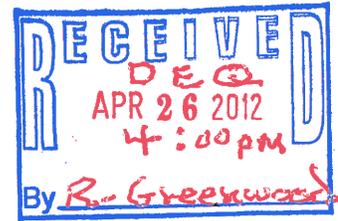


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# Nunhems USA, Inc.

## Permit-to-Construct Application Parma, Idaho Facility

**Prepared for:**

Nunhems USA, Inc.  
1200 Anderson Corner Road  
Parma, ID 83660  
Contact: Shane Roe  
(208) 674.4015

**Prepared by:**

JBR Environmental Consultants, Inc.  
7669 W. Riverside Drive, Suite 101  
Boise, ID 83714  
Contact: Andrew R. Wilkin  
(208) 853.0883

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## **1.0 INTRODUCTION**

Nunhems USA, Inc. (Nunhems) is submitting this Permit to Construct (PTC) Application for their seed processing facility located in Parma, Idaho. Upon regulatory investigation, it came to the attention of Nunhems that they must either submit this application, as required by IDAPA Rules # 58.01.01.200-214, or determine if the facility satisfies all the applicable self-exemption requirements as per IDAPA Rules # 58.01.01.220-225. Based upon the facility's estimated *uncontrolled* potential to emit (PTE), Nunhems does not satisfy all of the applicable self-exemption requirements. As a result, Nunhems is required to submit an application for a PTC.

The purpose of this document is to present all necessary and applicable information regarding the facility in support of a PTC Application for the facility. The Nunhems USA, Inc. Parma facility will be a minor source for all Criteria and Hazardous Air Pollutants. A site location map and plot plan has been included in Appendix A for reference.

This application is meant to ensure that the facility is in full permit compliance with all applicable IDAPA regulations. No new facility modifications will occur as a result of this PTC.

All required DEQ PTC forms and checklists are included in Appendix B.

## **2.0 PROCESS DESCRIPTION**

### **2.1 General Process Overview**

Nunhems processes carrot and onion seeds. In doing so, the facility completes five processing stages: warehousing, seed conditioning, seed enhancement, seed treatment, and packaging and shipping. Each of these process stages are described in detail in Section 2.2 on the following page.

### **2.2 Nunhems Parma Facility Process Flow Description**

#### Warehousing

Once seeds are received at the facility, they are inspected to determine if the product is "dirt seed" or "clean seed." Both clean and dirt-seed are sampled and analyzed to determine trueness to type, purity, vigor, seed health and seed count. Seeds are then analyzed for moisture content and dried, if needed, to bring the product to long term storage standards. A fumigation process is also performed, as needed, in order to eliminate infestation of boll weevils and other insects that may damage the seeds.

### Seed Conditioning

Seed conditioning is also referred to as seed cleaning or seed milling. It's the process of extracting the clean, pure seed from the plant parts that came with the seed from the field. Product considered "dirt seed" is received and stored within an adjacent building before it is conditioned within the conditioning building. Once received in the conditioning building, dirt seed goes through a "scalping" or pre-cleaning process where product is run across an air screen cleaner to remove the largest and smallest plant parts from the seed. Carrot seed goes through a separate process known as "brushing" where the awns or hairs of the seed are removed. After scalping and/or brushing, the seed is sent through the conditioning lines where they are further cleaned, density separated, color sorted and sized. If the quality and health standards are met, seed is moved to acclimated seed storage. Based upon the sales needs, Nunhems decides whether the product is: 1) enhanced, 2) treated, 3) packaged for stock, or 4) packaged for sale and shipment.

### Seed Enhancement

During the seed enhancement process, seeds are 1) *Disinfected* using a 1% chlorine solution 2) *Primed* (or pre-germinated) 3) *Sorted* and 4) *Pelleted* (where a polymer and filler is added to the seed to create a more uniform shape).

### Seed Treatment

After seed enhancement, seeds are sent for treatment where a thin layer of water-based polymer is applied in order to encapsulate the seed and hold the pesticide next to the seed.

### Packaging and Shipment

Logistics determines which type of container the product will be packaged in (pails, cans or pouches), and whether it will be packed for stock or for sale/distribution.

## **2.3 Emissions Source Description**

Emissions were calculated for all onsite sources at the facility. The emissions were calculated based on EPA approved AP-42 calculation methodologies. Qualitative emissions source descriptions for each onsite emissions source are listed below. Total quantitative emissions are detailed in section 4 of this PTC and emissions spreadsheets will be provided electronically.

### Warehousing Emissions

Warehousing emissions account for the storage, transfer, drying, and fumigation processes of the raw seed product.

*Seed drying* is conducted using heat from a 2.5 MMBtu/hr LPG-fired burner. The heated air is blown into a bed dryer, which allows seed to achieve the necessary moisture content.

*Box Chamber Fumigation* is performed by Nunhems to eliminate infestation of boll weevils and other insects that may damage the seeds. Box chamber fumigation, using phosphine gas, occurs by placing seed product within a railcar-type box fumigation chamber. Once the chamber is sealed, the seed is fumigated using 200 pills (or approximately 127 grams) of *Weevilcide* or *Fumitoxin* (which each contain approximately 55% phosphine) over a 3-5 day period. At the end of the fumigation, the door to the chamber is opened and a fan is placed in the chamber for ventilation. The chamber is then vented for 24 hours.

#### Seed Conditioning and Packaging

Seed conditioning emissions account for the storage, transfer, and active cleaning process of seeds. In addition, total emissions account for emissions associated with seed packaging, screening and product loading.

#### Seed Enhancement Processing

Enhancement processing emissions account for the seed storage and transfer processes. In addition, total emissions account for emissions associated with seed pelleting, film coating, and priming processes.

#### Various LPG Combustion Sources

Emissions from various building heaters and seed product dryer sources account for the combustion of liquefied petroleum gas on-site.

#### Emergency Diesel Generators

Emissions from three emergency diesel generators were calculated based upon an estimated run-time of 50 hours per year.

### **3.0 REGULATORY APPLICABILITY**

A review of applicable State and Federal Rules for each emissions unit is provided in Sections 3.1 and 3.2 below.

#### **3.1 State Regulatory Applicability**

A review of applicable requirements of the Rules for the Control of Air Pollution in Idaho is provided in Table 3-1. Each regulation requiring additional description is detailed in the sections following the table.

**Table 3-1 State Regulatory Applicability Summary**

<b>Regulation IDAPA 58.01.01.</b>	<b>Description</b>	<b>Applicable</b>	<b>Location of Information in Document or Comments</b>
200	Procedures and Requirements for Permits to Construct	Yes	NA
201	Permit to Construct Required	Yes	NA
202	Application Procedures	Yes – only 202.01.a.	Sections 1 - 3
203	Permit Requirements for New and Modified Stationary Sources	Yes	Sections 3 - 4
204	Permit Requirements for New Major Facilities or Major Modifications in Nonattainment Areas	No	NA – Nunhems is not located in a nonattainment area and the project is not Major
205	Permit Requirements for new Major Facilities or Major Modification in Attainment or Unclassifiable Areas	No	Not a major modification – Section 4
206	Optional Offsets for Permits to Construct	No	NA – Offsets are not required
207	Requirements for Emission Reduction Credit	No	NA
208	Demonstration of Air Quality Benefit	No	NA
209	Procedures for Issuing Permits	Yes	See below
209.01	General Procedures	No	Pertains to IDEQ
209.02	Additional Procedures for Specified Sources	No	NA
209.03	Good Engineering Stack Height	No	NA
209.04	Revisions of Permits to Construct	Yes	Pertains to IDEQ
209.05	Permit to Construct Procedures	No	
209.06	Transfer of Permits	No	
210	Demonstration of Preconstruction Compliance with Toxic Standards	Yes	Section 3.1.2
211	Conditions for Permits to Construct	Yes	Pertains to IDEQ
211.01	Reasonable Conditions	Yes	Pertains to IDEQ
211.02	Cancellation	No	NA
211.03	Notification to the Department	No	No additional facility changes will be completed
211.04	Performance Test	No	No additional facility changes will be completed
212	Obligation to Comply	Yes	See below

Regulation IDAPA 58.01.01.	Description	Applicable	Location of Information in Document or Comments
212.01	Responsibility to Comply with All Requirements	Yes	NA
212.02	Relaxation of Standards or Restrictions	No	NA –The proposed project does not ask for a relaxation of requirements
213	Pre-Permit Construction	No	NA
214	Demonstration of Preconstruction Compliance For New and Reconstructed Major Sources of Hazardous Air Pollutants	No	NA – The project does not involve new construction or re-construction of a major source of HAPs
220-223	Exemptions	No	NA
224	Permit to Construct Application Fee	Yes	\$1,000 check is attached to application
225	Permit to Construct Processing Fee	Yes	NA
226	Payment of Fees for Permits to Construct	Yes	NA
227	Receipt and Usage of Fees	Yes	Pertains to IDEQ
228	Appeals	Yes	Generally applicable.
123	Certification of Documents	Yes	Section 3.1.1
550	Air Pollution Emergency Rule	No	NA
577	Ambient Air Quality Standards for Specific Air Pollutants	Yes	Section 3.1.3
585-586	Toxic Air Pollutants	Yes	Section 3.1.4
590	New Source Performance Standards	Yes, subpart III	Section 3.1.5
591	National Emission Standards for Hazardous Air Pollutants	Yes, subpart ZZZZ	Section 3.1.6
625	Visible Emissions	Yes	Section 3.1.7
650	Rules for Control of Fugitive Dust	Yes	Section 3.1.8
676	Fuel Burning Equipment	No	Section 3.1.9
701	Process Weight	Yes	Section 3.1.10
775-776	Odors	Yes	Section 3.1.11

### 3.1.1 Certification of Documents

IDAPA 58.01.01.123 requires all documents including application forms for permits to construct, records, and monitoring reports submitted to the Department shall contain a certification by a responsible official. Nunhems will comply with this requirement and the appropriate certifications by a responsible official are being submitted with this application.

### **3.1.2 Demonstration of Preconstruction Compliance with Toxic Standards**

IDAPA 58.01.01.210 establishes requirements for compliance with toxic standards. Nunhems will comply with this rule by identifying and calculating the toxic pollutant emission rates from all applicable emissions units at the facility.

As described in Section 4.0 Emission Summary, Nunhems calculated the change in Toxic Air Pollutant (TAP) emission rates from all onsite emissions locations. No TAPs emissions rates exceeded the TAP emissions thresholds set by IDEQ.

### **3.1.3 Ambient Air Quality Standards for Specific Air Pollutants**

IDAPA 58.01.01.577 establishes ambient air quality standards for specific air pollutants including PM-10, Sulfur Dioxide, Ozone, Nitrogen Oxide, Carbon Monoxide, Fluorides and Lead. Nunhems performed atmospheric dispersion modeling in keeping with EPA and IDEQ modeling guidelines and has demonstrated compliance with the all ambient standards. A separate modeling report has been included in Appendix F for review.

### **3.1.4 Toxic Air Pollutants**

IDAPA 58.01.01.585 and 586 establishes requirements for compliance with toxic air pollutants. Nunhems has demonstrated compliance since no calculated TAPs emissions exceeded the TAPs emissions thresholds. The TAP Preconstruction Compliance Application Completeness Checklist is included in Attachment B and TAP emissions are shown in Section 4.0 below.

### **3.1.5 New Source Performance Standards**

The New Source Performance Standards applicable to Nunhems are in regards to their three compression ignition internal combustion engines utilized for emergency backup power generation. 40 CFR Part 61, Subpart III sets specific standards of performance for these types of units. Nunhems' emergency generators generally met the requirements of the subpart, but were widely not-applicable due to their engine sizes, model year, emergency-use-only status and because the facility is an area source for HAPs. All three sources comply with the standard emissions ratings and operation requirements in coordination with the manufacturer's certifications. A complete regulatory review is outlined in full detail on Form FRA, within Appendix B.

### **3.1.6 National Emission Standards for Hazardous Air Pollutants**

Two sets of National Emissions Standards for Hazardous Air Pollutants (NESHAPs) may potentially apply to the Nunhems facility. The first NESHAP regulations were developed under

the auspices of the original CAA. These standards are codified in 40 CFR Part 61, and address a limited number of pollutants and industries. 40 CFR Part 61 regulations do not apply to this facility.

Newer regulations are codified in 40 CFR Part 63 under the authority of the 1990 Clean Air Act Amendments (CAAA). These standards regulate HAP emissions from specific source categories and typically affect only major sources of HAPs. Part 63, Subpart ZZZZ, specifies regulations for Stationary Reciprocating Internal Combustions Engines. The requirements were evaluated against the manufacturer specifications of all three compression ignition internal combustion engines utilized on site, and it was determined that the rule is generally applicable to the units. A complete regulatory review is outlined in full detail on Form FRA, within Appendix B.

### **3.1.7 Visible Emissions**

IDAPA 58.01.01.625 restricts discharge of air pollutants into the atmosphere which is greater than 20% opacity for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period. Nunhems will comply with this rule by completing all routine onsite equipment maintenance and ensuring that the facility is operated within the standards of good engineering practices.

### **3.1.8 Rules for Control of Fugitive Dust**

IDAPA 58.01.01.650 requires that all reasonable precautions be taken to prevent the generation of fugitive dust. Nunhems will comply with fugitive particulate matter regulations by maintaining all baghouses according to the manufacturer's specifications and best practices.

### **3.1.9 Fuel Burning Equipment – Particulate Matter**

IDAPA 58.01.01.676 restricts any fuel burning source of more than 10 MMBtu/hr to limit the PM released from combustion to 0.015 gr/dscf for gas fuel. None of Nunhems' fuel burning sources equal or exceed the 10 MMBtu/hr limit, so this regulation does not apply.

### **3.1.10 Particulate Matter – Process Weight Limitations**

IDAPA 58.01.01.701 promulgates restrictions on PM for the entire facility based on process weight. Fuel burning equipment at the facility is not subject to this requirement. Process weight calculations are shown in Table 3-2 below.

### **3.1.11 Odors**

IDAPA 58.01.01.775-776 requires no emissions of odorous gases, liquids, or solids to the atmosphere in such quantities as to cause air pollution. Nunhems will comply with this requirement by keeping records of all odor complaints received and will take appropriate action for each complaint which has merit.

**Table 3-2 Process Weight Calculations**

Source	Process Weight, PW (lb/hr)	PM-Total Emissions Estimated (lb/hr)	Process Weight Rate Limitations - E (lb/hr)	In Compliance? (Y/N)
DC-1 CSL Dust Collector; Seed Conditioning, Lines 3-4	503.34	0.2094	1.88074268	Y
DC-2 CSL Dust Collector; Seed Conditioning, AIM Blending Line and Lines 5-6	503.34	0.2094	1.88074268	Y
DC-3 CSL Dust Collector; Seed Conditioning, Line 1-2	503.34	0.2100	1.88074268	Y
DC-4 CSL Dust Collector; Seed Conditioning, Carrot Seed Brushing Lines 1-3	503.34	0.0768	1.88074268	Y
DC-5 CSL Dust Collector; Seed Conditioning, Scalping Lines 3-4	503.34	0.1200	1.88074268	Y
DC-6 CSL Dust Collector; Seed Conditioning, Scalping Lines 1-2	503.34	0.1950	1.88074268	Y
DC-7 CSL Dust Collector; Seed Conditioning, Scalping and Brush Lines Makeup	503.34	0.0408	1.88074268	Y
DC-8 CSL Dust Collector; Seed Packaging and Shipping <sup>b</sup>	113.25	0.1500	0.76848508	Y
(FARR 1) FARR Cartridge Collector No. 1; Seed Treatment (Film Coating)	113.25	0.0113	0.76848508	Y
(FARR 2) FARR Cartridge Collector No. 2; Seed Treatment (Film Coating)	113.25	0.0113	0.76848508	Y
(FARR 3) FARR Cartridge Collector No. 3; Seed Enhancement (Pelleting)	113.25	0.0113	0.76848508	Y
(FARR 4) FARR Cartridge Collector No. 4; Seed Enhancement (Pelleting)	503.34	0.0113	1.88074268	Y
(MR BH 1) Murphy-Rodgers Baghouse; Seed Enhancement (Priming)	503.34	0.2094	1.88074268	Y
(HERD 1) Herding Filtration Unit No. 1; Seed Enhancement (Powder/Blending)	503.34	0.2094	1.88074268	Y
(HERD 2) Herding Filtration Unit No. 2; Seed Enhancement (Pelleting)	503.34	.2100	1.88074268	Y
Y(FARR 5) FARR Cartridge Collector No. 5; Warehousing (Bulk Unloading)	503.34	0.0768	1.88074268	Y

E = Emission Limit =  $0.045(PW)^{0.60}$  if PW is less than 9,250 lb/hr.

E =  $1.10(PW)^{0.25}$  if PW is greater than 9,250 lb/hr.

### 3.2 Federal Regulatory Applicability

A review of applicable Federal Rules is provided in Table 3-3. Included in Appendix B is the completed federal regulatory applicability PTC form.

**Table 3-3 Federal Regulatory Applicability Summary**

Section	Description	Regulatory Citation	Applicable
3.2.1	National Ambient Air Quality Standards (NAAQS)- (dispersion modeling)	40 CFR Part 50	Yes
3.2.2	Title V Operating Permit	40 CFR Part 70	No
3.2.3	National Emissions Standards for Hazardous Air Pollutants (NESHAPs)	40 CFR Parts 61, 63	Yes; subpart ZZZZ
3.2.4	New Source Review (NSR)	40 CFR Part 52	Yes
3.2.5	New Source Performance Standards (NSPS)	40 CFR Part 60	Yes; subpart IIII
3.2.6	Acid Rain Requirements	40 CFR Parts 72–78	No
3.2.7	Risk Management Programs For Chemical Accidental Release Prevention	40 CFR Part 68	No

#### 3.2.1 National Ambient Air Quality Standards (NAAQS)

Primary National Ambient Air Quality Standards (NAAQS) are identified in 40 CFR Part 50 and define levels of air quality, which the United States Environmental Protection Agency (USEPA) deems necessary to protect the public health. Secondary NAAQS define levels of air quality, which the USEPA judges necessary to protect public welfare from any known, or anticipated adverse effects of a pollutant. Examples of public welfare include protecting wildlife, buildings, national monuments, vegetation, visibility, and property values from degradation due to excessive emissions of criteria pollutants.

Specific standards for the following pollutants have been promulgated by USEPA: PM10, PM2.5, SO2, NOx, CO, ozone, and lead. The Parma facility will emit PM10, SO2, NOx, CO, and VOCs, a precursor to ozone. The facility will be a minor source for all pollutants. Compliance with the NAAQS has been demonstrated through the use of dispersion modeling. A separate modeling report has been included in Appendix F for review.

### **3.2.2 Title V (Part 70) Operating Permit**

Title V of the Clean Air Act (CAA) created the federal operating permit program. These permitting requirements are codified in 40 CFR Part 70. These permits are required for major sources with a PTE (considering federally enforceable limitations) greater than 100 tpy for any criteria pollutant, 25 tpy for all hazardous air pollutants (HAPs) in aggregate, or 10 tpy of any single HAP. Nunhems will qualify as a minor source and will be exempt from a Title V operating permit.

### **3.2.3 National Emission Standards for Hazardous Air Pollutants (NESHAPs)**

National Emission Standards for Hazardous Air Pollutants are discussed in Section 3.1.6 above. Subpart ZZZZ of the National Emission Standards for Hazardous Air Pollutants, Area Source Standards, generally applies to the Nunhems facility.

### **3.2.4 New Source Review (NSR) Requirements**

Payette County is designated as an attainment area for all criteria pollutants. Therefore, the prevention of significant deterioration (PSD) regulations codified in 40 CFR Part 52 do not apply to the proposed facility. The PSD rule applies to: (1) a new major source that has the potential to emit 100 tons per year or more for any criteria pollutant for a facility that is one of the 28 industrial source categories listed in 40 CFR § 52.21(b)(1)(i)(a); or (2) a new major source that has the potential to emit 250 tons per year or more of a regulated pollutant if the facility is not on the list of industrial source categories; or (3) a modification to an existing major source that results in a net emission increase greater than a PSD significant emission rate as specified in 40 CFR § 52.21 (b)(23)(i); or (4) a modification to an existing minor source that is major in itself. The Nunhems facility does not fall under one of the 28 industrial source categories, nor will the PTE exceed 250 tpy for any regulated pollutant. Therefore, Nunhems is not subject to PSD regulations. Additionally, Nunhems will not exceed the 100,000 tpy threshold for CO<sub>2</sub>e as defined in 40 CFR Part 98.

### **3.2.5 New Source Performance Standards (NSPS)**

New Source Performance Standards, under subpart IIII, generally applies to the Nunhems facility based upon their utilization of three compression ignition internal combustion emergency generators. The applicability of this subpart is discussed briefly in the above section, 3.1.5, and is more thoroughly outlined in Form FRA attached in Appendix B.

### **3.2.6 Acid Rain Requirements**

The acid rain requirements codified in 40 CFR Parts 72-78 apply only to utilities and other facilities that combust fossil fuel and generate electricity for wholesale or retail sale. The proposed facility will not produce electrical power for sale. Therefore, the facility is not subject to the acid rain provisions and will not require an acid rain permit.

### **3.2.7 Risk Management Programs for Chemical Accidental Release Prevention**

The facility is not subject to the Chemical Accidental Release Prevention Program and will not be required to develop a Risk Management Plan (RMP). Facilities that produce, process, store, or use any regulated toxic or flammable substance in excess of the thresholds listed in 40 CFR Part 68 must develop a RMP. The facility does not store any regulated toxic or flammable substances in excess of the applicable thresholds. A RMP is not necessary for this facility.

## **4.0 EMISSIONS SUMMARY**

This section includes all criteria air pollutant and TAPs calculations. A complete emissions inventory is included in Appendix E.

The facility will be permitted to operate 24 hours per day, seven days per week for a total of 8,760 hours per year for all process emissions sources. Emissions calculations and modeling for the combustion sources at the facility were based upon operating hours, as indicated in Appendices E and F. The facility currently receives and conditions approximately 1,300 tons of raw commodity inputs per year, however, emissions estimates assume a maximum of approximately 2,200 tons of raw commodity inputs per year. Of the 2,200 tons of raw commodity input, approximately 415 tons of the material becomes treated product. A conservative 496 tons per year of treated product was used for the emissions estimates. This represents the maximum operational seed production on an annual basis. All process emissions are controlled by bag houses.

#### 4.1 Criteria Pollutants

As discussed in Section 2.3, sources of criteria pollutant emissions at the Nunhems facility occur primarily from raw commodity receiving, seed conditioning and enhancement processes, emergency diesel generator utilization, LPG combustion from building heating and seed drying operations, and from seed packaging and shipping.

Process particulate emissions are based upon existing facility emission control devices, including baghouses. The baghouse manufacturers' guaranteed grain loading, volumetric flow rate and filtration unit control efficiency were all used to calculate emissions. Emissions calculations are provided in more detail within Appendix E.

Emissions from LPG combustion were based upon maximum material throughputs and operating hours of the units, while diesel combustion emissions from the backup emergency generators were based upon the manufacturer's specified brake horsepower rating and emissions certifications. Where manufacturer certified emissions factors were not available, those provided in AP-42, Table 3.3-1 were utilized.

Criteria Pollutant Emissions of PM-10, PM-2.5 and NOx exceeded IDEQ's screening limits. Therefore, Nunhems conducted modeling for these pollutants (see Appendix F for a complete modeling report).

Electronic copies of the Excel spreadsheets used to calculate facility emissions are included in Appendix E of this permit application.

Tables 4-1 and 4-2, below, show the controlled facility-wide PTE for criteria pollutants and the total facility change in emissions from a pre-facility emissions level of zero.

**Table 4-1 Facility Criteria Pollutant PTE**

Emissions Unit	EU ID #	NSR Pollutant**							
		PM-Total	PM-10	PM2.5	NOx	CO	CO2e	SOx	VOC
		T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
<b>Point Sources</b>									
CAT C9-2008 3 Phase Diesel Generator (at pumphouse)	CAT GEN	0.02	0.02	0.02	0.07	0.07	11.4	0.0003	0.0004
Generac 2000 Series 3-Phase Diesel Generator (South of Building "C")	GENERAC GEN	0.01	0.01	0.01	0.10	0.02	3.6	0.0000	0.0000
Stamford Cummins 3-Phase Diesel Generator	CUMMINS GEN	0.04	0.04	0.04	0.58	0.31	64.4	0.0125	0.0043
CSL Dust Collector; Seed Conditioning, Lines 3-4	DC-1	0.917	0.449	0.127	n/a	n/a	n/a	n/a	n/a
CSL Dust Collector; Seed Conditioning, AIM Blending Line and Lines 5-6	DC-2	0.917	0.449	0.127	n/a	n/a	n/a	n/a	n/a
CSL Dust Collector; Seed Conditioning, Line 1-2	DC-3	0.920	0.451	0.127	n/a	n/a	n/a	n/a	n/a
CSL Dust Collector; Seed Conditioning, Carrot Seed Brushing Lines 1-3	DC-4	0.336	0.165	0.046	n/a	n/a	n/a	n/a	n/a
CSL Dust Collector; Seed Conditioning, Scalping Lines 3-4	DC-5	0.526	0.258	0.073	n/a	n/a	n/a	n/a	n/a
CSL Dust Collector;	DC-6	0.854	0.419	0.118	n/a	n/a	n/a	n/a	n/a

Emissions Unit	EU ID #	NSR Pollutant**							
		PM-Total	PM-10	PM2.5	NOx	CO	CO2e	SOx	VOC
		T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Seed Conditioning, Scalping Lines 1-2									
CSL Dust Collector; Seed Conditioning, Scalping and Brush Lines Makeup	DC-7	0.179	0.088	0.025	n/a	n/a	n/a	n/a	n/a
CSL Dust Collector; Seed Packaging and Shipping <sup>b</sup>	DC-8	0.657	0.322	0.091	n/a	n/a	n/a	n/a	n/a
FARR Cartridge Collector No. 1; Seed Treatment (Film Coating)	FARR 1	0.438	0.215	0.060	n/a	n/a	n/a	n/a	1.07E-06
FARR Cartridge Collector No. 2; Seed Treatment (Film Coating)	FARR 2	0.411	0.202	0.057	n/a	n/a	n/a	n/a	1.00E-06
FARR Cartridge Collector No. 3; Seed Enhancement (Pelleting)	FARR 3	0.491	0.241	0.068	n/a	n/a	n/a	n/a	n/a
FARR Cartridge Collector No. 4; Seed Enhancement (Pelleting)	FARR 4	0.588	0.288	0.081	n/a	n/a	n/a	n/a	n/a
Murphy-Rodgers Baghouse; Seed Enhancement (Priming)	MR BH 1	0.050	0.024	0.007	n/a	n/a	n/a	n/a	n/a
Herdling Filtration Unit No. 1; Seed Enhancement	HERD 1	0.089	0.043	0.012	n/a	n/a	n/a	n/a	n/a

Emissions Unit	EU ID #	NSR Pollutant**							
		PM-Total	PM-10	PM2.5	NOx	CO	CO2e	SOx	VOC
		T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
(Powder/Blending)									
Herding Filtration Unit No. 2; Seed Enhancement (Pelleting)	HERD 2	1.032	0.506	0.142	n/a	n/a	n/a	n/a	1.87E-05
FARR Cartridge Collector No. 5; Warehousing (Bulk Unloading)	FARR 5	0.798	0.391	0.110	n/a	n/a	n/a	n/a	n/a
Two propane building heaters ("Q") for temperature and humidity control.	HEAT 1	0.015	0.017	0.015	0.017	0.015	0.017	0.28	0.31
Four building heaters south of building "L"	HEAT 2	0.004	0.004	0.004	0.004	0.004	0.004	0.07	0.08
Two Enclosed Propane Seed Dryers within building "L."	Dryer 1	0.015	0.037	0.015	0.037	0.015	0.037	0.28	0.68
Seed Dryer northwest of building "K."	Dryer 2	0.038	0.028	0.038	0.028	0.038	0.028	0.71	0.51
<b>Totals*</b>		<b>9.35</b>	<b>4.66</b>	<b>1.42</b>	<b>2.33</b>	<b>1.31</b>	<b>1602.6</b>	<b>0.20</b>	<b>0.13</b>

\* Does not include fugitive emissions sources as the facility does not fall within a listed source category.

\*\* See spreadsheets prepared by JBR (included in Appendix E of the permit application) for further information. Lead emissions were calculated at zero for all sources, so not applied in this table.

**Table 4-2 Facility Criteria Pollutant Change in Emissions**

	<b>PM-Total</b>	<b>PM-10</b>	<b>PM2.5</b>	<b>NOx</b>	<b>CO</b>	<b>CO2e</b>	<b>SOx</b>	<b>VOC</b>
<b>Pre-Facility PTE (TPY)</b>	0	0	0	0	0	0	0	0
<b>Post-Facility PTE (TPY)</b>	9.35	4.66	1.42	2.33	1.31	1602.6	0.20	0.13
<b>Change in PTE Emissions (TPY)</b>	9.35	4.66	1.42	2.33	1.31	1602.6	0.20	0.13
<b>Pre-Facility PTE (lb/hr)</b>	0	0	0	0	0	0	0	0
<b>Post-Facility PTE (lb/hr)</b>	4.88	3.81	3.07	31.20	16.48	4474.5	5.76	2.98
<b>Change in PTE Emissions (lb/hr)</b>	4.88	3.81	3.07	31.20	16.48	4474.5	5.76	2.98

## 4.2 Toxic and Hazardous Air Pollutants

Based upon the facilities Potential to Emit (PTE) from an assumed pre-facility emission level of zero, all emissions changes fall below the IDEQ screening emissions limits for non-carcinogenic TAPs ( IDAPA 58.01.01.585) and carcinogenic TAPs (IDAPA 58.01.01.586).

Emissions of TAPs and HAPs at the Nunhems facility are limited to emissions from the box chamber fumigation process, seed enhancement processing operations, and three onsite emergency diesel generators. TAPs compliance was demonstrated for all of the above listed sources, since the sum of the emissions from each source was found to be below the EL provided for each TAP (see Tables 4-3 and 4-4 below). Site-specific dispersion modeling was not needed to demonstrate compliance for either TAPs or HAPs.

### Box Chamber Fumigation

As described in section 2.3, Nunhems performs fumigation activities to eliminate infestation of boll weevils and other insects that may damage their seed product. Box chamber fumigation, using phosphine gas, occurs by placing seed product within a railcar-type box fumigation chamber. Once the chamber is sealed, the seed is fumigated using 200 pills (or approximately 127 grams) of *Weevilcide* or *Fumitoxin* (which each contain approximately 55% phosphine) over a 3-5 day period. At the end of the fumigation, the door to the chamber is opened and a fan is placed in the chamber for ventilation. The chamber is then vented for 24 hours. Maximum potential emissions were estimated using the maximum material throughput, the weight fraction of phosphine (0.55) and an estimated material transfer efficiency rate (95%). Emissions were assumed to primarily occur on the fourth day of fumigation when the door is opened. Maximum potential emissions are below the screening level for modeling purposes.

### Seed Enhancement Processing

A thorough review of all chemical substances used during the seed pelleting, film coating, and priming processes was conducted. MSDS information is included in Appendix F. A conservative estimate of the maximum hourly application rate (in lb/hr) was developed for all seed coating materials containing any TAP or HAP-listed chemical. A summary of the potential emissions associated with the seed enhancement materials and the fumigation process are presented in Table 4-3.

**Table 4-3 PTE TAPs from Seed Coatings**

Name of Material/ TAPs	Max Material Process Rate (lb/hr)	Transfer Efficiency (%) <sup>a</sup>	Wt. Fraction TAP	Filtration Control Efficiency (%) <sup>b</sup>	TAP Emissions (lb/hr)
Weevil-cide, Fumitoxin / Phosphine (55%)	0.011648	95%	0.55	0.00%	3.20E-04
42S Thiram / Thiram (42%)	4.000000	95%	0.42	99.99%	8.40E-06
42S Thiram / Thiram (42%)	0.350000	95%	0.42	99.99%	7.35E-07
Maxim 4FS / Ethylene Glycol (<15%)	0.025000	95%	0.15	99.99%	1.87E-08
Maxim 4FS / Ethylene Glycol (<15%)	0.004930	95%	0.15	99.99%	3.70E-09
ProGro / Thiram (50%)	1.980000	95%	0.50	99.99%	4.95E-06
Lorsban 30F / Chlorpyrifos (30%)	1.630000	95%	0.30	99.99%	2.44E-06
Lorsban 30F / Xylene (3%)	1.630000	95%	0.03	99.99%	2.44E-07
TriGard OMC / Kaolin Clay (<15%),	5.240000	95%	0.15	99.99%	3.93E-06
TriGard OMC / Amorphous Silica; diatomaceous earth (<15%)	5.240000	95%	0.15	99.99%	3.93E-06
C31 / Calcium carbonate (50-100%)	635.000000	95%	1.00	99.99%	3.17E-03
C31 / Diatomaceous earth/silica-amorphous (25-50%)	635.000000	95%	0.50	99.99%	1.59E-03
C31 / Mica (1-10%)	635.000000	95%	0.10	99.99%	3.17E-04
C31 / Silica, crystalline - Quartz (1-10%)	635.000000	95%	0.10	99.99%	3.17E-04
C31 / Silica, crystalline - Cristobalite (1-10%)	635.000000	95%	0.10	99.99%	3.17E-04
F18 / Mica (50-100%)	6.610000	95%	1.00	99.99%	3.30E-05
Mikrosohl 40 / Calcium Carbonate (88%)	26.400000	95%	0.88	99.99%	1.16E-04
Mikrosohl 40 / Hydrochloric acid-insoluble components (10%)	26.400000	95%	0.10	99.99%	1.32E-05
Wimer 100,130,140 / Silica, crystalline - Quartz (53%)	88.000000	95%	0.53	99.99%	2.33E-04
Navajo Brand Grade FFF Pumice / Aluminum Oxide: Al <sub>2</sub> O <sub>3</sub> (12%)	6.600000	95%	0.12	99.99%	3.96E-06
Navajo Brand Grade FFF Pumice / Calcium Oxide: CaO (<1%)	6.600000	95%	0.01	99.99%	3.30E-07
Navajo Brand Grade FFF Pumice / Magnesium Oxide: MgO (<1%)	6.600000	95%	0.01	99.90%	3.30E-06

Name of Material/ TAPs	Max Material Process Rate (lb/hr)	Transfer Efficiency (%) <sup>a</sup>	Wt. Fraction TAP	Filtration Control Efficiency (%) <sup>b</sup>	TAP Emissions (lb/hr)
Dicalite 476, 478 Perlite Filter Aids / Perlite (assume 100%)	14.300000	95%	1.00	99.90%	7.15E-04
SOL 17 / Methanol (<1%)	85.200000	95%	0.01	99.99%	4.26E-06
Sepiret 9256 EKWX / Formaldehyde (~39ppm or 0.0039%)	117.500000	95%	0.000039	99.90%	2.29E-07
Liquichlor/Sodium Hypochlorite / Sodium hydroxide (0.1-2%)	10.978682	95%	0.02	0.00%	1.10E-02
Thiourea / Thiourea (>99%)	0.000025	95%	0.99	0.00%	1.25E-06

A seed coating transfer efficiency of 95% was assumed for seed coatings (including fumigation), based upon process knowledge and system design. Filtration control efficiency was used only for coatings in the powder form. Control efficiency was provided by the baghouse manufacturer. Potential vapors from liquid coatings are not controlled by the baghouse and are represented by a control efficiency of 0%.

#### Generators

TAPs and HAPs emissions from the two largest diesel combustion sources were calculated utilizing the manufacturer's specified brake horsepower rating in conjunction with the manufacturer's certified emissions statement. Emissions from the smaller Generac unit were calculated based upon the manufacturer's specified brake horsepower rating in conjunction with the most recent emissions factors in AP-42 Table 3.3-1 (version 96-2002). Calculations and modeling assumed that the emergency generators would run a maximum of 50 hours per year and no longer than one hour once per week. The calculated emissions were compared to all applicable screening emissions limits. No emissions exceeded the related emissions threshold and as a result no further ambient impact analysis was required.

Tables 4-3 above and 4-4 below show the controlled facility-wide PTE for TAPs and HAPs.

**Table 4-4 PTE TAPs from All Sources**

**PART 1. PRE- AND POST PROJECT NON-CARCINOGENIC TAP EMISSIONS SUMMARY POTENTIAL TO EMIT**

Non-Carcinogenic Toxic Air Pollutants	Pre-Project	Post Project	Change in	Non-Carcinogenic Screening Emission Level	Exceeds Screening Level?
(sum of all emissions)	24-hour Average Emissions Rates for Units at the Facility	24-hour Average Emissions Rates for Units at the Facility	24-hour Average Emissions Rates for Units at the Facility	(lb/hr)	(Y/N)
	(lb/hr)	(lb/hr)	(lb/hr)		
Acrolein	0.00E+00	6.15E-06	6.15E-06	1.7E-02	N
Aluminum Oxide; Al2O3	0.00E+00	3.96E-06	3.96E-06	6.67E-01	N
Barium	0.00E+00	0.00E+00	0.00E+00	3.3E-02	N
Calcium Carbonate	0.00E+00	3.29E-03	3.29E-03	6.67E-01	N
Chlorpyrifos	0.00E+00	2.44E-06	2.44E-06	1.30E-02	N
Chromium	0.00E+00	0.00E+00	0.00E+00	3.3E-02	N
Cobalt	0.00E+00	0.00E+00	0.00E+00	3.3E-03	N
Copper	0.00E+00	0.00E+00	0.00E+00	6.7E-02	N
Ethylene Glycol	0.00E+00	2.24E-08	2.24E-08	8.46E-01	N
Hexane	0.00E+00	0.00E+00	0.00E+00	1.2E+01	N
Hydrogen Chloride (HCL)	0.00E+00	1.32E-05	1.32E-05	5.00E-02	N
Kaolin	0.00E+00	3.93E-06	3.93E-06	1.33E-01	N
Magnesium Oxide	0.00E+00	3.30E-06	3.30E-06	6.67E-01	N
Manganese	0.00E+00	0.00E+00	0.00E+00	3.33E-01	N
Mercury	0.00E+00	0.00E+00	0.00E+00	3.E-03	N
Methanol	0.00E+00	4.26E-06	4.26E-06	1.73E+01	N
Mica	0.00E+00	3.51E-04	3.51E-04	2.00E-01	N
Molybdenum	0.00E+00	0.00E+00	0.00E+00	6.67E-01	N
Naphthalene*	0.00E+00	3.38E-05	3.38E-05	9.10E-05	N
Pentane	0.00E+00	0.00E+00	0.00E+00	1.18E+02	N
Perlite	0.00E+00	7.15E-04	7.15E-04	6.67E-01	N
Phosphine	0.00E+00	3.20E-04	3.20E-04	2.70E-02	N
Phosphorus	0.00E+00	0.00E+00	0.00E+00	7.00E-03	N
Selenium	0.00E+00	0.00E+00	0.00E+00	1.3E-02	N
Silica - amorphous-Diatomaceous Earth	0.00E+00	1.59E-03	1.59E-03	6.67E-01	N
Silica, crystalline - Cristobalite	0.00E+00	3.17E-04	3.17E-04	3.30E-03	N
Silica, crystalline - Quartz	0.00E+00	5.51E-04	5.51E-04	6.70E-03	N
Sodium Hydroxide	0.00E+00	1.10E-02	1.10E-02	1.33E-01	N
Thiram	0.00E+00	1.41E-05	1.41E-05	3.33E-01	N
Toluene	0.00E+00	8.36E-05	8.36E-05	2.5E+01	N
Vanadium	0.00E+00	0.00E+00	0.00E+00	3.0E-03	N
Xylene	0.00E+00	5.78E-05	5.78E-05	2.90E+01	N
Zinc	0.00E+00	0.00E+00	0.00E+00	6.7E-01	N

\* Although listed as a noncarcinogen in the Rules, DEQ has determined that naphthalene is a possible/probable. carcinogen. Compliance for naphthalene emissions should be based on the EL or AACC listed in Section 586 for PAH.

\*\* See spreadsheets prepared by JBR (included in Appendix F of the permit application for further information regarding emission factors and calculation assumptions.

**PART 2. PRE- AND POST PROJECT CARCINOGENIC TAP EMISSIONS SUMMARY POTENTIAL TO EMIT**

Carcinogenic Toxic Air Pollutants	Pre-Project	Post Project	Change in	Carcinogenic Screening Emission Level	Exceeds Screening Level?
(sum of all emissions)	Annual Average Emissions Rates for Units at the Facility	Annual Average Emissions Rates for Units at the Facility	Annual Average Emissions Rates for Units at the Facility	(lb/hr)	(Y/N)
	(lb/hr)	(lb/hr)	(lb/hr)		
Arsenic	0.00E+00	0.00E+00	0.00E+00	1.5E-06	N
Benzene	0.00E+00	3.04E-05	3.04E-05	8.0E-04	N
Beryllium	0.00E+00	0.00E+00	0.00E+00	2.8E-05	N
Cadmium	0.00E+00	0.00E+00	0.00E+00	3.7E-06	N
Formaldehyde	0.00E+00	1.03E-05	1.03E-05	5.1E-04	N
Formaldehyde	0.00E+00	0.00E+00	0.00E+00	5.1E-04	N
Nickel	0.00E+00	1.25E-06	1.25E-06	2.7E-05	N
Thiourea	0.00E+00	9.28E-09	9.28E-09	1.5E-06	N
Benzo(a)pyrene	0.00E+00	3.03E-08	3.03E-08	2.0E-06	N
Benz(a)anthracene	0.00E+00	3.55E-08	3.55E-08	NA	N
Benzo(b)fluoranthene	0.00E+00	7.84E-09	7.84E-09	NA	N
Benzo(k)fluoranthene	0.00E+00	5.03E-08	5.03E-08	NA	N
Chrysene	0.00E+00	1.46E-08	1.46E-08	NA	N
Dibenzo(a,h)anthracene	0.00E+00	1.54E-08	1.54E-08	NA	N
Indeno(1,2,3-cd)pyrene	0.00E+00	1.63E-07	1.63E-07	NA	N
Total PAHs	0.00E+00	4.21E-05	4.21E-05	9.1E-05	N

a) PAH is considered as one TAP comprised of: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd)pyrene, benzo(a)pyrene. The total is compared to benzo(a)pyrene.

\*\* See spreadsheets prepared by JBR (included in Appendix E of the permit application for further information regarding emission factors and calculation assumptions.

**Table 4-5 PTE HAPs from All Sources**

<b>HAP Pollutants</b>	<b>PTE (T/yr)</b>
Acrolein	3.07E-07
Benzene	1.52E-06
Ethylene Glycol	9.83E-08
Formaldehyde	6.97E-09
Hexane	0.00E+00
Hydrochloric Acid	5.78E-05
Methanol	1.9E-05
Naphthalene	1.69E-06
Phosphine*	1.40E-03
Phosphorus	0.00E+00
Toluene	4.18E-06
Xylene	2.53E-04
<b>Total</b>	<b>1.74E-03</b>

\* Maximum Individual HAP

\*\* See spreadsheets prepared by JBR (included in Appendix E of the permit application for further information regarding emission factors and calculation assumptions.)

## **5.0 LIMITATIONS ON POTENTIAL TO EMIT**

Nunhems proposes the following limits on the operations and equipment parameters at the facility. These proposed emissions limits coincide with the data utilized in developing the Emissions Inventory which demonstrates compliance with the IDEQ emissions thresholds. Nunhems is requesting limits on maximum material throughput for processing operations, limitations to operating hours for the combustion emission sources, and control equipment specifications, as outlined below.

### **5.1 Material Throughput**

Total annual production volume will be limited to 496 tons per year.

Total raw commodity receiving will be limited to 2,205 tons per year.

### **5.2 Operating Hours**

The emergency generators were assumed to operate one hour per week for testing purposes, consistent with facility operations and the proposed permit. Each generator shall operate for a period not to exceed 50 hours of operation per year.

The two gas-fired building heaters and the larger seed dryer were modeled using the maximum hours per year in the emission inventory through model factors. The building heaters shall be permitted to operate 2,200 hours per year. The larger seed dryer shall be permitted to operate 1,440 hours per year.

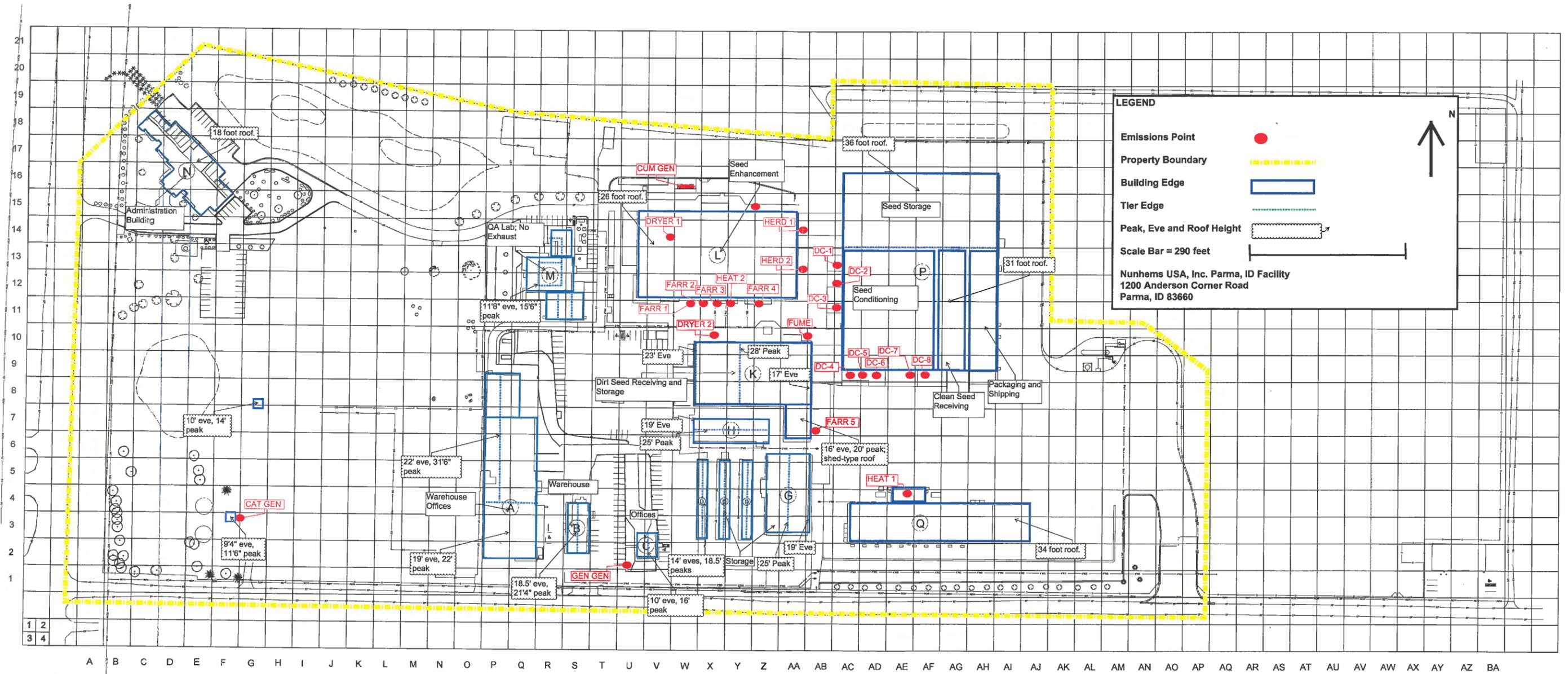
### **5.3 Control Equipment**

The onsite process control baghouses will provide a control efficiency of 99%.

# **APPENDIX A**

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## **Site Location Map and Plot Plan**



**LEGEND**

- Emissions Point ●
- Property Boundary - - - - -
- Building Edge ▭
- Tler Edge - - - - -
- Peak, Eve and Roof Height

Scale Bar = 290 feet

Nunhems USA, Inc. Parma, ID Facility  
 1200 Anderson Corner Road  
 Parma, ID 83660

1	2
3	4

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA AB AC AD AE AF AG AH AI AJ AK AL AM AN AO AP AQ AR AS AT AU AV AW AX AY AZ BA

# **APPENDIX B**

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DEQ PTC Forms and Checklists



**DEQ AIR QUALITY PROGRAM**  
 1410 N. Hilton, Boise, ID 83706  
 For assistance, call the  
**Air Permit Hotline – 1-877-5PERMIT**

Cover Sheet for Air Permit Application – Permit to Construct **Form CSPTC**

Please see instructions on page 2 before filling out the form.

**COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER**

1. Company Name	Nunhems USA, Inc. Parma, ID	
2. Facility Name	Parma, Idaho Facility	3. Facility ID No.
4. Brief Project Description - One sentence or less	Carrot and Onion Seed Processing Facility	

**PERMIT APPLICATION TYPE**

5.  New Source  New Source at Existing Facility  PTC for a Tier I Source Processed Pursuant to IDAPA 58.01.01.209.05.c  
 Unpermitted Existing Source  Facility Emissions Cap  Modify Existing Source: Permit No.: \_\_\_\_\_ Date Issued: \_\_\_\_\_  
 Required by Enforcement Action: Case No.: \_\_\_\_\_

6.  Minor PTC  Major PTC

**FORMS INCLUDED**

Included	N/A	Forms	DEQ Verify
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form CSPTC – Cover Sheet	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form GI – Facility Information	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form EU0 – Emissions Units General	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form EU1– Industrial Engine Information Please specify number of EU1s attached: <u>3</u>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU2– Nonmetallic Mineral Processing Plants Please specify number of EU2s attached: <u>0</u>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU3– Spray Paint Booth Information Please specify number of EU3s attached: <u>0</u>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU4– Cooling Tower Information Please specify number of EU3s attached: <u>0</u>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU5 – Boiler Information Please specify number of EU4s attached: <u>0</u>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form CBP– Concrete Batch Plant Please specify number of CBPs attached: <u>0</u>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form HMAP – Hot Mix Asphalt Plant Please specify number of HMAPs attached: <u>0</u>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	PERF – Portable Equipment Relocation Form	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form AO – Afterburner/Oxidizer	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form CA – Carbon Adsorber	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form CYS – Cyclone Separator	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form ESP – Electrostatic Precipitator	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form BCE– Baghouses Control Equipment attached: <u>16</u>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form SCE– Scrubbers Control Equipment	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form VSCE – Venturi Scrubber Control Equipment	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form CAM – Compliance Assurance Monitoring	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Forms EI– Emissions Inventory	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	PP – Plot Plan	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Forms MI1 – MI4 – Modeling (Excel workbook, all 4 worksheets)	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form FRA – Federal Regulation Applicability	<input type="checkbox"/>



## Department of Environmental Quality - Air Quality Division Minor Source Permit to Construct Application Completeness Checklist

This checklist is designed to aid the applicant in submitting a complete permit to construct application.

### I. Actions Recommended Before Submitting Application

- Refer to the Rule. Read the Permit to Construct requirements contained in IDAPA 58.01.01.200-228, Rules for the Control of Air Pollution in Idaho. The Rules are available on DEQ's website (go to <http://adm.idaho.gov/adminrules/rules/idapa58/0101.pdf>).
- Refer to DEQ's Permit to Construct Guidance Document. DEQ has developed a guidance document to aid applicants in submitting a complete permit to construction application. The guidance document is located on DEQ's website (go to [http://www.deq.idaho.gov/air/permits\\_forms/permitting/ptc\\_prepermit\\_guidance.pdf](http://www.deq.idaho.gov/air/permits_forms/permitting/ptc_prepermit_guidance.pdf)).
- Consult with DEQ Representatives. It is recommended that the applicant schedule a pre-application meeting with DEQ to discuss application requirements before submitting the permit to construct application. The meeting can be in person or on the phone. Contact DEQ's Air Quality Hotline at **877-5PERMIT** to schedule the pre-application meeting.
- Submit Ambient Air Quality Modeling Protocol. It is strongly recommended that an ambient air quality modeling protocol be submitted to DEQ at least two (2) weeks before the permit to construct application is submitted. Contact DEQ's Air Quality Hotline at **877-5PERMIT** for information about the protocol.

### II. Application Content

**Application content should be prepared using the checklist below. The checklist is based on the requirements contained in IDAPA 58.01.01.202.**

- Apply for a Permit to Construct. Submit a Permit to Construct application using forms available on DEQ's website at [http://www.deq.idaho.gov/air/permits\\_forms/forms/ptc\\_general\\_application.pdf](http://www.deq.idaho.gov/air/permits_forms/forms/ptc_general_application.pdf).
- Permit to Construct Application Fee. The permit to construct application fee of \$1000 must be submitted at the time the original permit to construct application is submitted. Refer to IDAPA 58.01.01.224. If the permit to construct application is withdrawn or denied and a new application is submitted, a new \$1,000 application fee is required to be submitted. The application fee is not transferable or refundable. The application fee can be paid by check, credit card or Electronic Funds Transfer (EFT). If you choose to pay by credit card or EFT, please refer to the following Access Idaho link:  
<https://www.accessidaho.org/secure/deq/payport/item.html?id=511>  
If you choose to pay by check, enclose the check with your permit to construct application.
- Process Description(s). The process or processes for which construction is requested must be described in sufficient detail and clarity such that a member of the general public not familiar with air quality can clearly understand the proposed project. A process flow diagram is required for each process.
- Equipment List. All equipment that will be used for which construction is requested must be described in detail. Such description includes, but is not limited to, manufacturer, model number or other descriptor, serial number, maximum process rate, proposed process rate, maximum heat input capacity, stack height, stack diameter, stack gas flowrate, stack gas temperature, etc. All equipment that will be used for which construction is requested must be clearly labeled on the process flow diagram.
- Potential to Emit. Submit the uncontrolled potential to emit (pre-control equipment emissions estimates) and the controlled potential to emit (post-control equipment emissions estimates) for all equipment for which construction is requested. Any limit on the equipment for which is construction is requested may become a



**Department of Environmental Quality**

1410 N. Hilton, Boise, ID 83706

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AQ-CH-P008

limit on that equipment in the permit to construct.

- Potential to Emit and Modeled Ambient Concentration for All Regulated Air Pollutants. All proposed emission limits and modeled ambient concentrations for all regulated air pollutants must demonstrate compliance with all applicable air quality rules and regulations. Regulated air pollutants include criteria air pollutants, toxic air pollutants listed pursuant to IDAPA 58.01.01.585 and 586, and hazardous air pollutants listed pursuant to Section 112 of the 1990 Clean Air Act Amendments (go to <http://www.epa.gov/ttn/atw/188polls.html>). Describe in detail how the proposed emissions limits and modeled ambient concentrations demonstrate compliance with each applicable air quality rule and regulation. It is requested that emissions calculations, assumptions, and documentation be submitted with sufficient detail so DEQ can verify the validity of the emissions estimates.
- Scaled Plot Plan. It is required a scaled plot plan be included in the permit to construct application and it must clearly label the location of each proposed process and the equipment that will be used in the process.
- List all Applicable Requirements. All applicable requirements must be cited by the rule or regulation section/subpart that applies for each emissions unit.
- Certification of Permit to Construct Application. The permit to construct application must be signed by the Responsible Official and must contain a certification signed by the Responsible Official. The certification must state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. Refer to IDAPA 58.01.01.123.
- Submit the Permit to Construct Application. Submit the permit to construct application and application fee to the following address:

Air Quality Program Office – Application Processing  
Department of Environmental Quality  
1410 N. Hilton  
Boise, ID 83706-1255



Please see instructions on page 2 before filling out the form.

**All information is required. If information is missing, the application will not be processed.**

IDENTIFICATION	
1. Company Name	2. Facility Name:
Nunhems USA, Inc.	Parma, ID Facility
3. Brief Project Description:	Carrot and Onion Seed Processing Facility
FACILITY INFORMATION	
4. Primary Facility Permit Contact Person/Title	Tyson Smith Country Head USA
5. Telephone Number and Email Address	(208) 674-4339 Tyson.Smith@bayer.com
6. Alternate Facility Contact Person/Title	Shane Roe Facility and Maintenance Manager
7. Telephone Number and Email Address	(208) 674-4079 shane.roe@bayer.com
8. Address to Which the Permit Should be Sent	1200 Anderson Corner Rd.
9. City/County/State/Zip Code	Parma Payette Idaho 83660
10. Equipment Location Address (if different than the mailing address above)	Same as above
11. City/County/State/Zip Code	
12. Is the Equipment Portable?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
13. SIC Code(s) and NAICS Code	Primary SIC: 0723 Secondary SIC: NAICS: 115114
14. Brief Business Description and Principal Product	Seed Treatment Processing Plant
15. Identify any adjacent or contiguous facility that this company owns and/or operates	N/A
16. Specify the reason for the application	<input checked="" type="checkbox"/> Permit to Construct (PTC) <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>For Tier I permitted facilities only: If you are applying for a PTC then you must also specify how the PTC will be incorporated into the Tier I permit.</p> <input type="checkbox"/> Incorporate the PTC at the time of the Tier I renewal  <input type="checkbox"/> Co-process the Tier I modification and PTC  <input type="checkbox"/> Administratively amend the Tier I permit to incorporate the PTC upon your request (IDAPA 58.01.01.209.05.a, b, or c)           </div> <input type="checkbox"/> Tier I Permit <input type="checkbox"/> Tier II Permit <input type="checkbox"/> Tier II/Permit to Construct
CERTIFICATION	
In accordance with IDAPA 58.01.01.123 (Rules for the Control of Air Pollution in Idaho), I certify based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.	
17. Responsible Official's Name/Title	Tyson Smith Country Head USA
18. Responsible Official Address	1200 Anderson Corner Road
19. Responsible Official Telephone Number	(208) 674-4339
20. Responsible Official Email Address	tyson.smith@bayer.com
21. Responsible Official's Signature	Date: 26 April 2012
22. <input checked="" type="checkbox"/> Check here to indicate that you would like to review the draft permit prior to final issuance.	



Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

1. Company Name: Nunhems USA, Inc.	2. Facility Name: Parma, ID	3. Facility ID No:
4. Brief Project Description: Carrot and Onion Seed Processing Facility		

**EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION**

5. Emissions Unit (EU) Name:	2 PROPANE BUILDING HEATERS		
6. EU ID Number:	HEATER 1		
7. EU Type:	<input type="checkbox"/> New Source	<input checked="" type="checkbox"/> Unpermitted Existing Source	Date Issued:
	<input type="checkbox"/> Modification to a Permitted Source – Previous Permit #:		
8. Manufacturer:	RAE CORPORATION.		
9. Model:	RCUAC4CD50-H4		
10. Maximum Capacity:	1,000,000 BTU/HR/UNIT		
11. Date of Construction:	2011		
12. Date of Modification (if any):			
13. Is this a Controlled Emission Unit?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, complete the following section. If No, go to line 22.		

**EMISSIONS CONTROL EQUIPMENT**

14. Control Equipment Name and ID:						
15. Date of Installation:			16. Date of Modification (if any):			
17. Manufacturer and Model Number:						
18. ID(s) of Emission Unit Controlled:						
19. Is operating schedule different than emission units(s) involved? <input type="checkbox"/> Yes <input type="checkbox"/> No						
20. Does the manufacturer guarantee the control efficiency of the control equipment? <input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, attach and label manufacturer guarantee)						
Control Efficiency	Pollutant Controlled					
	PM	PM10	SO <sub>2</sub>	NO <sub>x</sub>	VOC	CO

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

**EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)**

22. Actual Operation:	2200 HOURS/YEAR
23. Maximum Operation:	8760 HOURS/YEAR

**REQUESTED LIMITS**

24. Are you requesting any permit limits?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, indicate all that apply below)
<input checked="" type="checkbox"/> Operation Hour Limit(s):	2200 HOURS PER UNIT
<input type="checkbox"/> Production Limit(s):	
<input type="checkbox"/> Material Usage Limit(s):	
<input type="checkbox"/> Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
<input type="checkbox"/> Other:	
25. Rationale for Requesting the Limit(s):	EMISSIONS INVENTORY AND MODELING ASSUMED THE HOURS OF OPERATION AS STATED



Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

1. Company Name: Nunhems USA, Inc.	2. Facility Name: Parma, ID	3. Facility ID No:
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4. Brief Project Description: Carrot and Onion Seed Processing Facility

**EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION**

5. Emissions Unit (EU) Name:	TWO ENCLOSED PROPANE SEED DRYERS		
6. EU ID Number:	DRYER 1		
7. EU Type:	<input type="checkbox"/> New Source	<input checked="" type="checkbox"/> Unpermitted Existing Source	Date Issued:
	<input type="checkbox"/> Modification to a Permitted Source -- Previous Permit #:		
8. Manufacturer:	UNKNOWN		
9. Model:	UNKNOWN		
10. Maximum Capacity:	1,000,000 BTU/HR/UNIT		
11. Date of Construction:	2008		
12. Date of Modification (if any):			
13. Is this a Controlled Emission Unit?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, complete the following section. If No, go to line 22.		

**EMISSIONS CONTROL EQUIPMENT**

14. Control Equipment Name and ID:						
15. Date of Installation:			16. Date of Modification (if any):			
17. Manufacturer and Model Number:						
18. ID(s) of Emission Unit Controlled:						
19. Is operating schedule different than emission units(s) involved? <input type="checkbox"/> Yes <input type="checkbox"/> No						
20. Does the manufacturer guarantee the control efficiency of the control equipment? <input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, attach and label manufacturer guarantee)						
Control Efficiency	Pollutant Controlled					
	PM	PM10	SO <sub>2</sub>	NO <sub>x</sub>	VOC	CO

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

**EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)**

22. Actual Operation:	4800 HOURS/YEAR
23. Maximum Operation:	8760 HOURS/YEAR

**REQUESTED LIMITS**

24. Are you requesting any permit limits?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No (If Yes, indicate all that apply below)
<input type="checkbox"/> Operation Hour Limit(s):		
<input type="checkbox"/> Production Limit(s):		
<input type="checkbox"/> Material Usage Limit(s):		
<input type="checkbox"/> Limits Based on Stack Testing: Please attach all relevant stack testing summary reports		
<input type="checkbox"/> Other:		

25. Rationale for Requesting the Limit(s):



Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

1. Company Name: Nunhems USA, Inc.	2. Facility Name: Parma, ID	3. Facility ID No:
4. Brief Project Description: Carrot and Onion Seed Processing Facility		

**EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION**

5. Emissions Unit (EU) Name:	FOUR BUILDING HEATERS		
6. EU ID Number:	HEATER 2		
7. EU Type:	<input checked="" type="checkbox"/> New Source	<input type="checkbox"/> Unpermitted Existing Source	Date Issued:
	<input type="checkbox"/> Modification to a Permitted Source -- Previous Permit #:		
8. Manufacturer:	UNKNOWN		
9. Model:	UNKNOWN		
10. Maximum Capacity:	250,000 BTU/HR/UNIT		
11. Date of Construction:	1998		
12. Date of Modification (if any):			
13. Is this a Controlled Emission Unit?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, complete the following section. If No, go to line 22.		

**EMISSIONS CONTROL EQUIPMENT**

14. Control Equipment Name and ID:						
15. Date of Installation:			16. Date of Modification (if any):			
17. Manufacturer and Model Number:						
18. ID(s) of Emission Unit Controlled:						
19. Is operating schedule different than emission units(s) involved? <input type="checkbox"/> Yes <input type="checkbox"/> No						
20. Does the manufacturer guarantee the control efficiency of the control equipment? <input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, attach and label manufacturer guarantee)						
Control Efficiency	Pollutant Controlled					
	PM	PM10	SO <sub>2</sub>	NO <sub>x</sub>	VOC	CO

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

**EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)**

22. Actual Operation:	2200 HOURS/YEAR
23. Maximum Operation:	8760 HOURS/YEAR

**REQUESTED LIMITS**

24. Are you requesting any permit limits?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, indicate all that apply below)
<input checked="" type="checkbox"/> Operation Hour Limit(s):	2200 HOURS PER YEAR PER UNIT
<input type="checkbox"/> Production Limit(s):	
<input type="checkbox"/> Material Usage Limit(s):	
<input type="checkbox"/> Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
<input type="checkbox"/> Other:	
25. Rationale for Requesting the Limit(s):	EMISSIONS INVENTORY AND MODELING ASSUMED THE HOURS OF OPERATION AS STATED



Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

1. Company Name: Nunhems USA, Inc.	2. Facility Name: Parma, ID	3. Facility ID No:
4. Brief Project Description: Carrot and Onion Seed Processing Facility		

**EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION**

5. Emissions Unit (EU) Name:	FUMIGATION CHAMBER		
6. EU ID Number:	FUME		
7. EU Type:	<input type="checkbox"/> New Source	<input checked="" type="checkbox"/> Unpermitted Existing Source	Date Issued:
	<input type="checkbox"/> Modification to a Permitted Source -- Previous Permit #:		
8. Manufacturer:	N/A		
9. Model:	N/A		
10.. Maximum Capacity:	LENGTH: 60' 9" WIDTH: 9' 6" NTERIOR HEIGHT: 13'		
11. Date of Construction:	N/A		
12. Date of Modification (if any):			
13. Is this a Controlled Emission Unit?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, complete the following section. If No, go to line 22.		

**EMISSIONS CONTROL EQUIPMENT**

14. Control Equipment Name and ID:						
15. Date of Installation:			16. Date of Modification (if any):			
17. Manufacturer and Model Number:						
18. ID(s) of Emission Unit Controlled:						
19. Is operating schedule different than emission units(s) involved? <input type="checkbox"/> Yes <input type="checkbox"/> No						
20. Does the manufacturer guarantee the control efficiency of the control equipment? <input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, attach and label manufacturer guarantee)						
Control Efficiency	Pollutant Controlled					
	PM	PM10	SO <sub>2</sub>	NO <sub>x</sub>	VOC	CO

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

**EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)**

22. Actual Operation:	
23. Maximum Operation:	91 FUMES PER YEAR

**REQUESTED LIMITS**

24. Are you requesting any permit limits?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	(If Yes, indicate all that apply below)
<input type="checkbox"/> Operation Hour Limit(s):			
<input type="checkbox"/> Production Limit(s):			
<input type="checkbox"/> Material Usage Limit(s):			
<input type="checkbox"/> Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports		
<input type="checkbox"/> Other:			

25. Rationale for Requesting the Limit(s):	
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Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

1. Company Name: Nunhems USA, Inc.	2. Facility Name: Parma, ID	3. Facility ID No:
4. Brief Project Description: Carrot and Onion Seed Processing Facility		

**EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION**

5. Emissions Unit (EU) Name:	SEED DRYER NORTHWEST OF BUILDING "K."		
6. EU ID Number:	DRYER 2		
7. EU Type:	<input type="checkbox"/> New Source	<input checked="" type="checkbox"/> Unpermitted Existing Source	Date Issued:
	<input type="checkbox"/> Modification to a Permitted Source -- Previous Permit #:		
8. Manufacturer:	TWIN CITY FAN AND BLOWER CO.		
9. Model:	UNKNOWN		
10. Maximum Capacity:	2,500,000 BTU/HR		
11. Date of Construction:	2000		
12. Date of Modification (if any):			
13. Is this a Controlled Emission Unit?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, complete the following section. If No, go to line 22.		

**EMISSIONS CONTROL EQUIPMENT**

14. Control Equipment Name and ID:						
15. Date of Installation:			16. Date of Modification (if any):			
17. Manufacturer and Model Number:						
18. ID(s) of Emission Unit Controlled:						
19. Is operating schedule different than emission units(s) involved? <input type="checkbox"/> Yes <input type="checkbox"/> No						
20. Does the manufacturer guarantee the control efficiency of the control equipment? <input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, attach and label manufacturer guarantee)						
Control Efficiency	Pollutant Controlled					
	PM	PM10	SO <sub>2</sub>	NO <sub>x</sub>	VOC	CO

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

**EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)**

22. Actual Operation:	1440 HOURS/YEAR
23. Maximum Operation:	8760 HOURS/YEAR

**REQUESTED LIMITS**

24. Are you requesting any permit limits?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, indicate all that apply below)
<input checked="" type="checkbox"/> Operation Hour Limit(s):	1440 HOURS PER YEAR
<input type="checkbox"/> Production Limit(s):	
<input type="checkbox"/> Material Usage Limit(s):	
<input type="checkbox"/> Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
<input type="checkbox"/> Other:	

25. Rationale for Requesting the Limit(s): EMISSIONS CALCULATIONS AND MODELING BASED UPON OPERATING HOURS



Please see instructions on page 2 before filling out the form.

IDENTIFICATION				
1. Company Name: Nunhems USA, Inc.		2. Facility Name: Parma, ID Facility		
3 Brief Project Description: Onion and Carrot Seed Processions Facility				
ENGINE (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS				
4. Type of Unit: <input type="checkbox"/> New Unit <input checked="" type="checkbox"/> Unpermitted Existing Unit <input type="checkbox"/> Modification to a Unit with Permit #: _____ Date Issued: _____				
5. Engine Displacement: _____ (liters per cylinder)			6. Ignition Type: <input checked="" type="checkbox"/> Compression <input type="checkbox"/> Spark	
7. Use <input checked="" type="checkbox"/> Emergency <input type="checkbox"/> Non-Emergency				
8. Engine ID Number: C9-2008 3 Phase		9. Maximum Rated Engine Power: 398 Brake Horsepower (bhp)		
10. Construction Date: 2008-06-25		11. Manufacturer: Caterpillar	12. Model: C9	13. Model Year: 2008
14. Date of Modification (if applicable):		15. Serial Number (if available): S9L01887	16. Control Device (if any):	
FUEL DESCRIPTION AND SPECIFICATIONS				
17. Fuel Type	<input checked="" type="checkbox"/> Diesel Fuel (#2) (gal/hr)	<input type="checkbox"/> Gasoline Fuel (gal/hr)	<input type="checkbox"/> Natural Gas (cf/hr)	<input type="checkbox"/> Other Fuels (unit: )
18. Full Load Consumption Rate				
19. Actual Consumption Rate				
20. Sulfur Content wt%		N/A	N/A	
OPERATING LIMITS & SCHEDULE				
21. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.): Unit not to exceed 50 hours of operation per year.				
22. Operating Schedule (hours/day, months/year, etc.): Unit does not exceed one hour of operation per week for testing purposes.				



Please see instructions on page 2 before filling out the form.

IDENTIFICATION				
1. Company Name: Nunhems USA, Inc.		2. Facility Name: Parma, ID Facility		
3 Brief Project Description: Onion and Carrot Seed Processions Facility				
ENGINE (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS				
4. Type of Unit: <input type="checkbox"/> New Unit <input checked="" type="checkbox"/> Unpermitted Existing Unit <input type="checkbox"/> Modification to a Unit with Permit #: _____ Date Issued: _____				
5. Engine Displacement: 3.1375 (liters per cylinder)			6. Ignition Type: <input checked="" type="checkbox"/> Compression <input type="checkbox"/> Spark	
7. Use <input checked="" type="checkbox"/> Emergency <input type="checkbox"/> Non-Emergency				
8. Engine ID Number: Stamford Cummins 3-Phase Diesel Generator		9. Maximum Rated Engine Power: _____ Brake Horsepower (bhp)		
10. Construction Date: 2009		11. Manufacturer: Cummins Generator Technologies	12. Model: Cummins Inc, QSK50-G4 NR2	13. Model Year: 2009
14. Date of Modification (if applicable):		15. Serial Number (if available): F090008141	16. Control Device (if any): Turbocharged and Low Temperature Aftercooled	
FUEL DESCRIPTION AND SPECIFICATIONS				
17. Fuel Type	<input checked="" type="checkbox"/> Diesel Fuel (#2) (gal/hr)	<input type="checkbox"/> Gasoline Fuel (gal/hr)	<input type="checkbox"/> Natural Gas (cf/hr)	<input type="checkbox"/> Other Fuels (unit: )
18. Full Load Consumption Rate	109.4			
19. Actual Consumption Rate				
20. Sulfur Content wt%	0.03-0.05%	N/A	N/A	
OPERATING LIMITS & SCHEDULE				
21. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.): Unit not to exceed 50 hours of operation per year.				
22. Operating Schedule (hours/day, months/year, etc.): Unit does not exceed one hour of operation per week for testing purposes.				



Please see instructions on page 2 before filling out the form.

IDENTIFICATION				
1. Company Name: Nunhems USA, Inc.		2. Facility Name: Parma, ID Facility		
3 Brief Project Description: Onion and Carrot Seed Processions Facility				
ENGINE (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS				
4. Type of Unit: <input type="checkbox"/> New Unit <input checked="" type="checkbox"/> Unpermitted Existing Unit <input type="checkbox"/> Modification to a Unit with Permit #: _____ Date Issued: _____				
5. Engine Displacement: _____ (liters per cylinder)			6. Ignition Type: <input checked="" type="checkbox"/> Compression <input type="checkbox"/> Spark	
7. Use <input checked="" type="checkbox"/> Emergency <input type="checkbox"/> Non-Emergency				
8. Engine ID Number: 2000 Series 3-Phase Diesel Generator		9. Maximum Rated Engine Power: <u>125</u> Brake Horsepower (bhp)		
10. Construction Date: 2002		11. Manufacturer: Generac Power Systems, Inc.	12. Model: Model #: 1526500100	13. Model Year: 2001
14. Date of Modification (if applicable):		15. Serial Number (if available): Serial #: 2062523	16. Control Device (if any):	
FUEL DESCRIPTION AND SPECIFICATIONS				
17. Fuel Type	<input checked="" type="checkbox"/> Diesel Fuel (#2) (gal/hr)	<input type="checkbox"/> Gasoline Fuel (gal/hr)	<input type="checkbox"/> Natural Gas (cf/hr)	<input type="checkbox"/> Other Fuels (unit: )
18. Full Load Consumption Rate				
19. Actual Consumption Rate				
20. Sulfur Content wt%		N/A	N/A	
OPERATING LIMITS & SCHEDULE				
21. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.): Unit not to exceed 50 hours of operation per year.				
22. Operating Schedule (hours/day, months/year, etc.): Unit does not exceed one hour of operation per week for testing purposes.				



DEQ AIR QUALITY PROGRAM  
1410 N. Hilton, Boise, ID 83706  
For assistance, call the  
Air Permit Hotline – 1-877-5PERMIT

Baghouse Control Equipment **Form BCE**  
Revision 6  
2/18/10

Complete this form for each baghouse. Please see instructions on page 2 before filling out the form.

### IDENTIFICATION

1. Company Name Nunhems USA, Inc.	2. Facility Name: Parna, ID facility
3. Brief Project Description: PTC Application	

### BAGHOUSE INFORMATION

4. Baghouse Manufacturer: Carothers and Son, LTD	5. Baghouse Model: CSL 300 TR 12 HEI Collector	6. Baghouse Equipment ID: DC-1
7 (a). Baghouse particulate matter emission concentration. <u>0.0007</u> gr/dscf <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>	
7 (b). Percentage PM <sub>10</sub> <u>99.995</u> % Or Provide PM <sub>10</sub> Emission Concentration _____ gr/dscf	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e. per the baghouse manufacturer). Without documentation the application is not complete.</i>	
7 (c). Baghouse flow rate <u>34.900</u> dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>	
8. Baghouse particulate matter control efficiency. _____% PM control _____% PM <sub>10</sub> control <b>Note: Not needed if section #7 is completed.</b>	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>	
9. Is the baghouse equipped with a bag leak detector? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>	



Complete this form for each baghouse. Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

1. Company Name Nunhems USA, Inc.	2. Facility Name: Parma, ID facility
3. Brief Project Description: PTC Application	

**BAGHOUSE INFORMATION**

4. Baghouse Manufacturer: Carothers and Son, LTD	5. Baghouse Model: CSL 300 TR 12 HEI Collector	6. Baghouse Equipment ID: DC-2
7 (a). Baghouse particulate matter emission concentration. <u>0.0007</u> gr/dscf <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>	
7 (b). Percentage PM <sub>10</sub> <u>99.995</u> % Or Provide PM <sub>10</sub> Emission Concentration _____ gr/dscf	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e per the baghouse manufacturer). Without documentation the application is not complete.</i>	
7 (c). Baghouse flow rate <u>34,900</u> dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>	
8. Baghouse particulate matter control efficiency. _____% PM control _____% PM <sub>10</sub> control <b>Note: Not needed if section #7 is completed.</b>	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>	
9. Is the baghouse equipped with a bag leak detector? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>	



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Complete this form for each baghouse. Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

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3. Brief Project Description: PTC Application	

**BAGHOUSE INFORMATION**

4. Baghouse Manufacturer: Carothers and Son, LTD	5. Baghouse Model: CSL 300 TR 12 HEI Collector	6. Baghouse Equipment ID: DC-3
7 (a). Baghouse particulate matter emission concentration. <u>0.0007</u> gr/dscf <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>	
7 (b). Percentage PM <sub>10</sub> <u>99.995</u> % Or Provide PM <sub>10</sub> Emission Concentration _____ gr/dscf	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e. per the baghouse manufacturer). Without documentation the application is not complete.</i>	
7 (c). Baghouse flow rate <u>35,000</u> dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>	
8. Baghouse particulate matter control efficiency. _____% PM control _____% PM <sub>10</sub> control <b>Note: Not needed if section #7 is completed.</b>	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>	
9. Is the baghouse equipped with a bag leak detector? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>	



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**IDENTIFICATION**

1. Company Name Nunhems USA, Inc.	2. Facility Name: Parma, ID facility
3. Brief Project Description: PTC Application	

**BAGHOUSE INFORMATION**

4. Baghouse Manufacturer: Carothers and Son, LTD	5. Baghouse Model: CSL 110 TR 12 HEI Collector	6. Baghouse Equipment ID: DC-4
7 (a). Baghouse particulate matter emission concentration. <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>	<u>0.0007</u> gr/dscf	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>
7 (b). Percentage PM <sub>10</sub>  Or Provide PM <sub>10</sub> Emission Concentration	<u>99.995</u> %  _____ gr/dscf	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e. per the baghouse manufacturer). Without documentation the application is not complete.</i>
7 (c). Baghouse flow rate	<u>12,800</u> dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>
8. Baghouse particulate matter control efficiency. <b>Note: Not needed if section #7 is completed.</b>	_____ % PM control _____ % PM <sub>10</sub> control	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>
9. Is the baghouse equipped with a bag leak detector?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>



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**IDENTIFICATION**

1. Company Name Nunhems USA, Inc.	2. Facility Name: Parma, ID facility
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**BAGHOUSE INFORMATION**

4. Baghouse Manufacturer: Carothers and Son, LTD	5. Baghouse Model: CSL 110 TR 12 HEI Collector	6. Baghouse Equipment ID: DC-4
7 (a). Baghouse particulate matter emission concentration. <u>0.0007</u> gr/dscf <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>	
7 (b). Percentage PM <sub>10</sub> <u>99.995</u> % Or Provide PM <sub>10</sub> Emission Concentration _____ gr/dscf	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e per the baghouse manufacturer). Without documentation the application is not complete.</i>	
7 (c). Baghouse flow rate <u>12,800</u> dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>	
8. Baghouse particulate matter control efficiency. _____% PM control _____% PM <sub>10</sub> control <b>Note: Not needed if section #7 is completed.</b>	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>	
9. Is the baghouse equipped with a bag leak detector? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>	



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**BAGHOUSE INFORMATION**

4. Baghouse Manufacturer: Carothers and Son, LTD	5. Baghouse Model: CSL 130 TR 12 HEI Collector	6. Baghouse Equipment ID: DC-5
7 (a). Baghouse particulate matter emission concentration. <u>0.0007</u> gr/dscf <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>	
7 (b). Percentage PM <sub>10</sub> <u>99.995</u> % Or Provide PM <sub>10</sub> Emission Concentration _____ gr/dscf	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e. per the baghouse manufacturer). Without documentation the application is not complete.</i>	
7 (c). Baghouse flow rate <u>20,000</u> dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>	
8. Baghouse particulate matter control efficiency. _____% PM control _____% PM <sub>10</sub> control <b>Note: Not needed if section #7 is completed.</b>	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>	
9. Is the baghouse equipped with a bag leak detector? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>	



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**BAGHOUSE INFORMATION**

4. Baghouse Manufacturer: Carothers and Son, LTD	5. Baghouse Model: CSL 300 TR 12 HEI Collector	6. Baghouse Equipment ID: DC-6
7 (a). Baghouse particulate matter emission concentration. <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>	<u>0.0007</u> gr/dscf	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>
7 (b). Percentage PM <sub>10</sub>  Or Provide PM <sub>10</sub> Emission Concentration	<u>99.995</u> %  _____ gr/dscf	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e per the baghouse manufacturer). Without documentation the application is not complete.</i>
7 (c). Baghouse flow rate	<u>32,500</u> dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>
8. Baghouse particulate matter control efficiency. <b>Note: Not needed if section #7 is completed.</b>	_____ % PM control _____ % PM <sub>10</sub> control	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>
9. Is the baghouse equipped with a bag leak detector?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>



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1. Company Name Nunhems USA, Inc.	2. Facility Name: Parma, ID facility
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**BAGHOUSE INFORMATION**

4. Baghouse Manufacturer: Carothers and Son, LTD	5. Baghouse Model: CSL 64 TR 12 HEI Collector	6. Baghouse Equipment ID: DC-7
7 (a). Baghouse particulate matter emission concentration. <u>0.0007</u> gr/dscf <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>	
7 (b). Percentage PM <sub>10</sub> <u>99.995</u> % Or Provide PM <sub>10</sub> Emission Concentration _____ gr/dscf	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e per the baghouse manufacturer). Without documentation the application is not complete.</i>	
7 (c). Baghouse flow rate <u>6,800</u> dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>	
8. Baghouse particulate matter control efficiency. _____% PM control _____% PM <sub>10</sub> control <b>Note: Not needed if section #7 is completed.</b>	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>	
9. Is the baghouse equipped with a bag leak detector? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>	



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**BAGHOUSE INFORMATION**

4. Baghouse Manufacturer: Carothers and Son, LTD	5. Baghouse Model: CSL 225 TR 12 HEI Collector	6. Baghouse Equipment ID: DC-8
7 (a). Baghouse particulate matter emission concentration. <u>0.0007</u> gr/dscf <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>	
7 (b). Percentage PM <sub>10</sub> <u>99.995</u> % Or Provide PM <sub>10</sub> Emission Concentration _____ gr/dscf	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e. per the baghouse manufacturer). Without documentation the application is not complete.</i>	
7 (c). Baghouse flow rate <u>25,000</u> dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>	
8. Baghouse particulate matter control efficiency. _____% PM control _____% PM <sub>10</sub> control <b>Note: Not needed if section #7 is completed.</b>	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>	
9. Is the baghouse equipped with a bag leak detector? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>	



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**BAGHOUSE INFORMATION**

4. Baghouse Manufacturer: Camfil FARR Air Pollution Control	5. Baghouse Model: GS-8 Gold Series	6. Baghouse Equipment ID: FARR-1
7 (a). Baghouse particulate matter emission concentration. <u>0.002</u> gr/dscf <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>		<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>
7 (b). Percentage PM <sub>10</sub> <u>99.993</u> % Or Provide PM <sub>10</sub> Emission Concentration _____ gr/dscf		<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e. per the baghouse manufacturer). Without documentation the application is not complete.</i>
7 (c). Baghouse flow rate _____ dscfm		<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>
8. Baghouse particulate matter control efficiency. _____% PM control _____% PM <sub>10</sub> control <b>Note: Not needed if section #7 is completed.</b>		<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>
9. Is the baghouse equipped with a bag leak detector? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>



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1. Company Name  Nunhems USA, Inc.	2. Facility Name:  Parma, ID facility	
3. Brief Project Description: PTC Application		
BAGHOUSE INFORMATION		
4. Baghouse Manufacturer: Camfil FARR Air Pollution Control	5. Baghouse Model: GS-8 Gold Series	6. Baghouse Equipment ID: FARR-2
7 (a). Baghouse particulate matter emission concentration.  <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>	<u>0.002</u> gr/dscf	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. <b>Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required.</b> If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>
7 (b). Percentage PM <sub>10</sub>  Or Provide PM <sub>10</sub> Emission Concentration	<u>99.993</u> %  _____ gr/dscf	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e. per the baghouse manufacturer). Without documentation the application is not complete.</i>
7 (c). Baghouse flow rate	_____ dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is <b>documented</b> that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>
8. Baghouse particulate matter control efficiency.  <b>Note: Not needed if section #7 is completed.</b>	_____ % PM control _____ % PM <sub>10</sub> control	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>
9. Is the baghouse equipped with a bag leak detector?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>



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IDENTIFICATION		
1. Company Name	2. Facility Name:	
Nunhems USA, Inc.	Parma, ID facility	
3. Brief Project Description: PTC Application		
BAGHOUSE INFORMATION		
4. Baghouse Manufacturer: Camfil FARR Air Pollution Control	5. Baghouse Model: GS-8 Gold Series	6. Baghouse Equipment ID: FARR-3
7 (a). Baghouse particulate matter emission concentration.	<u>0.002</u> gr/dscf	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>
<b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>		
7 (b). Percentage PM <sub>10</sub>	<u>99.993</u> %	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e. per the baghouse manufacturer). Without documentation the application is not complete.</i>
Or Provide PM <sub>10</sub> Emission Concentration	_____ gr/dscf	
7 (c). Baghouse flow rate	_____ dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>
8. Baghouse particulate matter control efficiency.	_____ % PM control _____ % PM <sub>10</sub> control	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>
<b>Note: Not needed if section #7 is completed.</b>		
9. Is the baghouse equipped with a bag leak detector?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>



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Air Permit Hotline – 1-877-5PERMIT

Baghouse Control Equipment **Form BCE**  
Revision 6  
2/18/10

Complete this form for each baghouse. Please see instructions on page 2 before filling out the form.

IDENTIFICATION		
1. Company Name	2. Facility Name:	
Nunhems USA, Inc.	Parma, ID facility	
3. Brief Project Description:	PTC Application	
BAGHOUSE INFORMATION		
4. Baghouse Manufacturer: Camfil FARR Air Pollution Control	5. Baghouse Model: GS-8 Gold Series	6. Baghouse Equipment ID: FARR-4
7 (a). Baghouse particulate matter emission concentration.	<u>0.002</u> gr/dscf	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>
<b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>		
7 (b). Percentage PM <sub>10</sub>	<u>99.993</u> %	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e. per the baghouse manufacturer). Without documentation the application is not complete.</i>
Or Provide PM <sub>10</sub> Emission Concentration	_____ gr/dscf	
7 (c). Baghouse flow rate	_____ dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>
8. Baghouse particulate matter control efficiency.	_____ % PM control _____ % PM <sub>10</sub> control	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>
<b>Note: Not needed if section #7 is completed.</b>		
9. Is the baghouse equipped with a bag leak detector?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>



Complete this form for each baghouse. Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

1. Company Name Nunhems USA, Inc.	2. Facility Name: Pama, ID facility
3. Brief Project Description: PTC Application	

**BAGHOUSE INFORMATION**

4. Baghouse Manufacturer: Camfil FARR Air Pollution Control	5. Baghouse Model: GS-8 Gold Series	6. Baghouse Equipment ID: FARR-5
7 (a). Baghouse particulate matter emission concentration. <u>0.002</u> gr/dscf <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>	
7 (b). Percentage PM <sub>10</sub> <u>99.993</u> % Or Provide PM <sub>10</sub> Emission Concentration _____ gr/dscf	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e. per the baghouse manufacturer). Without documentation the application is not complete.</i>	
7 (c). Baghouse flow rate _____ dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>	
8. Baghouse particulate matter control efficiency. _____% PM control _____% PM <sub>10</sub> control <b>Note: Not needed if section #7 is completed.</b>	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>	
9. Is the baghouse equipped with a bag leak detector? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>	



Complete this form for each baghouse. Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

1. Company Name Nunhems USA, Inc.	2. Facility Name: Parma, ID facility
3. Brief Project Description: PTC Application	

**BAGHOUSE INFORMATION**

4. Baghouse Manufacturer: Herding Filtration, LLC.	5. Baghouse Model: P-1899 HSL 1500-12/18 SZ	6. Baghouse Equipment ID: HERD 1
7 (a). Baghouse particulate matter emission concentration. <u>0.0004</u> gr/dscf <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>	
7 (b). Percentage PM <sub>10</sub> <u>99.993</u> % Or Provide PM <sub>10</sub> Emission Concentration _____ gr/dscf	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e. per the baghouse manufacturer). Without documentation the application is not complete.</i>	
7 (c). Baghouse flow rate <u>7,985</u> dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>	
8. Baghouse particulate matter control efficiency. _____% PM control _____% PM <sub>10</sub> control <b>Note: Not needed if section #7 is completed.</b>	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>	
9. Is the baghouse equipped with a bag leak detector? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>	



Complete this form for each baghouse. Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

1. Company Name Nunhems USA, Inc.		2. Facility Name: Parma, ID facility	
3. Brief Project Description: PTC Application			

**BAGHOUSE INFORMATION**

4. Baghouse Manufacturer: Herding Filtration, LLC.		5. Baghouse Model: P-2112 Delta Sys 1500-144/9 (3KA) GZ		6. Baghouse Equipment ID: HERD 2	
7 (a). Baghouse particulate matter emission concentration. <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>		0.0004 gr/dscf		<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required. If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>	
7 (b). Percentage PM <sub>10</sub>  Or Provide PM <sub>10</sub> Emission Concentration		99.993 %  _____ gr/dscf		<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e. per the baghouse manufacturer). Without documentation the application is not complete.</i>	
7 (c). Baghouse flow rate		7,985 dscfm		<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is documented that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>	
8. Baghouse particulate matter control efficiency. <b>Note: Not needed if section #7 is completed.</b>		_____% PM control _____% PM <sub>10</sub> control		<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>	
9. Is the baghouse equipped with a bag leak detector?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>	



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**IDENTIFICATION**

1. Company Name Nunhems USA, Inc.	2. Facility Name: Parma, ID facility
3. Brief Project Description: PTC Application	

**BAGHOUSE INFORMATION**

4. Baghouse Manufacturer: Murphy-Rodgers, Inc	5. Baghouse Model: MRM-12-4D	6. Baghouse Equipment ID: MR BH 1
7 (a). Baghouse particulate matter emission concentration. _____ gr/dscf <b>Note: Provide information in 7(a)-(c) or answer question #8 below.</b>	<i>Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration. <b>Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required.</b> If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.</i>	
7 (b). Percentage PM <sub>10</sub> _____ % Or Provide PM <sub>10</sub> Emission Concentration _____ gr/dscf	<i>What percentage of the PM concentration listed in question #7(a) is PM<sub>10</sub>. You must provide documentation as to how the percentage was determined (i.e. per the baghouse manufacturer). Without documentation the application is not complete.</i>	
7 (c). Baghouse flow rate _____ dscfm	<i>Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm if it is <b>documented</b> that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.</i>	
8. Baghouse particulate matter control efficiency. _____ % PM control _____ % PM <sub>10</sub> control <b>Note: Not needed if section #7 is completed.</b>	<i>Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM<sub>10</sub>. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.</i>	
9. Is the baghouse equipped with a bag leak detector? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.</i>	



## Facility Wide Potential to Emit Emission Inventory Application Template and Instructions

For new stationary sources provide the facility's potential to emit for all NSR Regulated Air Pollutants. The potential to emit provided here must match the emissions rates which are requested to be permitted.

For modifications to existing facilities (including the addition of new emissions units), if the existing facility classification is in question an existing facility wide potential to emit emission inventory will be required to be submitted<sup>1</sup>. Contact DEQ to determine if a facility wide emission inventory for the existing facility is required.

**All emissions inventories must be submitted with thorough documentation.** The emission inventories will be subjected to technical review. Therefore, prepare your application with sufficient documentation so that the public and DEQ can verify the validity of the emission estimates. **Applications submitted without sufficient documentation are incomplete. Follow the instructions provided on page 2; do not proceed until you have read the instructions.**

**Applicants must use the Potential to Emit Summary table provided below.**

**Table 1. POTENTIAL TO EMIT FOR NSR REGULATED POLLUTANTS**

Emissions Unit	EU ID #	NSR Pollutant <sup>**</sup>							
		PM-Total	PM-10	PM2.5	NOx	CO	CO2e	SOx	VOC
		T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
<b>Point Sources</b>									
CAT C9-2008 3 Phase Diesel Generator (at pumphouse)	CAT GEN	0.02	0.02	0.02	0.07	0.07	11.4	0.0003	0.0004
Generac 2000 Series 3-Phase Diesel Generator (South of Building "C")	GENE RAC GEN	0.01	0.01	0.01	0.10	0.02	3.6	0.0000	0.0000

<sup>1</sup> The applicant must determine if the existing facility is a major facility. If the facility is an existing PSD major facility and changes are being made to the facility the major modification test must be conducted.

Stamford Cummins 3-Phase Diesel Generator	CUM MINS GEN	0.04	0.04	0.04	0.58	0.31	64.4	0.0125	0.0043
CSL Dust Collector; Seed Conditioning, Lines 3-4	DC-1	0.917	0.449	0.127	n/a	n/a	n/a	n/a	n/a
CSL Dust Collector; Seed Conditioning, AIM Blending Line and Lines 5-6	DC-2	0.917	0.449	0.127	n/a	n/a	n/a	n/a	n/a
CSL Dust Collector; Seed Conditioning, Line 1-2	DC-3	0.920	0.451	0.127	n/a	n/a	n/a	n/a	n/a
CSL Dust Collector; Seed Conditioning, Carrot Seed Brushing Lines 1-3	DC-4	0.336	0.165	0.046	n/a	n/a	n/a	n/a	n/a
CSL Dust Collector; Seed Conditioning, Scalping Lines 3-4	DC-5	0.526	0.258	0.073	n/a	n/a	n/a	n/a	n/a
CSL Dust Collector; Seed Conditioning, Scalping Lines 1-2	DC-6	0.854	0.419	0.118	n/a	n/a	n/a	n/a	n/a
CSL Dust Collector; Seed Conditioning, Scalping and Brush Lines Makeup	DC-7	0.179	0.088	0.025	n/a	n/a	n/a	n/a	n/a
CSL Dust Collector; Seed Packaging	DC-8	0.657	0.322	0.091	n/a	n/a	n/a	n/a	n/a

and Shipping <sup>b</sup>									
FARR Cartridge Collector No. 1; Seed Treatment (Film Coating)	FARR 1	0.438	0.215	0.060	n/a	n/a	n/a	n/a	1.07E-06
FARR Cartridge Collector No. 2; Seed Treatment (Film Coating)	FARR 2	0.411	0.202	0.057	n/a	n/a	n/a	n/a	1.00E-06
FARR Cartridge Collector No. 3; Seed Enhancement (Pelleting)	FARR 3	0.491	0.241	0.068	n/a	n/a	n/a	n/a	n/a
FARR Cartridge Collector No. 4; Seed Enhancement (Pelleting)	FARR 4	0.588	0.288	0.081	n/a	n/a	n/a	n/a	n/a
Murphy-Rodgers Baghouse; Seed Enhancement (Priming)	MR BH 1	0.050	0.024	0.007	n/a	n/a	n/a	n/a	n/a
Herding Filtration Unit No. 1; Seed Enhancement (Powder/BI ending)	HERD 1	0.089	0.043	0.012	n/a	n/a	n/a	n/a	n/a
Herding Filtration Unit No. 2; Seed Enhancement (Pelleting)	HERD 2	1.032	0.506	0.142	n/a	n/a	n/a	n/a	1.87E-05
FARR Cartridge Collector No. 5;	FARR 5	0.798	0.391	0.110	n/a	n/a	n/a	n/a	n/a

Warehousing (Bulk Unloading)									
Two propane building heaters ("Q") for temperature and humidity control.	HEAT 1	0.015	0.017	0.015	0.017	0.015	0.017	0.28	0.31
Four building heaters south of building "L"	HEAT 2	0.004	0.004	0.004	0.004	0.004	0.004	0.07	0.08
Two Enclosed Propane Seed Dryers within building "L."	Dryer 1	0.015	0.037	0.015	0.037	0.015	0.037	0.28	0.68
Seed Dryer northwest of building "K."	Dryer 2	0.038	0.028	0.038	0.028	0.038	0.028	0.71	0.51
<b>Totals*</b>		<b>9.35</b>	<b>4.66</b>	<b>1.42</b>	<b>2.33</b>	<b>1.31</b>	<b>1602.6</b>	<b>0.20</b>	<b>0.13</b>

\* Does not include fugitive emissions sources as the facility does not fall within a listed source category.

\*\* See spreadsheets prepared by JBR (included in Appendix E of the permit application) for further information. Lead emissions were calculated at zero for all sources, so not applied in this table.

- a) NSR Regulated air Pollutants are defined<sup>2</sup> as: Particulate Matter (PM, PM-10, PM-2.5), Carbon Monoxide, Lead, Nitrogen Dioxide, Ozone (VOC), Sulfur Dioxide, CO<sub>2</sub>e<sup>3</sup>, Green House Gases (GHG) mass, all pollutants regulated by NSPS (40 CFR 60)(i.e. TRS, fluoride, sulfuric acid mist) & Class I & Class II Ozone Depleting Substances (40 CFR 82)(i.e. CFC, HCFC, Halon, etc.)

\* Does not include fugitive emissions sources as the facility does not fall within a listed source category.

\*\* See spreadsheets prepared by JBR (included in Appendix E of the permit application) for further information regarding emission factor.

Applicants are encouraged to call DEQ's Air Quality Permit Hotline (1-877-573-7648) to ask questions as they prepare the application. **Emission Inventory Instructions:**

<sup>2</sup> 40 CFR 52.21(b)(50), as incorporated by reference at IDAPA 58.01.01.107.03.d

<sup>3</sup> Multiply each green house gas (GHG) by the global warming potential (GWP) listed at 40 CFR 98, Table A- 1 of Subpart A then sum all values to determine CO<sub>2</sub>e (GHGs are carbon dioxide, nitrous oxide, methane, hydrofluorcarbons, perfluorcarbons, sulfur hexafluoride). Be sure to show all calculations as described in the instructions.



## Ambient Impact Assessment Emission Inventory for New Minor Facilities and Minor Modifications Application Template and Instructions

### New Minor Facilities or Minor Modifications to Existing Facilities

Applicants must demonstrate that the source will not cause or significantly contribute to a violation of an ambient air quality standard for criteria pollutants<sup>1</sup>. As described in the [State of Idaho Air Quality Modeling Guideline](#), there are three methods that an applicant can use to demonstrate compliance:

- Method 1.** Demonstrate that emissions from the new and/or modified existing facility are below air quality modeling thresholds that are listed in the [State of Idaho Air Quality Modeling Guideline](#).
- Method 2.** Demonstrate that emissions from the new and/or modified source will not cause ambient impacts at or above significant ambient impact levels (Significant Impact Analysis or Preliminary Analysis).
- Method 3.** Demonstrate that facility wide emissions, when combined with co-contributing sources and background levels, do not cause an exceedance of ambient standards (Cumulative Analysis).

The type of emission inventory required depends upon which method is used to demonstrate compliance. In the following pages the type of emission inventory that is required to be submitted is discussed for each method. DEQ strongly recommends that the applicant develop and submit for DEQ approval a written modeling protocol prior to submitting the application (refer to the [State of Idaho Air Quality Modeling Guideline](#)). The modeling protocol must address what types of emission inventories are required for modeling, and address which fugitive emissions must be included.

**All modeling emission inventories must be summarized using the emission inventory summary table provided below (Table 1).**

The applicant must document all emission calculations and follow the emission inventory instructions provided. **Applications without sufficient documentation are incomplete; do not proceed until you have read the instructions on page 6.**

---

<sup>1</sup> Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01.203 & 403)

**Table 1 Facility Criteria Pollutant Change in Emissions**

	PM-Total	PM-10	PM2.5	NOx	CO	CO2e	SOx	VOC
Pre-Facility PTE (TPY)	0	0	0	0	0	0	0	0
Post-Facility PTE (TPY)	9.35	4.66	1.42	2.33	1.31	1602.6	0.20	0.13
Change in PTE Emissions (TPY)	9.35	4.66	1.42	2.33	1.31	1602.6	0.20	0.13
Pre-Facility PTE (lb/hr)	0	0	0	0	0	0	0	0
Post-Facility PTE (lb/hr)	4.88	3.81	3.07	31.20	16.48	4474.5	5.76	2.98
Change in PTE Emissions (lb/hr)	4.88	3.81	3.07	31.20	16.48	4474.5	5.76	2.98

Sources requiring modeling to demonstrate compliance with AAQS, based upon DEQ guidance, are summarized below.

POINT SOURCES		Easting (X)	Northing (Y)	Base Elev	Stk Ht	Temp	Exit Vel	Stack Diam	NO2	PMTEN	PM2PT 5
Source ID	Source Description	(m)	(m)	(m)	(ft)	(°F)	(m/s)	(ft)	(lb/hr)	(lb/hr)	(lb/hr)
CUMGEN	Cummins generator	504002.5	4857986.4	695.1	15.0	140.0	10.19	1.33	23.35	1.55	1.55
MRBH1	Baghouse 1	504035.5	4857977.9	696.0	30.0	63.2	0.001	1.00		0.0055	0.0016
HERD1		504073.5	4857965.4	696.2	17.7	70.0	0.001	2.09		0.0099	0.0028
HERD2		504074.0	4857941.9	695.8	27.2	70.5	0.001	2.50		0.1155	0.0325
FARR4		504037.5	4857920.0	694.7	29.7	74.5	0.001	1.50		0.0658	0.0185
FARR3		504020.0	4857919.5	694.2	29.7	77.7	0.001	1.50		0.0549	0.0155
FARR2		504013.0	4857920.0	694.0	29.7	65.9	0.001	1.50		0.046	0.013
FARR1		504009.0	4857919.0	693.9	29.9	65.7	0.001	1.50		0.049	0.0138
DC1	Dust Collector 1	504095.0	4857938.9	695.7	28.8	73.1	0.001	4.26		0.1026	0.0289
DC2	Dust Collector 2	504093.5	4857926.0	695.4	29.2	83.9	0.001	4.26		0.1026	0.0289
DC3	Dust Collector 3	504094.5	4857910.5	694.7	29.0	73.2	0.001	4.26		0.1029	0.029
DC4	Dust Collector 4	504103.5	4857883.0	693.6	27.6	80.2	0.001	3.35		0.0376	0.0106
DC5	Dust Collector 5	504108.9	4857883.0	693.6	27.4	76.5	0.001	3.24		0.0588	0.0166
DC6	Dust Collector 6	504114.4	4857882.5	693.6	31.0	74.3	0.001	4.26		0.0956	0.0269
DC7	Dust Collector 7	504125.4	4857883.5	693.7	27.5	76.7	0.001	1.69		0.02	0.0056
DC8	Dust Collector 8	504133.9	4857881.5	693.8	30.3	78.6	0.001	4.26		0.0735	0.0207
GENGEN	Generac emergency generator	503978.9	4857774.2	690.5	5.0	140.0	538.1	0.25	3.88	0.28	0.28
CATGEN	Emergency caterpillar generator	503754.9	4857790.3	691.9	11.0	140.0	69.9	0.50	2.63	0.88	0.88
FARR5		504083.9	4857841.4	692.4	21.5	75.4	0.001	1.50		0.0893	0.0251
DRYER1		503988.6	4857960.6	694.2	30.0	111.2	7.474	1.50	0.28	0.015	0.015

VOLUME SOURCES		Easting (X)	Northing (Y)	Base Elevation	Release Height	Horiz Dim	Vert Dim	NO2	PMTEN	PM2PT5
Source	Source Description	(m)	(m)	(m)	(ft)	(ft)	(ft)	(lb/hr)	(lb/hr)	(lb/hr)

ID										
DRYER2		504020.4	4857903.4	693.7	2.7	50.4	13.0	0.71	0.038	0.038
HEAT1	Space Heater(s)	504122.1	4857812.8	692.4	3.3	80.9	15.8	0.28	0.015	0.015
HEAT2	Space heaters	504026.2	4857919.4	694.4	3.0	50.4	12.1	0.07	0.004	0.004

SEE **APPENDIX F** WITHIN PTC APPLICATION FOR A COMPLETE MODELING ANALYSIS AND FURTHER DISCRPTIONS OF THE ABOVE TABLES



**STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY**

Version 1, August 2010

## **Toxic Air Pollutant Emissions Inventory Application Template and Instructions**

Applicants must demonstrate preconstruction compliance with toxic air pollutant (TAP) standards contained in IDAPA 58.01.01.210 (*Rules for the Control of Air Pollution in Idaho*). DEQ has developed a TAP completeness checklist in order to assist applicants. DEQ strongly recommends that applicants complete and submit this checklist as part of the application. **Applications which do not follow one of the available methods for demonstrating compliance described in the checklist will be determined incomplete or denied.** Follow this link to the checklist: [Toxic Air Pollutant Application Completeness Checklist](#). Be sure to calculate emissions correctly for the averaging periods as described in the checklist and in the instructions on page 3.

The type of TAP emissions inventory required depends upon which method is used to demonstrate compliance (see the [Toxic Air Pollutant Application Completeness Checklist](#)). **All TAP emissions inventories must be summarized using the emissions inventory summary tables provided below (Table 1 and Table 2).**

The applicant must **document all emission calculations as described in the instructions provided on the following page. Applications without sufficient documentation are incomplete; do not proceed until you have read the instructions.**

Applicants are encouraged to call DEQ's Air Quality Permit Hotline (1-877-573-7648) to ask questions as they prepare the application.

**Part 1. PRE- AND POST PROJECT NON-CARCINOGENIC TAP EMISSIONS SUMMARY  
POTENTIAL TO EMIT**

Non-Carcinogenic Toxic Air Pollutants  (sum of all emissions)	Pre-Project  24-hour Average Emissions Rates for Units at the Facility  (lb/hr)	Post Project  24-hour Average Emissions Rates for Units at the Facility  (lb/hr)	Change in  24-hour Average Emissions Rates for Units at the Facility  (lb/hr)	Non- Carcinogenic Screening Emission Level  (lb/hr)	Exceeds Screening Level?  (Y/N)
Acrolein	0.00E+00	6.15E-06	6.15E-06	1.7E-02	N
Aluminum Oxide; Al <sub>2</sub> O <sub>3</sub>	0.00E+00	3.96E-06	3.96E-06	6.67E-01	N
Barium	0.00E+00	0.00E+00	0.00E+00	3.3E-02	N
Calcium Carbonate	0.00E+00	3.29E-03	3.29E-03	6.67E-01	N
Chlorpyrifos	0.00E+00	2.44E-06	2.44E-06	1.30E-02	N
Chromium	0.00E+00	0.00E+00	0.00E+00	3.3E-02	N
Cobalt	0.00E+00	0.00E+00	0.00E+00	3.3E-03	N
Copper	0.00E+00	0.00E+00	0.00E+00	6.7E-02	N
Ethylene Glycol	0.00E+00	2.24E-08	2.24E-08	8.46E-01	N
Hexane	0.00E+00	0.00E+00	0.00E+00	1.2E+01	N
Hydrogen Chloride (HCL)	0.00E+00	1.32E-05	1.32E-05	5.00E-02	N
Kaolin	0.00E+00	3.93E-06	3.93E-06	1.33E-01	N
Magnesium Oxide	0.00E+00	3.30E-06	3.30E-06	6.67E-01	N
Manganese	0.00E+00	0.00E+00	0.00E+00	3.33E-01	N
Mercury	0.00E+00	0.00E+00	0.00E+00	3.E-03	N
Methanol	0.00E+00	4.26E-06	4.26E-06	1.73E+01	N
Mica	0.00E+00	3.51E-04	3.51E-04	2.00E-01	N
Molybdenum	0.00E+00	0.00E+00	0.00E+00	6.67E-01	N
Naphthalene*	0.00E+00	3.38E-05	3.38E-05	9.10E-05	N
Pentane	0.00E+00	0.00E+00	0.00E+00	1.18E+02	N
Perlite	0.00E+00	7.15E-04	7.15E-04	6.67E-01	N
Phosphine	0.00E+00	3.20E-04	3.20E-04	2.70E-02	N
Phosphorus	0.00E+00	0.00E+00	0.00E+00	7.00E-03	N

Selenium	0.00E+00	0.00E+00	0.00E+00	1.3E-02	N
Silica - amorphous- Diatomaceous Earth	0.00E+00	1.59E-03	1.59E-03	6.67E-01	N
Silica, crystalline - Cristobalite	0.00E+00	3.17E-04	3.17E-04	3.30E-03	N
Silica, crystalline - Quartz	0.00E+00	5.51E-04	5.51E-04	6.70E-03	N
Sodium Hydroxide	0.00E+00	1.10E-02	1.10E-02	1.33E-01	N
Thiram	0.00E+00	1.41E-05	1.41E-05	3.33E-01	N
Toluene	0.00E+00	8.36E-05	8.36E-05	2.5E+01	N
Vanadium	0.00E+00	0.00E+00	0.00E+00	3.0E-03	N
Xylene	0.00E+00	5.78E-05	5.78E-05	2.90E+01	N
Zinc	0.00E+00	0.00E+00	0.00E+00	6.7E-01	N

\* Although listed as a noncarcinogen in the Rules, DEQ has determined that naphthalene is a possible/probable carcinogen. Compliance for naphthalene emissions should be based on the EL or AACC listed in Section 586 for PAH.

\*\* See spreadsheets prepared by JBR (included in Appendix F of the permit application for further information regarding emission factors and calculation assumptions.

**Part 2. PRE- AND POST PROJECT CARCINOGENIC TAP EMISSIONS  
SUMMARY POTENTIAL TO EMIT**

<b>Carcinogenic Toxic Air Pollutants</b>	<b>Pre-Project</b>	<b>Post Project</b>	<b>Change in</b>	<b>Carcinogenic Screening Emission Level</b>	<b>Exceeds Screening Level?</b>
<b>(sum of all emissions)</b>	<b>Annual Average Emissions Rates for Units at the Facility (lb/hr)</b>	<b>Annual Average Emissions Rates for Units at the Facility (lb/hr)</b>	<b>Annual Average Emissions Rates for Units at the Facility (lb/hr)</b>	<b>(lb/hr)</b>	<b>(Y/N)</b>
Arsenic	0.00E+00	0.00E+00	0.00E+00	1.5E-06	N
Benzene	0.00E+00	3.04E-05	3.04E-05	8.0E-04	N
Beryllium	0.00E+00	0.00E+00	0.00E+00	2.8E-05	N
Cadmium	0.00E+00	0.00E+00	0.00E+00	3.7E-06	N
Formaldehyde	0.00E+00	1.03E-05	1.03E-05	5.1E-04	N
Formaldehyde	0.00E+00	0.00E+00	0.00E+00	5.1E-04	N
Nickel	0.00E+00	1.25E-06	1.25E-06	2.7E-05	N
Thiourea	0.00E+00	9.28E-09	9.28E-09	1.5E-06	N
Benzo(a)pyrene	0.00E+00	3.03E-08	3.03E-08	2.0E-06	N
Benz(a)anthracene	0.00E+00	3.55E-08	3.55E-08	NA	N
Benzo(b)fluoranthene	0.00E+00	7.84E-09	7.84E-09	NA	N
Benzo(k)fluoranthene	0.00E+00	5.03E-08	5.03E-08	NA	N
Chrysene	0.00E+00	1.46E-08	1.46E-08	NA	N
Dibenzo(a,h)anthracene	0.00E+00	1.54E-08	1.54E-08	NA	N
Indeno(1,2,3-cd)pyrene	0.00E+00	1.63E-07	1.63E-07	NA	N
Total PAHs	0.00E+00	4.21E-05	4.21E-05	9.1E-05	N

a) PAH is considered as one TAP comprised of: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd)pyrene, benzo(a)pyrene. The total is compared to benzo(a)pyrene.

\*\* See spreadsheets prepared by JBR (included in Appendix E of the permit application for further information regarding emission factors and calculation assumptions.

## Department of Environmental Quality - Air Quality Division Toxic Air Pollutant (TAP) Preconstruction Compliance Application Completeness Checklist

**This checklist is designed to aid the applicant in submitting a complete preconstruction compliance demonstration for toxic air pollutants (TAPs) in permit to construct applications. The applicant must place a check mark in the box for each section below that applies.**

I. Actions Needed Before Submitting Application

- Refer to the Rule. Read the Demonstration of Preconstruction Compliance with Toxic Standards contained in IDAPA 58.01.01.210 (Rules Section 210) Rules for the Control of Air Pollution in Idaho (Rules). Toxic air pollutants (TAPs) are regulated in accordance with Rules Section 210 only from emission units constructed or modified on or after July 1, 1995.

Determine if a new (constructed after June 30, 1995) emission unit has the potential to emit a TAP listed in IDAPA 58.01.01.585 (Rules Section 585) or IDAPA 58.0101.586 ( Rules Section 586). Potential toxic air pollutants can be determined by reviewing commonly available emission factors, such as EPA's AP-42, or calculating emissions using a mass balance. For TAPs that are emitted but not listed in Rules Section 585 and 586, contact the Air Permit Hotline at 877-5PERMIT.

Determine if the proposed construction or modification is exempt from the need to obtain a permit to construct in accordance with IDAPA 58.01.01.220-223. Use the Exemption Criteria and Reporting Requirements for TAPs IDAPA 58.01.01.223 checklist to assist you in the exemption determination. If the source does not qualify for an exemption in accordance with IDAPA 58.01.01.220-223 complete the following checklist and submit it with the permit application. Please note that fugitive TAP emissions are not included in the IDAPA 58.01.01.223 exemption determination, but fugitive TAP emissions are included in the analysis if a permit is required. Stated another way: if a source is required to obtain a Permit to Construct because it does not meet the exemption criteria for any reason all TAP emissions, including fugitive TAPs, are included in the compliance demonstration in the application for the permit to construct. Should you have any questions regarding the fact that all TAPs, including fugitive TAPs, are included in the TAP preconstruction compliance demonstration submitted with a permit to construct application you may call the Air Permit Hotline at 877-5PERMIT.

**Will the new or modified source result in new or increased potential emissions of TAPs?**

- Yes. If yes, continue to section II.
- No. If no, no further action is required.

II. Application Content

If a new source has the potential to emit a TAP, or if a modification to an existing source increases the potential to emit of a TAP, then one of the following methods (A-J) of demonstrating TAP preconstruction compliance must be documented for each TAP. Standard methods are one of A-C. The applicant may also use one of the specialized methods in D-J. Fugitive TAP emissions shall be included in the analysis. The compliance methods are based on the requirements of Rules Section 210. Applicants are often able to demonstrate preconstruction TAP compliance using a combination of methods A and B.

Emission Calculations

Emissions calculation methodologies used are dependent on whether a specific TAP is a non-carcinogen or a carcinogen and whether the compliance method chosen from the list below calls

for controlled or uncontrolled emissions. Non-carcinogens are regulated based on a 24-hour averaging period and emission rates used for comparison to the non-carcinogen screening emissions level (EL) should be the maximum controlled or uncontrolled emissions quantity during any 24-hour period divided by 24. Carcinogens are regulated as a long term increment and emission rates used for comparison to the carcinogen EL should be the maximum controlled or uncontrolled emissions quantity during any 1 year period divided by 8760.

### Modeling Analyses

Atmospheric dispersion modeling is required when controlled TAP emissions rates exceed ELs. Modeling analyses should be conducted in accordance with IDAPA 58.01.01.210.03. Quantification of Ambient Concentrations and the State of Idaho Air Quality Modeling Guideline ([http://www.deq.idaho.gov/air/data\\_reports/publications.cfm#model](http://www.deq.idaho.gov/air/data_reports/publications.cfm#model)). For non-carcinogen 24-hour increments, compliance is demonstrated using the maximum modeled 24-hour-averaged concentration from available meteorological data (typically a five-year data set). For carcinogen long-term increments, compliance is demonstrated using the maximum modeled average concentration for the duration of the data set (one-year to five-year data set).

A submitted modeling report should clearly specify modeled emissions rates and results. All electronic model input files should be submitted, including BPIP input files.

### Poly aromatic Hydrocarbons

Questions often arise regarding polyaromatic hydrocarbons as they are listed in Rules Section 586 of the Rules. The following two points are provided for clarification.

- 1) The following group of 7 PAH's (i.e. named POM), shall be combined and considered as one TAP equivalent in potency to benzo(a)pyrene:  
Benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a, h)anthracene, chrysene, indeno(1,2,3,-cd) pyrene, benzo (a) pyrene
- 2) All other PAH's are considered as a single pollutant and the emission of each is compared the PAH increment listed in Rules Section 586.

### Compliance Methods

Fill in letter(s) (A-J) from the list below for TAP compliance demonstration method(s) used: **E**

#### **A. TAPs Compliance Using Uncontrolled Emissions (Rules Section 210.05)**

- Calculate the uncontrolled emissions (Rules Section 210.05) of each TAP from new emissions units. Uncontrolled emission rates are emissions at maximum capacity without the effect of physical or operational limitations. See Quantification of Emission Rates (Rules Section 210.02). Show calculations and state all assumptions.
- Calculate the increase of TAP emissions from modified emissions units. Show calculations and state all assumptions. The increase in emissions for a modified emission unit is determined by subtracting the potential to emit the TAP before the modification from the uncontrolled potential to emit after the modification. In conducting this analysis please note the following for TAP emission rate increase determinations:

Uncontrolled emission rates after the modification are emissions at maximum capacity without the effect of physical or operational limitations.

When determining the emissions increase from existing permitted emissions units the emission rate before the modification is equivalent to the emission limits contained in the permit for the

TAPs or, if there no emission limits in the permit, by determining what the emission rate is under the physical or operational limitations contained in the permit.

- Aggregate the uncontrolled emissions for each TAP from all new emissions units with the increase in emissions from all modified emissions units.
- If the aggregated emissions increase for each TAP from the new and modified units, as determined above, are less than or equal to the respective TAP screening emissions level (EL) then preconstruction compliance with toxic standards has been demonstrated and no further analysis is required. Submit a table comparing the uncontrolled emissions rate to the applicable EL.

If aggregated emissions are greater than the respective screening emissions level (EL) for any pollutants, use another compliance demonstration method for those pollutants, such as methods B, C, or D.

**B. TAP Compliance Using Uncontrolled Ambient Concentration (Rules Section 210.06)**

- Determine the uncontrolled emissions of each TAP from new emission units and the increase in emissions from all modified emissions units as described above in compliance Method A. Show calculations and state all assumptions.
- Model the uncontrolled emissions of each TAP from new emissions units and the increase in emissions from all modified emissions units.
- If the uncontrolled ambient concentration is less than or equal to the acceptable ambient concentration increment listed in Rules Section 585 and 586 no further procedures for demonstrating preconstruction compliance will be required for that TAP as part of the application process. Submit a table comparing uncontrolled ambient concentrations to the applicable acceptable ambient concentration.

**C. TAP Compliance Using Controlled Ambient Concentrations (Rules Section 210.08)**

- Determine the controlled emissions from new emissions units and the controlled emission increase from modified emissions units. Show all calculations and state all assumptions, including the control methods.
- Model the controlled emissions of each TAP from new emissions units and the increase in controlled emissions from all modified emissions units.

TAP emissions levels (EL) included in Rules Section 585 and 586 are derived based on generic modeling. If the sum the of emissions from new and modified sources is below the EL compliance is demonstrated without the need to conduct site-specific dispersion modeling.

- If the controlled ambient concentration from emission increases from new emissions units and modified emissions units is less than the applicable acceptable ambient concentration no further procedures for demonstrating preconstruction compliance are required.
- The Department shall include an emission limit for the TAP in the permit to construct that is equal to or, if requested by the applicant, less than the emission rate that was used in the modeling (Rules Section 210.08.c).

In some instances the Department may consider a throughput limit or other inherently-limiting operational restriction in a permit as an effective emission limit for the TAP, rather than including a specific emission rate limit. Note that the applicant may model uncontrolled emissions as described in compliance Method B in an attempt to avoid TAPs emissions limitations.

**D. TAPs Compliance for NSPS and NESHAP Sources (Rules Section 210.20)**

- If the owner or operator demonstrates that the TAP emissions from the source or modification is regulated by 40 CFR Part 60, 40 CFR Part 61 or 40 CFR Part 63, no further procedures for demonstrating preconstruction compliance will be required for that TAP.
- Provide a demonstration that the TAP is regulated under 40 CFR Part 60, 40 CFR Part 61 or 40 CFR Part 63. This demonstration must be specific for each TAP emitted.

**E. TAP Compliance Using Net Emissions (Rules Section 210.09)**

An applicant may use TAP net emissions to show preconstruction compliance; however this analysis may require more work than some of the others procedures available to demonstrate preconstruction compliance. When netting, all emissions increases and decreases of the TAP that have occurred within five years must be included in the analysis as described below.

- Determine the net emission increase for a TAP. A net emissions increase shall be an emission increase from a particular modification plus any other increase and decreases in actual emissions at the facility that are creditable and contemporaneous with particular modification (Rules Section 210.09). Show all calculations and state all assumptions.
- A creditable increase or decrease in actual emissions is contemporaneous with a particular modification if it occurs within five (5) years of the commencement of the construction or modification (Rules Section 210.09.a).

Actual emissions are (Rules Section 006.03):

- In general, actual emissions as of a particular date shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a two year period which precedes the particular date and which is representative of normal source operation. The Department shall allow the use of a different time period upon a determination that it is more representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, productions rates, and types of materials processed, stored, or combusted during the selected time period.
- The Department may presume that the source-specific allowable emissions for the unit are equivalent to actual emissions of the unit.
- For any emission unit (except electric utility steam generating units) that has not begun normal operations on the particular date, actual emissions shall equal the potential to emit of the unit on that date.
- Do not include emissions increases from emission units that have an uncontrolled emission rate that is 10% or less than the applicable screening emission level (EL) in Rules Section 585 and 586 (Rules Section 007.09.c.ii) and do not include emission increases from environmental remediation sources (Rules Section 007.09.c.iii). Show all calculations and state all assumptions.
- If the net emission increase is less than or equal to the applicable screening emissions level (EL) listed in Rules Section 585 and 586, no further procedures for demonstrating preconstruction compliance will be required (Rules Section 210.09.c).
- The Department shall include emission limits and other permit terms for the TAP in the permit to construct that will assure that the facility will be operated in the manner described in the preconstruction compliance demonstration (Rules Section 210.09.d).

In some instances the Department may consider a throughput limit or other inherently-limiting operational restriction in a permit as an effective emission limit for the TAP, rather than including a specific emission rate limit..

**F. TAP Compliance Using Net Ambient Concentration (Rules Section 210.10)**

- Determine the emission increase from the new source or modification, and all other creditable emission increases and decrease using the methods described above in compliance Method E.
- Model the emissions increases and decreases for each TAP. Modeling TAP decreases is accomplished by using negative valued emissions rates in the model input.
- If the net ambient concentration is less than or equal to the applicable ambient concentration increment listed in Rules Section 585 and 586, no further procedures for demonstrating preconstruction compliance are required.
- The Department shall include emission limits and other permit terms for the TAP in the permit to construct that will assure that the facility will be operated in the manner described in the preconstruction compliance demonstration (Rules Section 210.10.d).

In some instances the Department may consider a throughput limit or other inherently-limiting operational restriction in a permit as an effective emission limit for the TAP, rather than including a specific emission rate limit..

**G. TAP Compliance Using T-RACT Ambient Concentration for Carcinogens (Rules Section 210.12)**

The applicant may use T-RACT to demonstrate preconstruction compliance for TAPs listed in Rules Section 586 only.

T-RACT is an emissions standard based on the lowest emission of TAPs that a particular source is capable of meeting by application of control technology that is reasonably available, as determined by the Department, considering technological and economic feasibility. If control technology is not feasible, the emission standard may be based on the application of a design, equipment, work practice or operational requirement, or combination thereof (Rules Section 007.16).

**T-RACT Submittal Requirements**

- The applicant shall submit the following information to the Department identifying and documenting which control technologies or other requirements the applicant believes to be T-RACT (Rules Section 210.14).

The technical feasibility of a control technology or other requirements for a particular source shall be determined considering several factors including but not limited to:

- Process and operating procedures, raw materials and physical plant layout.
- The environmental impacts caused by the control technology that can not be mitigated, including but not limited to, water pollution and the production of solid wastes.
- The energy requirements of the control technology.

The economic feasibility of a control technology or other requirement, including the costs of necessary mitigation measures, for a particular source shall be determined considering several factors including, but not limited to:

- Capital costs.
- Cost effectiveness, which is the annualized cost of the control technology divided by the amount of emission reduction.
- The difference in costs between the particular source and other similar sources, if any, that have implemented emissions reductions.
- Compare the source's or modification's approved T-RACT ambient concentration to the applicable acceptable ambient concentration increment listed in Rules Section 586 multiplied by a factor of 10. If the sources approved T-RACT concentration is less than or equal to 10 times the applicable acceptable ambient concentration increment listed in Rules Section 586, no further procedures for demonstrating preconstruction compliance will be required.
- If an application is submitted to the Department without T-RACT and determined complete, and T-RACT is later determined to be applicable the completeness determination of the application will be revoked until a supplemental application is submitted and determined complete. When the supplemental application is determined complete, the timeline for agency action shall be reinitiated (Rules Section 210.13.b).
- If the Department determines that the source has proposed T-RACT, the Department shall develop emission standards to be incorporated into a permit to construct.

In some instances, the Department may consider a throughput limit or other inherently limiting operational restriction in a permit as an effective emission limit for the TAP, rather than including a specific emission rate limit.

**H. TAP Compliance Using the Short Term Source Factor (Rules Section 210.15)**

- For short term sources, the applicant may utilize a short term adjustment factor of ten (10) only for a carcinogenic pollutant listed in Rules Section 586. For a carcinogen listed in Rules Section 586 multiply either the applicable acceptable ambient concentration increment or the screening emission rate (EL), but not both, by ten (10) to demonstrate preconstruction compliance (Rules Section 210.15).
- A short term source is any new stationary source or modification to an existing source, with an operational life no greater than five (5) years from the inception of any operations to cessation of actual operations (Rules Section 210.15).

**I. TAP Compliance for Environmental Remediation Sources (Rules Section 210.16)**

- For remediation sources subject to or regulated by the Resource Conservation and Recovery Act and the Idaho Rules and Standard for Hazardous Waste, or the comprehensive Environmental Response, Compensation and Liability Act or a consent order, if the estimated ambient concentration is greater than the acceptable ambient impact increment listed in Rules Section 585 and 586, Best Available Control Technology shall be applied and operated until the estimated uncontrolled emission from the remediation source are below the applicable acceptable ambient concentration increment (Rules Section 210.16).

**J. TAP Compliance Using Offset Ambient Concentration (Rules Section 210.11)**

- Contact the Department prior to proposing to utilize Offset Ambient Concentrations to demonstrate preconstruction compliance.
  
- Emission offsets must satisfy the requirements for emission reduction credits (Rules Section 460).
  - The proposed level of allowable emissions must be less than the actual emissions of the emissions units providing the offsets (Rules Section 460.01).
  - An air quality permit must be issued that restricts the potential to emit of the emission unit providing the offset.
  - Emission reduction imposed by local, state or federal regulations or permits shall not be allowed.
  
- Compare the source's or modifications approved emission offset ambient concentration to the applicable acceptable ambient concentration listed in Rules Section 585 and 586. If the source's or modifications approved offset concentration is less than the acceptable ambient concentration listed in Rules Section 585 and 586, no further procedures for demonstrating preconstruction compliance will be required.
  
- The Department shall include emission limits and other permit terms for the TAP in the permit to construct that will assure that the facility will be operated in the manner described in the preconstruction compliance demonstration (Rules Section 210.10.d).



## Facility Wide Hazardous Air Pollutant Potential to Emit Application Template and Instructions

Provide the facility wide potential to emit for all Hazardous Air Pollutants (HAPs). **The potential to emit provided here must match the emissions rates which are requested to be permitted.**

HAPs are pollutants that are required to be regulated under the Clean Air Act. A list of the HAPs may be found by following this link: [HAP list](#); review the list carefully to be sure you have included all listed HAPs.

**All emissions inventories must be submitted with thorough documentation.** The emission inventories will be subjected to technical review; prepare your application with sufficient documentation so that either the public or DEQ can verify the validity of the emission estimates. **Applications submitted without sufficient documentation are incomplete. Follow the instructions provided on the following page; do not proceed until you have read the instructions.**

**Applicants must use the Potential to Emit Summary table provided below.** Identify the individual HAP with the highest emissions and total HAP emissions. The potential to emit provided here must match the emissions rates which are requested to be permitted. **All fugitive emissions of HAPs must be included.**

Table Error! No text of specified style in document.-5 PTE HAPs from All Sources

HAP Pollutants	PTE (T/yr)
Acrolein	3.07E-07
Benzene	1.52E-06
Ethylene Glycol	9.83E-08
Formaldehyde	6.97E-09
Hexane	0.00E+00
Hydrochloric Acid	5.78E-05
Methanol	1.9E-05
Naphthalene	1.69E-06
Phosphine*	1.40E-03
Phosphorus	0.00E+00
Toluene	4.18E-06
Xylene	2.53E-04
<b>Total</b>	<b>1.74E-03</b>

\* Maximum Individual HAP

\*\* See spreadsheets prepared by JBR (included in Appendix E of the permit application for further information regarding emission factors and calculation assumptions.)



**DEQ AIR QUALITY PROGRAM**  
 1410 N. Hilton, Boise, ID 83706  
 For assistance, call the  
**Air Permit Hotline – 1-877-5PERMIT**

# AIR PERMIT APPLICATION

Revision 6  
 10/7/09

For each box in the table below, CTRL+click on the blue underlined text for instructions and information.

## IDENTIFICATION

1. Company Name:  Nunhems USA, Inc.	2. Facility Name:  Parma Facility
3. Brief Project Description:      Onion and Carrot Seed Processing Facility	

## APPLICABILITY DETERMINATION

4. List applicable subparts of the New Source Performance Standards (NSPS) ( <a href="#">40 CFR part 60</a> ).  Examples of NSPS affected emissions units include internal combustion engines, boilers, turbines, etc. The applicant must thoroughly review the list of affected emissions units.	List of applicable subpart(s):  <b>Subpart III—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines</b>
5. List applicable subpart(s) of the National Emission Standards for Hazardous Air Pollutants (NESHAP) found in <a href="#">40 CFR part 61</a> and <a href="#">40 CFR part 63</a> .  Examples of affected emission units include solvent cleaning operations, industrial cooling towers, paint stripping and miscellaneous surface coating. <a href="#">EPA has a web page dedicated to NESHAP</a> that should be useful to applicants.	List of applicable subpart(s): <b>Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines</b>  <input type="checkbox"/> Not Applicable
6. For each subpart identified above, conduct a complete a regulatory analysis using the instructions and referencing the example provided on the following pages.  <b>Note</b> - Regulatory reviews must be submitted with sufficient detail so that DEQ can verify applicability and document in legal terms why the regulation applies. Regulatory reviews that are submitted with insufficient detail will be determined incomplete.	<input checked="" type="checkbox"/> A detailed regulatory review is provided (Follow instructions and example).  <input type="checkbox"/> DEQ has already been provided a detailed regulatory review. Give a reference to the document including the date.

**IF YOU ARE UNSURE HOW TO ANSWER ANY OF THESE QUESTIONS, CALL THE AIR PERMIT HOTLINE AT  
1-877-5PERMIT**

*It is emphasized that it is the applicant's responsibility to satisfy all technical and regulatory requirements, and that DEQ will help the applicant understand what those requirements are prior to the application being submitted but that DEQ will not perform the required technical or regulatory analysis on the applicant's behalf.*

Green highlights indicate non-applicability

Yellow highlights indicate some form of applicability

*Times New-Roman, bold and italic font indicates response to rule.*

Subpart III--STANDARDS OF PERFORMANCE FOR STATIONARY COMPRESSION IGNITION INTERNAL COMBUSTION ENGINES

§60.4200

Am I subject to this subpart?

§60.4201

What emission standards must I meet for non-emergency engines if I am a stationary CI internal combustion engine manufacturer? ***Facility does not operate non-emergency units.***

§60.4202

What emission standards must I meet for emergency engines if I am a stationary CI internal combustion engine manufacturer?

§60.4203

How long must my engines meet the emission standards if I am a manufacturer of stationary CI internal combustion engines? ***Facility does not manufacture CI ICE.***

§60.4204

What emission standards must I meet for non-emergency engines if I am an owner or operator of a stationary CI internal combustion engine? ***Facility does not operate non-emergency units.***

§60.4205

What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

§60.4206

How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?

§60.4207

What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?

§60.4208

What is the deadline for importing or installing stationary CI ICE produced in previous model years?

§60.4209

What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?

§60.4210

What are my compliance requirements if I am a stationary CI internal combustion engine manufacturer? ***Facility does not manufacture CI ICE.***

§60.4211

What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?

§60.4212

What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of less than 30 liters per cylinder? ***Facility operates certified units that meet emissions requirements.***

§60.4213

What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of greater than or equal to 30 liters per cylinder? ***Facility does not operate generators with***

*displacement greater than 30 liters/cylinder.*

§60.4214

What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?

§60.4215

What requirements must I meet for engines used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands? *Facility does not operate generators in these locations.*

§60.4216

What requirements must I meet for engines used in Alaska? *Facility does not operate generators in these locations.*

§60.4217

What emission standards must I meet if I am an owner or operator of a stationary internal combustion engine using special fuels? *Facility does not operate generators using special fuels.*

§60.4218

What parts of the General Provisions apply to me?

§60.4219

What definitions apply to this subpart?

Appendix

Table 1 to Subpart IIII of Part 60 --Emission Standards for Stationary Pre-2007 Model Year Engines With a Displacement of <10 Liters per Cylinder and 2007-2010 Model Year Engines >2,237 KW (3,000 HP) and With a Displacement of <10 Liters per Cylinder *May be applicable to the Generac generator unit.*

Appendix

Table 2 to Subpart IIII of Part 60 --Emission Standards for 2008 Model Year and Later Emergency Stationary CI ICE <37 KW (50 HP) With a Displacement of <10 Liters per Cylinder *Facility does not operate generators with these specifications.*

Appendix

Table 3 to Subpart IIII of Part 60 --Certification Requirements for Stationary Fire Pump Engines *Facility does not operate generators with these specifications.*

Appendix

Table 4 to Subpart IIII of Part 60 --Emission Standards for Stationary Fire Pump Engines *Facility does not operate generators with these specifications.*

Appendix

Table 5 to Subpart IIII of Part 60 --Labeling and Recordkeeping Requirements for New Stationary Emergency Engines *May apply to all units*

Appendix

Table 6 to Subpart IIII of Part 60 --Optional 3-Mode Test Cycle for Stationary Fire Pump Engines *Facility does not operate generators with these specifications.*

Appendix

Table 7 to Subpart IIII of Part 60 --Requirements for Performance Tests for Stationary CI ICE With a Displacement of >eqt;30 Liters per Cylinder *Facility does not operate generators with these specifications.*

Appendix

Table 8 to Subpart IIII of Part 60 --Applicability of General Provisions to Subpart IIII *May be generally applicable.*

*Items highlighted yellow, above, will be further analyzed in the following section.*

## **Title 40: Protection of Environment**

### **PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES**

**Subpart III—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines**

**Source:** 71 FR 39172, July 11, 2006, unless otherwise noted.

**What This Subpart Covers**

**§ 60.4200 Am I subject to this subpart?** *Yes, all three generators apply, as stated below.*

(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in paragraphs (a)(1) through (4) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

(1) Manufacturers of stationary CI ICE with a displacement of less than 30 liters per cylinder where the model year is:

(i) 2007 or later, for engines that are not fire pump engines; *Applies to the Generac unit only (2001 model). The Cummins (2009 model) and Cat (2008 model) generators are not applicable.*

(ii) The model year listed in Table 3 to this subpart or later model year, for fire pump engines. *None are fire pump engines.*

(2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are:

(i) Manufactured after April 1, 2006, and are not fire pump engines, or *The Cummins (2009 model) and Cat (2008 model) generators apply to this subpart.*

(ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

(3) Owners and operators of any stationary CI ICE that are modified or reconstructed after July 11, 2005 and any person that modifies or reconstructs any stationary CI ICE after July 11, 2005.

(4) The provisions of §60.4208 of this subpart are applicable to all owners and operators of stationary CI ICE that commence construction after July 11, 2005.

(b) The provisions of this subpart are not applicable to stationary CI ICE being tested at a stationary CI ICE test cell/stand.

(c) If you are an owner or operator of an area source subject to this subpart, you are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart applicable to area sources.

(d) Stationary CI ICE may be eligible for exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C (or the exemptions described in 40 CFR part 89, subpart J and 40 CFR part 94, subpart J, for engines that would need to be certified to standards in those parts), except that owners and operators, as well as manufacturers, may be eligible to request an exemption for national security.

(e) Owners and operators of facilities with CI ICE that are acting as temporary replacement units and that are located at a stationary source for less than 1 year and that have been properly certified as meeting the standards that would be applicable to such engine under the appropriate nonroad engine provisions, are not required to meet any other provisions under this subpart with regard to such engines.

[71 FR 39172, July 11, 2006, as amended at 76 FR 37967, June 28, 2011]

**§ 60.4202 What emission standards must I meet for emergency engines if I am a stationary CI internal combustion engine manufacturer?** *This subpart is applicable for both the CAT and Cummins engines (see (b)(1))*

(a) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a maximum engine power less than or equal to 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder that are not fire pump engines to the emission standards specified in paragraphs (a)(1) through (2) of this section.

(1) For engines with a maximum engine power less than 37 KW (50 HP): *N/A for the Generac, as it is a 125 horsepower rated engine.*

(2) For engines with a maximum engine power greater than or equal to 37 KW (50 HP), the certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants beginning in model year 2007. *The Generac model year is 2001, so N/A to the previous section.*

(b) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a maximum engine power greater than 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder that are not fire pump engines to the emission standards specified in paragraphs (b)(1) through (2) of this section. *None of the generators meet this specification*

(1) For 2007 through 2010 model years, the emission standards in table 1 to this subpart, for all pollutants, for the same maximum engine power. *This subpart is applicable for both the CAT and Cummins engines.*

(2) For 2011 model year and later, the certification emission standards for new nonroad CI engines for engines of the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants. *Not applicable to any of the generators.*

(c) [Reserved]

(d) Beginning with the model years in table 3 to this subpart, stationary CI internal combustion engine manufacturers must certify their fire pump stationary CI ICE to the emission standards in table 4 to this subpart, for all pollutants, for the same model year and NFPA nameplate power.

*Not applicable.*

(e) Stationary CI internal combustion engine manufacturers must certify the following emergency stationary CI ICE that are not fire pump engines to the certification emission standards for new marine CI engines in 40 CFR 94.8, as applicable, for all pollutants, for the same displacement and maximum engine power: *Not applicable.*

(f) Stationary CI internal combustion engine manufacturers must certify the following emergency stationary CI ICE to the certification emission standards and other requirements applicable to Tier 3 new marine CI engines in 40 CFR 1042.101, 40 CFR 1042.107, 40 CFR 1042.115, 40 CFR 1042.120, and 40 CFR 1042.145, for all pollutants, for the same displacement and maximum engine power: *Not applicable.*

(g) Notwithstanding the requirements in paragraphs (a) through (d) of this section, stationary emergency CI internal combustion engines identified in paragraphs (a) and (c) may be certified to the provisions of 40 CFR part 94 or, if Table 2 to 40 CFR 1042.101 identifies Tier 3 standards as being applicable, the requirements applicable to Tier 3 engines in 40 CFR part 1042, if the engines will be used solely in either or both of the following locations: *Not applicable.*

(1) Areas of Alaska not accessible by the FAHS; and *Not applicable.*

(2) Marine offshore installations. *Not applicable.*

(h) Notwithstanding the requirements in paragraphs (a) through (f) of this section, stationary CI internal combustion engine manufacturers are not required to certify reconstructed engines; however manufacturers may elect to do so. The reconstructed engine must be certified to the emission standards specified in paragraphs (a) through (f) of this section that are applicable to the model year, maximum engine power and displacement of the reconstructed emergency stationary CI ICE. *Not applicable.*

**§ 60.4205** What emission standards must I meet for **emergency engines** if I am an owner or operator of a stationary CI internal combustion engine? *See section (1) below.*

(a) Owners and operators of pre-2007 model year emergency stationary CI ICE with a displacement of less than 10 liters per cylinder that are not fire pump engines **must comply with the emission standards in Table 1 to this subpart.** Owners and operators of pre-2007 model year emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards in 40 CFR 94.8(a)(1).

*This section is applicable to the Generac engine, but not the CAT or the Cummins Engines. CAT is a 2008 model and the Cummins is a 2009.*

(b) Owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the **emission standards for new nonroad CI engines in §60.4202**, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE.

(c) Owners and operators of **fire pump engines** with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants. *N/A*

(d) Owners and operators of emergency stationary CI engines with a displacement of greater than or equal to 30 liters per cylinder must meet the requirements in this section. *N/A*

(1) For engines installed prior to January 1, 2012, limit the emissions of NO<sub>x</sub> in the stationary CI internal combustion engine exhaust to the following:

(i) **17.0 g/KW-hr (12.7 g/HP-hr) when maximum engine speed is less than 130 rpm;**

*All three sources comply with the above emissions rating. See manufacturer's certifications in the attached EUI forms.*

(ii)  $45 \cdot n^{-0.2}$  g/KW-hr ( $34 \cdot n^{-0.2}$  g/HP-hr) when maximum engine speed is 130 or more but less than 2,000 rpm, where n is maximum engine speed; and *All three sources comply with the above emissions rating. See manufacturer's certifications in the attached EUI forms.*

(iii) 9.8 g/kW-hr (7.3 g/HP-hr) when maximum engine speed is 2,000 rpm or more. *N/A*

(2) For engines installed on or after January 1, 2012, limit the emissions of NO<sub>x</sub> in the stationary CI internal combustion engine exhaust to the following: *All three sources comply with the above emissions rating. See manufacturer's certifications in the attached EUI forms.*

(3) Limit the emissions of PM in the stationary CI internal combustion engine exhaust to 0.40 g/KW-hr (0.30 g/HP-hr). *All three sources comply with the above emissions rating. See manufacturer's certifications in the attached EUI forms.*

(e) Owners and operators of emergency stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests in-use must meet the NTE standards as indicated in §60.4212. *N/A*

(f) Owners and operators of any modified or reconstructed emergency stationary CI ICE subject to this subpart must meet the emission standards applicable to the model year, maximum engine power, and displacement of the modified or reconstructed CI ICE that are specified in paragraphs (a) through (e) of this section. *N/A*

**§ 60.4206** How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine? *Generally applicable.*

Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§60.4204 and 60.4205 **over the entire life of the engine.**

[76 FR 37969, June 28, 2011]

**§ 60.4207 What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?**

**(a)** Beginning October 1, 2007, owners and operators of stationary CI ICE subject to this subpart that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(a). *All units comply with the stated rule.*

**(b)** Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must purchase diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel. *All units comply with the stated rule.*

**(c)** [Reserved]

**(d)** Beginning June 1, 2012, owners and operators of stationary CI ICE subject to this subpart with a displacement of greater than or equal to 30 liters per cylinder are no longer subject to the requirements of paragraph (a) of this section, and must use fuel that meets a maximum per-gallon sulfur content of 1,000 parts per million (ppm). *N/A; no units exceed 30 liters per cylinder.*

**(e)** Stationary CI ICE that have a national security exemption under §60.4200(d) are also exempt from the fuel requirements in this section. *N/A*

[71 FR 39172, July 11, 2006, as amended at 76 FR 37969, June 28, 2011]

**Other Requirements for Owners and Operators**

**§ 60.4208 What is the deadline for importing or installing stationary CI ICE produced in previous model years?**

**(a)** After December 31, 2008, owners and operators may not install stationary CI ICE (excluding fire pump engines) that do not meet the applicable requirements for 2007 model year engines. *All units comply with the applicable requirements.*

**(b)** After December 31, 2009, owners and operators may not install stationary CI ICE with a maximum engine power of less than 19 KW (25 HP) (excluding fire pump engines) that do not meet the applicable requirements for 2008 model year engines. *N/A; no such units on site.*

**(c)** After December 31, 2014, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 19 KW (25 HP) and less than 56 KW (75 HP) that do not meet the applicable requirements for 2013 model year non-emergency engines. *N/A; no such units on site.*

**(d)** After December 31, 2013, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 56 KW (75 HP) and less than 130 KW (175 HP) that do not meet the applicable requirements for 2012 model year non-emergency engines. *N/A; no such units on site.*

**(e)** After December 31, 2012, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 130 KW (175 HP), including those above 560 KW (750 HP), that do not meet the applicable requirements for 2011 model year non-emergency engines. *N/A; no such units on site.*

**(f)** After December 31, 2016, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 560 KW (750 HP) that do not meet the applicable requirements for 2015 model year non-emergency engines. *N/A; no such units on site.*

**(g)** After December 31, 2018, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power greater than or equal to 600 KW (804 HP) and less than 2,000 KW (2,680 HP) and a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder that do not meet the applicable requirements for 2017 model year non-emergency engines. *N/A; no such units on site.*

**(h)** In addition to the requirements specified in §§60.4201, 60.4202, 60.4204, and 60.4205, it is prohibited to import stationary CI ICE with a displacement of less than 30 liters per cylinder that do not meet the applicable requirements specified in paragraphs (a) through (g) of this section after the dates specified in paragraphs (a) through (g) of this section. *N/A; no such units on site.*

(i) The requirements of this section do not apply to owners or operators of stationary CI ICE that have been modified, reconstructed, and do not apply to engines that were removed from one existing location and reinstalled at a new location. *N/A; no such units on site.*

[71 FR 39172, July 11, 2006, as amended at 76 FR 37969, June 28, 2011]

**§ 60.4209 What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine? *Generally applicable.***

If you are an owner or operator, you must meet the monitoring requirements of this section. In addition, you must also meet the monitoring requirements specified in §60.4211.

(a) If you are an owner or operator of an emergency stationary CI internal combustion engine that does not meet the standards applicable to non-emergency engines, you must install a non-resettable hour meter prior to startup of the engine. *Each unit is equipped with an hour meter.*

(b) If you are an owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in §60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached. *Each unit is maintained to manufacturer's specifications, which comply with the aforementioned standards.*

[71 FR 39172, July 11, 2006, as amended at 76 FR 37969, June 28, 2011]

**§ 60.4211 What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?**

(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must do all of the following, except as permitted under paragraph (g) of this section:

- (1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions; *Current practice.*
- (2) Change only those emission-related settings that are permitted by the manufacturer; and *Current practice.*
- (3) Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you. *Current practice.*

(b) If you are an owner or operator of a pre-2007 model year stationary CI internal combustion engine and must comply with the emission standards specified in §§60.4204(a) or 60.4205(a), or if you are an owner or operator of a CI fire pump engine that is manufactured prior to the model years in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) through (5) of this section.

(1) Purchasing an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications. *See manufacturer's certifications attached to Form EU1.*

(2) Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

(3) Keeping records of engine manufacturer data indicating compliance with the standards. *See manufacturer's certifications attached to Form EU1.*

(4) Keeping records of control device vendor data indicating compliance with the standards.

(5) Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

(c) If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §§60.4204(b) or §60.4205(b), or if you are an owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to your

fire pump engine power rating in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), **you must comply by purchasing an engine certified to the emission standards in §60.4204(b), or §60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's emission-related specifications,** except as permitted in paragraph (g) of this section.

(d) If you are an owner or operator and must comply with the emission standards specified in §60.4204(c) or §60.4205(d), you must demonstrate compliance according to the requirements specified in paragraphs (d)(1) through (3) of this section. *N/A.*

(e) If you are an owner or operator of a **modified or reconstructed stationary CI internal combustion** engine and must comply with the emission standards specified in §60.4204(e) or §60.4205(f), you must demonstrate compliance according to one of the methods specified in paragraphs (e)(1) or (2) of this section. *N/A.*

(f) Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. Emergency stationary ICE may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply non-emergency power as part of a financial arrangement with another entity. For owners and operators of emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted in this section, is prohibited. **Generally applicable.**

(g) If you do not install, configure, operate, and maintain your engine and control device according to the manufacturer's emission-related written instructions, or you change emission-related settings in a way that is not permitted by the manufacturer, you must demonstrate compliance as follows: ***Maintenance of all engines and control devices is conducted according to the manufacturer's emission-related written instructions.***

### Notification, Reports, and Records for Owners and Operators

#### **§ 60.4214 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?**

(a) Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the requirements of paragraphs (a)(1) and (2) of this section. ***Facility does operate units meeting the above requirements.***

(b) If the stationary CI internal combustion engine **is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification.** Starting with the model years in **table 5** to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time. ***Generally applicable.***

(c) If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached. *N/A*

### General Provisions

#### **§ 60.4218 What parts of the General Provisions apply to me?**

Table 8 to this subpart shows which parts of the General Provisions in §§60.1 through 60.19 apply to you.

Definitions

**§ 60.4219** What definitions apply to this subpart? *Generally applicable.*

**Table 1 to Subpart IIII of Part 60—Emission Standards for Stationary Pre-2007 Model Year Engines With a Displacement of <10 Liters per Cylinder and 2007–2010 Model Year Engines >2,237 KW (3,000 HP) and With a Displacement of <10 Liters per Cylinder**

*The Generac generator falls under this category, as it was built in 2001 and has a displacement of less than 10 liters/cylinder. Calculated emissions show compliance with emissions threshold for NOx.*

[As stated in §§60.4201(b), 60.4202(b), 60.4204(a), and 60.4205(a), you must comply with the following emission standards]

Maximum engine power	Emission standards for stationary pre-2007 model year engines with a displacement of <10 liters per cylinder and 2007–2010 model year engines >2,237 KW (3,000 HP) and with a displacement of <10 liters per cylinder in g/KW-hr (g/HP-hr)				
	NMHC + NO <sub>x</sub>	HC	NO <sub>x</sub>	CO	PM
KW<8 (HP<11)	10.5 (7.8)			8.0 (6.0)	1.0 (0.75)
8≤KW<19 (11≤HP<25)	9.5 (7.1)			6.6 (4.9)	0.80 (0.60)
19≤KW<37 (25≤HP<50)	9.5 (7.1)			5.5 (4.1)	0.80 (0.60)
37≤KW<56 (50≤HP<75)			9.2 (6.9)		
56≤KW<75 (75≤HP<100)			9.2 (6.9)		
75≤KW<130 (100≤HP<175)			9.2 (6.9)		
130≤KW<225 (175≤HP<300)		1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)
225≤KW<450 (300≤HP<600)		1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)
450≤KW≤560 (600≤HP≤750)		1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)
KW>560 (HP>750)		1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)

**Table 5 to Subpart IIII of Part 60—Labeling and Recordkeeping Requirements for New Stationary Emergency Engines**

[You must comply with the labeling requirements in §60.4210(f) and the recordkeeping requirements in §60.4214(b) for new emergency stationary CI ICE beginning in the following model years:]

Engine power	Starting model year
19≤KW<56 (25≤HP<75)	2013
56≤KW<130 (75≤HP<175)	2012
KW≥130 (HP≥175)	2011

*None of the above model years are consistent with what the facility utilizes. The table is not applicable.*

**Table 8 to Subpart IIII of Part 60—Applicability of General Provisions to Subpart IIII**

*All are generally applicable.*

[As stated in §60.4218, you must comply with the following applicable General Provisions:]

General Provisions citation	Subject of citation	Applies to subpart	Explanation
§60.1	General applicability of the General Provisions	Yes	
§60.2	Definitions	Yes	Additional terms defined in §60.4219.
§60.3	Units and abbreviations	Yes	
§60.4	Address	Yes	
§60.5	Determination of construction or modification	Yes	
§60.6	Review of plans	Yes	
§60.7	Notification and Recordkeeping	Yes	Except that §60.7 only applies as specified in §60.4214(a).
§60.8	Performance tests	Yes	Except that §60.8 only applies to stationary CI ICE with a displacement of (≥30 liters per cylinder and engines that are not certified.
§60.9	Availability of information	Yes	
§60.10	State Authority	Yes	
§60.11	Compliance with standards and maintenance requirements	No	Requirements are specified in subpart IIII.
§60.12	Circumvention	Yes	
§60.13	Monitoring requirements	Yes	Except that §60.13 only applies to stationary CI ICE with a displacement of (≥30 liters per cylinder.
§60.14	Modification	Yes	
§60.15	Reconstruction	Yes	
§60.16	Priority list	Yes	
§60.17	Incorporations by reference	Yes	
§60.18	General control device requirements	No	
§60.19	General notification and reporting requirements	Yes	

**Green highlights indicate non-applicability**

**Yellow highlights indicate some form of applicability**

*Times New-Roman, bold and italic font indicates response to rule.*

## **Title 40: Protection of Environment**

### **PART 63—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES (CONTINUED)**

#### **Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines**

**Source:** 69 FR 33506, June 15, 2004, unless otherwise noted.

#### **What This Subpart Covers**

##### **§ 63.6580 What is the purpose of subpart ZZZZ?**

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

[73 FR 3603, Jan. 18, 2008]

##### **§ 63.6585 Am I subject to this subpart?**

You are subject to this subpart if you own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand.

(a) A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.

(b) A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site.

(c) An area source of HAP emissions is a source that is not a major source.

#### ***Generally applicable.***

(d) If you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable.

(e) If you are an owner or operator of a stationary RICE used for national security purposes, you may be eligible to request an exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C.

[69 FR 33506, June 15, 2004, as amended at 73 FR 3603, Jan. 18, 2008]

##### **§ 63.6590 What parts of my plant does this subpart cover?**

This subpart applies to each affected source.

(a) **Affected source.** An affected source is any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand.

##### **(1) Existing stationary RICE.**

***Sources are not to be considered existing, since the construction date is the date of permit issuance.***

(2) **New stationary RICE.** (i) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after December 19, 2002.

(ii) A stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

(iii) A stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

***The generator units would be considered new sources and generally apply to § 63.6590 (2) (iii).***

(3) **Reconstructed stationary RICE.** (i) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after December 19, 2002.

(ii) A stationary RICE with a site rating of equal to or less than 500 brake HP located at a **major source of HAP air pollution** is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after June 12, 2006.

(iii) A stationary RICE located at an area source of HAP emissions **is reconstructed** if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after June 12, 2006.

(c) **Stationary RICE subject to limited requirements.** (1) An affected source which meets either of the criteria in paragraphs (b)(1)(i) through (ii) of this section does not have to meet the requirements of this subpart and of subpart A of this part except for the initial notification requirements of §63.6645(f).

(i) The stationary RICE is a new or reconstructed emergency stationary RICE with a site rating of more than 500 brake HP **located at a major source** of HAP emissions.

(ii) The stationary RICE is a new or reconstructed limited use stationary RICE with a site rating of more than 500 brake **HP located at a major source** of HAP emissions.

(3) A new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis must meet the initial notification requirements of §63.6645(f) and the requirements of §§63.6625(c), 63.6650(g), and 63.6655(c). These stationary RICE do not have to meet the emission limitations and operating limitations of this subpart.

(3) The following stationary RICE do not have to meet the requirements of this subpart and of subpart A of this part, including initial notification requirements:

(i) Existing spark ignition 2 stroke lean burn (2SLB) stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions;

(ii) Existing spark ignition 4 stroke lean burn (4SLB) stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions;

(iii) Existing emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions;

(iv) Existing limited use stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions;

(v) Existing stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that combusts landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis;

(vi) Existing residential emergency stationary RICE located at an area source of HAP emissions;

(vii) Existing commercial emergency stationary RICE located at an area source of HAP emissions; or

(viii) Existing institutional emergency stationary RICE located at an area source of HAP emissions.

(c) **Stationary RICE subject to Regulations under 40 CFR Part 60.** An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of **40 CFR part 60 subpart IIII, for compression ignition engines** or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

**(1) A new or reconstructed stationary RICE located at an area source;**

***This regulation generally applies. The 40 CFR part 60 subpart IIII, for compression ignition engines, will apply and has been analyzed in subsequent documents (attached).***

(1) A new or reconstructed 2SLB stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions;

(2) A new or reconstructed 4SLB stationary RICE with a site rating of less than 250 brake HP located at a major source of HAP emissions;

(3) A new or reconstructed spark ignition 4 stroke rich burn (4SRB) stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions;

(4) A new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis;

(5) A new or reconstructed emergency or limited use stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions;

(6) A new or reconstructed compression ignition (CI) stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions.

[69 FR 33506, June 15, 2004, as amended at 73 FR 3604, Jan. 18, 2008; 75 FR 9674, Mar. 3, 2010; 75 FR 37733, June 30, 2010; 75 FR 51588, Aug. 20, 2010]

**§ 63.6595 When do I have to comply with this subpart?**

- (a) **Affected sources.** If you have an existing stationary RICE, excluding existing non-emergency CI stationary RICE, with a site rating of more than 500 brake HP located at a major source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than June 15, 2007. If you have an existing non-emergency CI stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, an existing stationary CI RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, or an existing stationary CI RICE located at an area source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than May 3, 2013. If you have an existing stationary SI RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, or an existing stationary SI RICE located at an area source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than October 19, 2013.
- (b) If you start up your new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a **major source** of HAP emissions before August 16, 2004, you must comply with the applicable emission limitations and operating limitations in this subpart no later than August 16, 2004.
- (c) If you start up your new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a **major source** of HAP emissions after August 16, 2004, you must comply with the applicable emission limitations and operating limitations in this subpart upon startup of your affected source.
- (d) If you start up your new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a **major source** of HAP emissions before January 18, 2008, you must comply with the applicable emission limitations and operating limitations in this subpart no later than January 18, 2008.
- (e) If you start up your new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a **major source** of HAP emissions after January 18, 2008, you must comply with the applicable emission limitations and operating limitations in this subpart upon startup of your affected source.
- (f) If you start up your new or reconstructed stationary RICE located at an area source of HAP emissions **before January 18, 2008**, you must comply with the applicable emission limitations and operating limitations in this subpart no later than January 18, 2008.
- (7) If you start up your new or reconstructed stationary RICE located at an area source of HAP emissions after January 18, 2008, you must comply with the applicable emission limitations and operating limitations in this subpart upon startup of your affected source.

*General compliance with this subpart is applicable, for there is a reference to new emergency generators at an area source for HAPs.*

(b) **Area sources that become major sources.** If you have an area source that increases its emissions or its potential to emit such that it becomes a major source of HAP, the compliance dates in paragraphs (b)(1) and (2) of this section apply to you.

(1) Any stationary RICE for which construction or reconstruction is commenced after the date when your area source becomes a major source of HAP must be in compliance with this subpart upon startup of your affected source.

(2) Any stationary RICE for which construction or reconstruction is commenced before your area source becomes a major source of HAP must be in compliance with the provisions of this subpart that are applicable to RICE located at major sources within 3 years after your area source becomes a major source of HAP.

(c) If you own or operate an affected source, you must meet the applicable notification requirements in **§ 63.6545** and in **40 CFR part 63, subpart A**.

*The above referenced **§ 63.6645**, and Table 5 that the subpart references, does not have a reference to new emergency generators at an area source for HAPs. Subpart is not applicable.*

**Emission and Operating Limitations**

**§ 63.6600** What emission limitations and operating limitations must I meet if I own or operate a stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions?

*Not applicable. No reference to new emergency generators at an area source for HAPs.*

**§ 63.6601** What emission limitations must I meet if I own or operate a new or reconstructed 4SLB stationary RICE with a site rating of greater than or equal to 250 brake HP and less than or equal to 500 brake HP located at a major source of HAP emissions?

*Not applicable. No reference to new emergency generators at an area source for HAPs.*

**§ 63.6602** What emission limitations must I meet if I own or operate an existing stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions?

*Not applicable. No reference to new emergency generators at an area source for HAPs.*

**§ 63.6603** What emission limitations and operating limitations must I meet if I own or operate an existing stationary RICE located at an area source of HAP emissions?

*Not applicable. No reference to new emergency generators at an area source for HAPs.*

**§ 63.6604** What fuel requirements must I meet if I own or operate an **existing stationary CI RICE**?

*Not applicable. No reference to new emergency generators at an area source for HAPs.*

**General Compliance Requirements**

**§ 63.6605** What are my general requirements for complying with this subpart?

(a) You must be in compliance with the emission limitations and operating limitations in this subpart that apply to you at all times.

(b) At all times you must operate and maintain any **affected source**, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

*Generally applicable.*

**Testing and Initial Compliance Requirements**

**§ 63.6610** By what date must I conduct the initial performance tests or other initial compliance demonstrations if I own or operate a stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions?

*Not applicable. No reference to new emergency generators at an area source for HAPs.*

**§ 63.6611** By what date must I conduct the initial performance tests or other initial compliance demonstrations if I own or operate a new or reconstructed **4SLB SI stationary RICE** with a site rating of greater than or equal to 250 and less than or equal to 500 brake HP located **at a major source of HAP emissions**?

*Not applicable. No reference to new emergency generators at an area source for HAPs.*

**§ 63.6612** By what date must I conduct the initial performance tests or other initial compliance demonstrations if I own or operate an **existing stationary RICE** with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions or an **existing stationary RICE** located at **an area source of HAP emissions**?

*Not applicable. No reference to new emergency generators at an area source for HAPs.*

**§ 63.6613** When must I conduct subsequent performance tests?

*Not applicable. No reference to new emergency generators at an area source for HAPs.*

**§ 63.6620** What performance tests and other procedures must I use?

*Not applicable. No reference to new emergency generators at an area source for HAPs.*

**§ 63.6625** What are my monitoring, installation, collection, operation, and maintenance requirements?

(a) If you elect to install a **CEMS** as specified in Table 5 of this subpart, you must install, operate, and maintain a CEMS to monitor CO and either oxygen or CO<sub>2</sub> at **both the inlet and the outlet of the control device** according to the requirements in paragraphs (a)(1) through (4) of this section.

(1) Each CEMS must be installed, operated, and maintained according to the applicable performance specifications of 40 CFR part 60, appendix B.

(2) You must conduct an initial performance evaluation and an annual relative accuracy test audit (RATA) of each CEMS according to the requirements in §63.8 and according to the applicable performance specifications of 40 CFR part 60, appendix B as well as daily and periodic data quality checks in accordance with 40 CFR part 60, appendix F, procedure 1.

(3) As specified in §63.8(c)(4)(ii), each CEMS must complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period. You must have at least two data points, with each representing a different 15-minute period, to have a valid hour of data.

(4) The CEMS data must be reduced as specified in §63.8(g)(2) and recorded in parts per million or parts per billion (as appropriate for the applicable limitation) at 15 percent oxygen or the equivalent CO<sub>2</sub> concentration.

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(b) If you are required to install a **continuous parameter monitoring system (CPMS)** as specified in Table 5 of this subpart, you must install, operate, and maintain each CPMS according to the requirements in paragraphs (b)(1) through (5) of this section. For an affected source that is complying with the emission limitations and operating limitations on March 9, 2011, the requirements in paragraph (b) of this section are applicable September 6, 2011.

(1) You must prepare a site-specific monitoring plan that addresses the monitoring system design, data collection, and the quality assurance and quality control elements outlined in paragraphs (b)(1)(i) through (v) of this section and in §63.8(d). As specified in §63.8(f)(4), you may request approval of monitoring system quality assurance and quality control procedures alternative to those specified in paragraphs (b)(1) through (5) of this section in your site-specific monitoring plan.

(i) The performance criteria and design specifications for the monitoring system equipment, including the sample interface, detector signal analyzer, and data acquisition and calculations;

(ii) Sampling interface (e.g., thermocouple) location such that the monitoring system will provide representative measurements;

(iii) Equipment performance evaluations, system accuracy audits, or other audit procedures;

(iv) Ongoing operation and maintenance procedures in accordance with provisions in §63.8(c)(1) and (c)(3); and

(v) Ongoing reporting and recordkeeping procedures in accordance with provisions in §63.10(c), (e)(1), and (e)(2)(i).

(2) You must install, operate, and maintain each CPMS in continuous operation according to the procedures in your site-specific monitoring plan.

(3) The CPMS must collect data at least once every 15 minutes (see also §63.6635).

(4) For a CPMS for measuring temperature range, the temperature sensor must have a minimum tolerance of 2.8 degrees Celsius (5 degrees Fahrenheit) or 1 percent of the measurement range, whichever is larger.

(5) You must conduct the CPMS equipment performance evaluation, system accuracy audits, or other audit procedures specified in your site-specific monitoring plan at least annually.

(6) You must conduct a performance evaluation of each CPMS in accordance with your site-specific monitoring plan.

(7) If you are operating a new or reconstructed stationary RICE which fires **landfill gas or digester gas equivalent** to 10 percent or more of the gross heat input on an annual basis, you must monitor and record your fuel usage daily with separate fuel meters to measure the volumetric flow rate of each fuel. In addition, you must operate your stationary RICE in a manner which reasonably minimizes HAP emissions.

(8) If you are operating a new or reconstructed emergency 4SLB stationary RICE with a site rating of greater than or equal to 250 and less than or equal to 500 brake HP located at a **major source of HAP emissions**, you must install a non-resettable hour meter prior to the startup of the engine.

(9) If you own or operate any of the following stationary RICE, you must operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions:

(1) An **existing** stationary RICE with a site rating of less than 100 HP located at a major source of HAP emissions;

(2) An **existing** emergency or black start stationary RICE with a site rating of less than or equal to 500 HP located at a major source of HAP emissions;

(3) An **existing** emergency or black start stationary RICE located at an area source of HAP emissions;

(4) An **existing non-emergency**, non-black start stationary CI RICE with a site rating less than or equal to 300 HP located at an area source of HAP emissions;

(5) An **existing non-emergency**, non-black start 2SLB stationary RICE located at an area source of HAP emissions;

(6) An **existing non-emergency**, non-black start landfill or digester gas stationary RICE located at an area source of HAP emissions;

(7) An **existing non-emergency**, non-black start 4SLB stationary RICE with a site rating less than or equal to 500 HP located at an area source of HAP emissions;

(8) An **existing non-emergency**, non-black start 4SRB stationary RICE with a site rating less than or equal to 500 HP located at an area source of HAP emissions;

(9) An **existing non-emergency**, non-black start 4SLB stationary RICE with a site rating greater than 500 HP located at an area source of HAP emissions that is operated 24 hours or less per calendar year; and

(10) An **existing non-emergency**, non-black start 4SRB stationary RICE with a site rating greater than 500 HP located at an area source of HAP emissions that is operated 24 hours or less per calendar year.

### *None of the above scenarios apply to the sources at Nunhems.*

(11) If you own or operate an **existing emergency** stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions or an **existing emergency stationary** RICE located at an area source of HAP emissions, you must install a non-resettable hour meter if one is not already installed.

(12) If you own or operate an **existing non-emergency**, non-black start CI engine greater than or equal to 300 HP that is not equipped with a closed crankcase ventilation system, you must comply with either paragraph (g)(1) or paragraph (g)(2) of this section. Owners and operators must follow the manufacturer's specified maintenance requirements for operating and maintaining the open or closed crankcase ventilation systems and replacing the crankcase filters, or

can request the Administrator to approve different maintenance requirements that are as protective as manufacturer requirements. Existing CI engines located at area sources in areas of Alaska not accessible by the FAHS do not have to meet the requirements of paragraph (g) of this section.

- 11. Install a closed crankcase ventilation system that prevents crankcase emissions from being emitted to the atmosphere, or
- 12. Install an open crankcase filtration emission control system that reduces emissions from the crankcase by filtering the exhaust stream to remove oil mist, particulates, and metals.

(h) If you operate a new, reconstructed, or existing stationary engine, you must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup in Tables 1a, 2a, 2c, and 2d to this subpart apply.

**§ 63.6625(h) generally applies to this section, although Tables 1a, 2a, 2c, and 2d, indicated above, do not include the new emergency generators at an area source for HAPs.**

13. If you own or operate a stationary CI engine that is subject to the work, operation or management practices in items 1 or 2 of Table 2c to this subpart or in items 1 or 4 of Table 2d to this subpart, you have the option of utilizing an oil analysis program in order to extend the specified oil change requirement in Tables 2c and 2d to this subpart. The oil analysis must be performed at the same frequency specified for changing the oil in Table 2c or 2d to this subpart. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity, and percent water content. The condemning limits for these parameters are as follows: Total Base Number is less than 30 percent of the Total Base Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 days or before commencing operation, whichever is later. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.

14. If you own or operate a stationary SI engine that is subject to the work, operation or management practices in items 6, 7, or 8 of Table 2c to this subpart or in items 5, 6, 7, 9, or 11 of Table 2d to this subpart, you have the option of utilizing an oil analysis program in order to extend the specified oil change requirement in Tables 2c and 2d to this subpart. The oil analysis must be performed at the same frequency specified for changing the oil in Table 2c or 2d to this subpart. The analysis program must at a minimum analyze the following three parameters: Total Acid Number, viscosity, and percent water content. The condemning limits for these parameters are as follows: Total Acid Number increases by more than 3.0 milligrams of potassium hydroxide (KOH) per gram from Total Acid Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 days or before commencing operation, whichever is later. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.

**§ 63.6630 How do I demonstrate initial compliance with the emission limitations and operating limitations?**

(a) You must demonstrate initial compliance with each emission and operating limitation that applies to you according to Table 5 of this subpart.

*There are no specifications for new generators within an area source for HAPs within Table 5.*

(b) During the initial performance test, you must establish each operating limitation in Tables 1b and 2b of this subpart that applies to you.

(c) You must submit the Notification of Compliance Status containing the results of the initial compliance demonstration according to the requirements in §63.6645.

**Continuous Compliance Requirements**

**§ 63.6635 How do I monitor and collect data to demonstrate continuous compliance?**

(a) If you must comply with emission and operating limitations, you must monitor and collect data according to this section.

(b) Except for monitor malfunctions, associated repairs, required performance evaluations, and required quality assurance or control activities, you must monitor continuously at all times that the stationary RICE is operating. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions.

(c) You may not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels. You must, however, use all the valid data collected during all other periods.

[69 FR 33506, June 15, 2004, as amended at 76 FR 12867, Mar. 9, 2011]

**§ 63.6640 How do I demonstrate continuous compliance with the emission limitations and operating limitations?**

15. You must demonstrate continuous compliance with each emission limitation and operating limitation in Tables 1a and 1b, Tables 2a and 2b, Table 2c, and Table 2d to this subpart that apply to you according to methods specified in Table 6 of this subpart.

*No reference to new emergency generators at an area source for HAPs within Table 6.*

(b) You must report each instance in which you did not meet each emission limitation or operating limitation in Tables 1a and 1b, Tables 2a and 2b, Table 2c, and Table 2d to this subpart that apply to you. These instances are deviations from the emission and operating limitations in this subpart. These deviations must be reported according to the requirements in §63.6650. If you change your catalyst, you must reestablish the values of the operating parameters measured during the initial performance test. When you reestablish the values of your operating parameters, you must also conduct a performance test to demonstrate that you are meeting the required emission limitation applicable to your stationary RICE.

(c) [Reserved]

(d) For new, reconstructed, and rebuilt stationary RICE, deviations from the emission or operating limitations that occur during the first 200 hours of operation from engine startup (engine burn-in period) are not violations. Rebuilt stationary RICE means a stationary RICE that has been rebuilt as that term is defined in 40 CFR 94.11(a).

(e) You must also report each instance in which you did not meet the requirements in Table 8 to this subpart that apply to you. If you own or operate a new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions (except new or reconstructed 4SLB engines greater than or equal to 250 and less than or equal to 500 brake HP), a new or reconstructed stationary RICE located at an area source of HAP emissions, or any of the following RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, you do not need to comply with the requirements in Table 8 to this subpart: An existing 2SLB stationary RICE, an existing 4SLB stationary RICE, an existing emergency stationary RICE, an existing limited use stationary RICE, or an existing stationary RICE which fires landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis. If you own or operate any of the following RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, you do not need to comply with the requirements in Table 8 to this subpart, except for the initial notification requirements: a new or reconstructed stationary RICE that combusts landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, a new or reconstructed emergency stationary RICE, or a new or reconstructed limited use stationary RICE.

***No reference to new emergency generators at an area source for HAPs within Table 8. The rule is generally applicable, in that the initial notification requirements apply to this part for the Cummins generator set.***

(f) **Requirements for emergency stationary RICE.** (1) If you own or operate an existing emergency stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, a new or reconstructed emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that was installed on or after June 12, 2006, or an existing emergency stationary RICE located at an area source of HAP emissions, you must operate the emergency stationary RICE according to the requirements in paragraphs (f)(1)(i) through (iii) of this section. Any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1)(i) through (iii) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1)(i) through (iii) of this section, the engine will not be considered an emergency engine under this subpart and will need to meet all requirements for non-emergency engines.

(i) There is no time limit on the use of emergency stationary RICE in emergency situations.

(ii) You may operate your emergency stationary RICE for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency RICE beyond 100 hours per year.

(iii) You may operate your emergency stationary RICE up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity; except that owners and operators may operate the emergency engine for a maximum of 15 hours per year as part of a demand response program if the regional transmission organization or equivalent balancing authority and transmission operator has determined there are emergency conditions that could lead to a potential electrical blackout, such as unusually low frequency, equipment overload, capacity or energy deficiency, or unacceptable voltage level. The engine may not be operated for more than 30 minutes prior to the time when the emergency condition is expected to occur, and the engine operation must be terminated immediately after the facility is notified that the emergency condition is no longer imminent. The 15 hours per year of demand response operation are counted as part of the 50 hours of operation per year provided for non-emergency situations. The supply of emergency power to another entity or entities pursuant to financial arrangement is not limited by this paragraph (f)(1)(iii), as long as the power provided by the financial arrangement is limited to emergency power.

(2) If you own or operate an emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that was installed prior to June 12, 2006, you must operate the engine according to the conditions described in paragraphs (f)(2)(i) through (iii) of this section. If you do not operate the engine according to the requirements in paragraphs (f)(2)(i) through (iii) of this section, the engine will not be considered an emergency engine under this subpart and will need to meet all requirements for non-emergency engines.

(i) There is no time limit on the use of emergency stationary RICE in emergency situations.

(ii) You may operate your emergency stationary RICE for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by the manufacturer, the vendor, or the insurance company associated with the engine. Required testing of such units should be minimized, but there is no time limit on the use of emergency stationary RICE in emergency situations and for routine testing and maintenance.

(iii) You may operate your emergency stationary RICE for an additional 50 hours per year in non-emergency situations. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

***The engines are new emergency stationary RICE in at an area source of HAP emissions. The requirements do not specify requirements for new emergency gens in area sources. The above regulation is only generally applicable.***

Notifications, Reports, and Records  
§ 63.6616 What notifications must I submit and when?

(a) You must submit all of the notifications in §§63.7(b) and (c), 63.8(e), (f)(4) and (f)(6), 63.9(b) through (e), and (g) and (h) that apply to you by the dates specified if you own or operate any of the following;

# NSPS/NESHAP Regulation Review and Applicability Form **FRA**

(1) An existing stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions.

(2) An existing stationary RICE located at an area source of HAP emissions.

(3) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions.

(4) A new or reconstructed 4SLB stationary RICE with a site rating of greater than or equal to 250 HP located at a major source of HAP emissions.

(5) This requirement does not apply if you own or operate an existing stationary RICE less than 100 HP, an existing stationary emergency RICE, or an existing stationary RICE that is not subject to any numerical emission standards.

(6) As specified in §63.9(b)(2), if you start up your stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions before the effective date of this subpart, you must submit an Initial Notification not later than December 13, 2004.

(7) If you start up your new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions on or after August 16, 2004, you must submit an Initial Notification not later than 120 days after you become subject to this subpart.

(8) As specified in §63.9(b)(2), if you start up your stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions before the effective date of this subpart and you are required to submit an initial notification, you must submit an Initial Notification not later than July 16, 2008.

(9) If you start up your new or reconstructed stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions on or after March 18, 2008 and you are required to submit an initial notification, you must submit an Initial Notification not later than 120 days after you become subject to this subpart.

(10) If you are required to submit an Initial Notification but are otherwise not affected by the requirements of this subpart, in accordance with §63.6590(b), your notification should include the information in §63.9(b)(2)(i) through (v), and a statement that your stationary RICE has no additional requirements and explain the basis of the exclusion (for example, that it operates exclusively as an emergency stationary RICE if it has a site rating of more than 500 brake HP located at a major source of HAP emissions).

(11) If you are required to conduct a performance test, you must submit a Notification of Intent to conduct a performance test at least 60 days before the performance test is scheduled to begin as required in §63.7(b)(1).

(12) If you are required to conduct a performance test or other initial compliance demonstration as specified in Tables 4 and 5 to this subpart, you must submit a Notification of Compliance Status according to §63.9(h)(2)(ii).

(13) For each initial compliance demonstration required in Table 4 to this subpart that does not include a performance test, you must submit the Notification of Compliance Status before the close of business on the 30th day following the completion of the initial compliance demonstration.

(14) For each initial compliance demonstration required in Table 5 to this subpart that includes a performance test conducted according to the requirements in Table 3 to this subpart, you must submit the Notification of Compliance Status, including the performance test results, before the close of business on the 60th day following the completion of the performance test according to §63.10(d)(2).

***Table 5 and the above do not have a reference to new emergency generators at an area source for HAPs. Subpart is not applicable.***

§ 63.6654 What reports must I submit and when?

(a) You must submit each report in Table 7 of this subpart that applies to you.

***Not applicable. Table 7 does not reference new emergency generators in area sources for HAPs.***

§ 63.6655 What records must I keep?

***Generally applicable***

§ 63.6660 In what form and how long must I keep my records?

***Generally applicable***

Other Requirements and Information

§ 63.6665 What parts of the General Provisions apply to me?

Table 3 to this subpart shows which parts of the General Provisions in §§63.1 through 63.15 apply to you. If you own or operate a new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions (except new or reconstructed 4SLB engines greater than or equal to 250 and less than or equal to 500 brake HP), a new or reconstructed stationary RICE located at an area source of HAP emissions, or any of the following RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, you do not need to comply with any of the requirements of the General Provisions specified in Table 3: An existing 2SLB stationary RICE, an existing 4SLB stationary RICE, an existing stationary RICE that combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, an existing emergency stationary RICE, or an existing limited use stationary RICE. If you own or operate any of the following RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, you do not need to comply with the requirements in the General Provisions specified in Table 8 except for the initial notification requirements: A new stationary RICE that combusts landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, a new emergency stationary RICE, or a new limited use stationary RICE.

***Initial notification information required for the Cummins generator, as it is > 500 hp. Since it is a new emergency generator, there are no other requirements under Table 8.***

§ 63.6670 Who implements and enforces this subpart?

***Not applicable***

§ 63.6675 What definitions apply to this subpart?

***Generally applicable.***

**Table 1a** to Subpart ZZZZ of Part 63—Emission Limitations for Existing, New, and Reconstructed Spark Ignition, 4SRB Stationary RICE >500 HP Located at a Major Source of HAP Emissions

**No reference to new emergency generators at an area source for HAPs.**

**Table 1b** to Subpart ZZZZ of Part 63—Operating Limitations for Existing, New, and Reconstructed Spark Ignition, 4SRB Stationary RICE >500 HP Located at a Major Source of HAP Emissions and Existing Spark Ignition, 4SRB Stationary RICE >500 HP Located at an Area Source of HAP Emissions

**No reference to new emergency generators at an area source for HAPs.**

**Table 2a** to Subpart ZZZZ of Part 63—Emission Limitations for New and Reconstructed 2SLB and Compression Ignition Stationary RICE >500 HP and New and Reconstructed 4SLB Stationary RICE ≥250 HP Located at a Major Source of HAP Emissions

**No reference to new emergency generators at an area source for HAPs.**

**Table 2b** to Subpart ZZZZ of Part 63— Operating Limitations for New and Reconstructed 2SLB and Compression Ignition Stationary RICE >500 HP Located at a Major Source of HAP Emissions, New and Reconstructed 4SLB Stationary RICE ≥250 HP Located at a Major Source of HAP Emissions, Existing Compression Ignition Stationary RICE >500 HP, and Existing 4SLB Stationary RICE >500 HP Located at an Area Source of HAP Emissions

**No reference to new emergency generators at an area source for HAPs.**

**Table 2c** to Subpart ZZZZ of Part 63—Requirements for Existing Compression Ignition Stationary RICE Located at a Major Source of HAP Emissions and Existing Spark Ignition Stationary RICE ≤500 HP Located at a Major Source of HAP Emissions

**No reference to new emergency generators at an area source for HAPs.**

**Table 2d** to Subpart ZZZZ of Part 63— Requirements for Existing Stationary RICE Located at Area Sources of HAP Emissions

**Table 3** to Subpart ZZZZ of Part 63—Subsequent Performance Tests

**Applies to existing units in major source areas. No reference to new emergency generators at an area source for HAPs.**

**Table 4** to Subpart ZZZZ of Part 63—Requirements for Performance Tests

As stated in §§63.6610, 63.6611, 63.6612, 63.6620, and **63.6640**, you must comply with the following requirements for performance tests for stationary RICE:

**No reference to new emergency generators at an area source for HAPs.**

**Table 5** to Subpart ZZZZ of Part 63—Initial Compliance With Emission Limitations and Operating Limitations

As stated in §§63.6612, **63.6625** and 63.6630, you must initially comply with the emission and operating limitations as required by the following:

**No reference to new emergency generators at an area source for HAPs.**

**Table 6** to Subpart ZZZZ of Part 63—Continuous Compliance With Emission Limitations, Operating Limitations, Work Practices, and Management Practices

As stated in **§63.6640**, you must continuously comply with the emissions and operating limitations and work or management practices as required by the following:

**No reference to new emergency generators at an area source for HAPs.**

**Table 7** to Subpart ZZZZ of Part 63—Requirements for Reports

As stated in §63.6650, you must comply with the following requirements for reports:

**No reference to new emergency generators at an area source for HAPs.**

**Table 8** to Subpart ZZZZ of Part 63—Applicability of General Provisions to Subpart ZZZZ.

As stated in §63.6665, you must comply with the following applicable general provisions.

## STACK PARAMETER VERIFICATION/DOCUMENTATION FORM

Source/Stack ID: <b>CAT C9-2008 3 Phase Diesel Generator (at pump-house) / CAT GEN</b>	Stack Description:
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Stack Coordinates (UTMs): E	N	Datum:
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Stack Height: <b>11 feet from ground level.</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Stack height was derived from direct measurement.</b>
Groundlevel Elevation:	

Stack Diameter at Point of Release to Atmosphere: <b>6 inches.</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>
Is Stack Capped or a Horizontal Release? <b>Vertical stack. Passive "blow-through" cap; only active when not in use.</b>	

Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>2700 FPM</b>  1800 RPM	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Verified via direct measurement using an Extech Thermo-Anemometer (AN-100)</b>
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Stack Temperature <sup>e</sup> : <b>60 °C / 140 °F</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using an Extech Thermo-Anemometer (AN-100)</b>
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Name of Person Verifying Stack Parameters: **Jim Duncan**

Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>
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Signature:	Date: <b>04-16-12</b>
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<sup>a.</sup> Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;

<sup>b.</sup> The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.

<sup>c.</sup> Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).

<sup>d.</sup> Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.

e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

<b>STACK PARAMETER VERIFICATION/DOCUMENTATION FORM</b>		
Source/Stack ID: <b>Stamford Cummins 3-Phase Diesel Generator / CUM GEN</b>		Stack Description:
Stack Coordinates (UTMs): E	N	Datum:
Stack Height: <b>15 feet from ground level</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>	
Groundlevel Elevation:		
Stack Diameter at Point of Release to Atmosphere: <b>16 inches</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>	
Is Stack Capped or a Horizontal Release? <b>Vertical stack. Passive "blow-through" cap; only active when not in use.</b>		
Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>2800 FPM</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Verified via direct measurement using an Extech Thermo-Anemometer (AN-100)</b>	
<b>1800 RPM</b>		
Stack Temperature <sup>e</sup> : <b>60 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using an Extech Thermo-Anemometer (AN-100)</b>	
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>		
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>	
Signature:		Date: <b>04-16-2012</b>

a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;

b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.

c. Values used should be representative of typical operational conditions and the location at the point of release to the

- d. atmosphere (accounting for in-stack cooling).  
Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

<b>STACK PARAMETER VERIFICATION/DOCUMENTATION FORM</b>		
Source/Stack ID: <b>Generac 2000 Series 3-Phase Diesel Generator (South of Building "C") / GEN GEN</b>		Stack Description:
Stack Coordinates (UTMs): E	N	Datum:
Stack Height: <b>5 feet from ground level</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>	
Groundlevel Elevation:		
Stack Diameter at Point of Release to Atmosphere: <b>3 inches.</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>	
Is Stack Capped or a Horizontal Release? <b>Vertical stack. Passive "blow-through" cap; only active when not in use.</b>		
Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>5,200 FPM</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Verified via direct measurement using an Extech Thermo-Anemometer (AN-100).</b>	
Stack Temperature <sup>e</sup> : <b>60 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using an Extech Thermo-Anemometer (AN-100)</b>	
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>		
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>	
Signature:		Date: <b>04-16-2012</b>

<sup>a.</sup> Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;



Stack Temperature <sup>c</sup> : <b>22.8 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech 45168 Mini Thermo-Anemometer.</b>	
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>		
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>	
Signature:		Date: <b>04-02-2012</b>

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

<b>STACK PARAMETER VERIFICATION/DOCUMENTATION FORM</b>		
Source/ Stack ID: <b>Dust Collector #2 /DC-2</b>	Stack Description: <b>A horizontally arranged vent attached to the Seed Conditioning building. The exhaust stream runs from a horizontal pipe towards the building and is directed 180 degrees away from the building, through the vent.</b>	
Stack Coordinates (UTMs): E	N	Datum:
Stack Height: <b>29 feet, 2 inches.</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>	
Groundlevel Elevation:		
Stack Diameter at Point of Release to Atmosphere: <b>57 inches by 36 inches.</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>	
Is Stack Capped or a Horizontal Release? <b>Horizontal Release.</b>		



Figure 2

<b>Stack Flow Rate (velocity or volumetric flow)<sup>c</sup>: 34,900 CFM @ 16" SP, 70 °F, sea level.</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Stack flow velocity was derived from the manufacturer's fan specifications in the document titled "Dust Collection System Standards and Summary"</b>
<b>Stack Temperature<sup>c</sup>: 28.8 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech 45168 Mini Thermo-Anemometer.</b>
<b>Name of Person Verifying Stack Parameters: Jim Duncan</b>	
<b>Company: Nunhems USA, Inc.</b>	<b>Position: Maintenance</b>
<b>Signature:</b>	<b>Date: 04-02-2012</b>

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

<b>STACK PARAMETER VERIFICATION/DOCUMENTATION FORM</b>		
<b>Source/ Stack ID: Dust Collector #3 /DC-3</b>	<b>Stack Description: A horizontally arranged vent attached to the Seed Conditioning building. The exhaust stream runs from a horizontal pipe towards the building and is directed 180 degrees away from the building, through the vent.</b>	
<b>Stack Coordinates (UTMs): E</b>	<b>N</b>	<b>Datum:</b>
<b>Stack Height: 29 feet, 0 inches.</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>	
<b>Groundlevel Elevation:</b>		

Stack Diameter at Point of Release to Atmosphere: <b>57 inches by 36 inches.</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>
Is Stack Capped or a Horizontal Release? <b>Horizontal Release.</b>	
Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>35,000 CFM @ 16" SP, 70 F, sea level.</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Stack flow velocity was derived from the manufacturer's fan specifications in the document titled "Dust Collection System Standards and Summary"</b>
Stack Temperature <sup>e</sup> : <b>22.9 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech 45168 Mini Thermo-Anemometer.</b>
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>	
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>
Signature:	Date: <b>04-02-2012</b>

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

### STACK PARAMETER VERIFICATION/DOCUMENTATION FORM

Source/ Stack ID: <b>Dust Collector #4 /DC-4</b>	Stack Description: <b>A horizontally arranged vent attached to the Seed Conditioning building. The exhaust stream runs from a horizontal pipe towards the building and is directed 180 degrees away from the building, through the vent.</b>
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Stack Coordinates (UTMs): E		N	Datum:
Stack Height: <b>27 feet, 7 inches.</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>		
Groundlevel Elevation:			
Stack Diameter at Point of Release to Atmosphere: <b>47 inches by 27 inches.</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>		
Is Stack Capped or a Horizontal Release? <b>Horizontal Release.</b>			
Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>12,800 CFM @ 16" SP, 70 F, sea level.</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Stack flow velocity was derived from the manufacturer's fan specifications in the document titled "Dust Collection System Standards and Summary"</b>		
Stack Temperature <sup>e</sup> : <b>26.7 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech 45168 Mini Thermo-Anemometer.</b>		
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>			
Company: <b>Nunhems USA, Inc.</b>		Position: <b>Maintenance</b>	
Signature:		Date: <b>04-02-2012</b>	

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

## STACK PARAMETER VERIFICATION/DOCUMENTATION FORM

Source/ Stack ID: <b>Dust Collector #5 /DC-5</b>	Stack Description: <b>A horizontally arranged vent attached to the Seed Conditioning building. The exhaust stream runs from a horizontal pipe towards the building and is directed 180 degrees away from the building, through the vent.</b>	
Stack Coordinates (UTMs): E	N	Datum:
Stack Height: <b>27 feet, 5 inches.</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>	
Groundlevel Elevation:		
Stack Diameter at Point of Release to Atmosphere: <b>44 inches by 27 inches.</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>	
Is Stack Capped or a Horizontal Release? <b>Horizontal Release.</b>		
Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>20,000 CFM @ 16" SP, 70 F, sea level.</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Stack flow velocity was derived from the manufacturer's fan specifications in the document titled "Dust Collection System Standards and Summary"</b>	
Stack Temperature <sup>e</sup> : <b>24.7 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech 45168 Mini Thermo-Anemometer.</b>	
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>		
Company: <b>Nunhems USA, Inc.</b>		Position: <b>Maintenance</b>
Signature:		Date: <b>04-02-2012</b>

- <sup>a.</sup> Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- <sup>b.</sup> The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- <sup>c.</sup> Values used should be representative of typical operational conditions and the location at the point of release to the

- d. atmosphere (accounting for in-stack cooling). Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

<b>STACK PARAMETER VERIFICATION/DOCUMENTATION FORM</b>	
<b>Source/ Stack ID:</b> <b>Dust Collector #6 /DC-6</b>	<b>Stack Description:</b> <b>A horizontally arranged vent attached to the Seed Conditioning building. The exhaust stream runs from a horizontal pipe towards the building and is directed 180 degrees away from the building, through the vent.</b>
<b>Stack Coordinates (UTMs):</b> E	N
Datum:	
<b>Stack Height: 31 feet, 0 inches.</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>
<b>Groundlevel Elevation:</b>	
<b>Stack Diameter at Point of Release to Atmosphere: 57 inches by 36 inches.</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>
<b>Is Stack Capped or a Horizontal Release? Horizontal Release.</b>	
<b>Stack Flow Rate (velocity or volumetric flow)<sup>c</sup>: 32,500 CFM @ 16" SP, 70 F, sea level.</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Stack flow velocity was derived from the manufacturer's fan specifications in the document titled "Dust Collection System Standards and Summary"</b>
<b>Stack Temperature<sup>e</sup>: 23.5 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech 45168 Mini Thermo-Anemometer.</b>
<b>Name of Person Verifying Stack Parameters: Jim Duncan</b>	
<b>Company: Nunhems USA, Inc.</b>	<b>Position: Maintenance</b>

Signature:	Date: <b>04-02-2012</b>
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- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

**STACK PARAMETER VERIFICATION/DOCUMENTATION FORM**

Source/ Stack ID: <b>Dust Collector #7 /DC-7</b>	Stack Description: <b>A horizontally arranged vent attached to the Seed Conditioning building. The exhaust stream runs from a horizontal pipe towards the building and is directed 180 degrees away from the building, through the vent.</b>
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Stack Coordinates (UTMs): E	N	Datum:
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Stack Height: <b>27 feet, 6 inches.</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>
Groundlevel Elevation:	

Stack Diameter at Point of Release to Atmosphere: <b>18 inches by 18 inches.</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>
Is Stack Capped or a Horizontal Release? <b>Horizontal Release.</b>	

Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>6,800 CFM @ 16" SP, 70 F, sea level.</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Stack flow velocity was derived from the manufacturer's fan specifications in the document titled "Dust Collection System Standards and Summary"</b>
Stack Temperature <sup>e</sup> : <b>24.8 °C</b>	

Stack Temperature <sup>e</sup> : <b>24.8 °C</b>	Describe how stack temperature was verified, providing copies of any
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materials used <sup>e</sup> : <b>Verified via direct measurement using an ExTech 45168 Mini Thermo-Anemometer.</b>	
<b>Name of Person Verifying Stack Parameters: Jim Duncan</b>	
<b>Company: Nunhems USA, Inc.</b>	<b>Position: Maintenance</b>
<b>Signature:</b>	<b>Date: 04-02-2012</b>

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

<b>STACK PARAMETER VERIFICATION/DOCUMENTATION FORM</b>		
<b>Source/ Stack ID:</b> <b>Dust Collector #8 /DC-8</b>	<b>Stack Description:</b> <b>A horizontally arranged vent attached to the Seed Conditioning building. The exhaust stream runs from a horizontal pipe towards the building and is directed 180 degrees away from the building, through the vent.</b>	
<b>Stack Coordinates (UTMs): E</b>	<b>N</b>	<b>Datum:</b>
<b>Stack Height: 30 feet, 4 inches.</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>	
<b>Groundlevel Elevation:</b>		
<b>Stack Diameter at Point of Release to Atmosphere: 57 inches by 36 inches.</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>	
<b>Is Stack Capped or a Horizontal Release? Horizontal Release.</b>		
<b>Stack Flow Rate (velocity or volumetric flow)<sup>c</sup>: 25,000 CFM @ 16" SP, 70 F, sea level.</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Stack flow velocity was derived from the</b>	

**manufacturer's fan specifications in the document  
titled "Dust Collection System Standards and Summary"**

<b>Stack Temperature<sup>c</sup>: 25.9 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech 45168 Mini Thermo-Anemometer.</b>
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**Name of Person Verifying Stack Parameters: Jim Duncan**

<b>Company: Nunhems USA, Inc.</b>	<b>Position: Maintenance</b>
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<b>Signature:</b>	<b>Date: 04-02-2012</b>
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- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

**STACK PARAMETER VERIFICATION/DOCUMENTATION FORM**

<b>Source/Stack ID: FARR Cartridge Collector No. 1 for Seed Treatment (Film Coating) / FARR 1</b>	<b>Stack Description: The exhaust piping extends several feet vertically from an exhaust fan atop the cartridge collector unit. A 90 degree bend at the end of the piping vents emissions horizontally over the roof of the building.</b>
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<b>Stack Coordinates (UTMs): E</b>	<b>N</b>	<b>Datum:</b>
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<b>Stack Height: 29 feet 11 inches</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>
<b>Groundlevel Elevation:</b>	

<b>Stack Diameter at Point of Release to Atmosphere: 18 inches</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>
<b>Is Stack Capped or a Horizontal Release? Horizontal Release</b>	

Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>3,300 fpm or 5,831 cfm</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>
Stack Temperature <sup>c</sup> : <b>18.7 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>	
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>
Signature:	Date: <b>04-16-2012</b>

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

<b>STACK PARAMETER VERIFICATION/DOCUMENTATION FORM</b>		
Source/Stack ID: <b>FARR Cartridge Collector No. 2 for Seed Treatment (Film Coating) / FARR 2</b>	Stack Description: <b>The exhaust piping extends several feet vertically from an exhaust fan atop the cartridge collector unit. A 90 degree bend at the end of the piping vents emissions horizontally over the roof of the building.</b>	
Stack Coordinates (UTMs): E	N	Datum:
Stack Height: <b>29 feet 8 inches</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>	
Groundlevel Elevation:		
Stack Diameter at Point of	Describe how stack diameter was verified, providing copies of	

Release to Atmosphere: <b>18 inches</b>	any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>
Is Stack Capped or a Horizontal Release? <b>Horizontal Release</b>	
Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>3,100 fpm or 5,478 cfm</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>
Stack Temperature <sup>e</sup> : <b>18.8 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>	
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>
Signature:	Date: <b>04-16-2012</b>

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

<b>STACK PARAMETER VERIFICATION/DOCUMENTATION FORM</b>		
Source/Stack ID: <b>FARR Cartridge Collector No. 3 for Seed Enhancement (Pelleting) / FARR 3</b>	Stack Description: <b>The exhaust piping extends several feet vertically from an exhaust fan atop the cartridge collector unit. A 90 degree bend at the end of the piping vents emissions horizontally over the roof of the building.</b>	
Stack Coordinates (UTMs): E	N	Datum:
Stack Height: <b>29 feet 8 inches</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>	
Groundlevel Elevation:		

<b>Stack Diameter at Point of Release to Atmosphere: 18 inches</b>	<b>Describe how stack diameter was verified, providing copies of any materials used<sup>b</sup>: Verified via direct measurement.</b>
<b>Is Stack Capped or a Horizontal Release? Horizontal Release</b>	
<b>Stack Flow Rate (velocity or volumetric flow)<sup>c</sup>: 3,700 fpm or 6,538 cfm</b>	<b>Describe how stack flow was verified, providing copies of any materials used<sup>d</sup>: Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>
<b>Stack Temperature<sup>e</sup>: 25.4 °C</b>	<b>Describe how stack temperature was verified, providing copies of any materials used<sup>e</sup>: Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>
<b>Name of Person Verifying Stack Parameters: Jim Duncan</b>	
<b>Company: Nunhems USA, Inc.</b>	<b>Position: Maintenance</b>
<b>Signature:</b>	<b>Date: 04-13-2012</b>

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

<b>STACK PARAMETER VERIFICATION/DOCUMENTATION FORM</b>		
<b>Source/Stack ID: FARR Cartridge Collector No. 4 for Seed Enhancement (Pelleting) / FARR 4</b>	<b>Stack Description: The exhaust piping extends several feet vertically from an exhaust fan atop the cartridge collector unit. A 90 degree bend at the end of the piping vents emissions horizontally over the roof of the building.</b>	
<b>Stack Coordinates (UTMs): E</b>	<b>N</b>	<b>Datum:</b>

Stack Height: <b>29 feet 8 inches</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>
Groundlevel Elevation:	
Stack Diameter at Point of Release to Atmosphere: <b>18 inches</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>
Is Stack Capped or a Horizontal Release? <b>Horizontal Release</b>	
Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>4,430 fpm or 7,828 cfm</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>
Stack Temperature <sup>e</sup> : <b>23.6 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>	
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>
Signature:	Date: <b>04-13-2012</b>

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

### STACK PARAMETER VERIFICATION/DOCUMENTATION FORM

Source/Stack ID: <b>Murphy-Rodgers Baghouse for Seed Enhancement (Priming) / MR</b>	Stack Description: <b>The exhaust piping extends several feet vertically from an exhaust fan at the side of the baghouse unit. A 90 degree bend</b>
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<b>BH 1</b>	<b>at the end of the piping vents emissions horizontally over the roof of the building.</b>	
Stack Coordinates (UTMs): E	N	Datum:
Stack Height: <b>30 feet 0 inches</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>	
Groundlevel Elevation:		
Stack Diameter at Point of Release to Atmosphere: <b>12 inches</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> :	
Is Stack Capped or a Horizontal Release? <b>Horizontal Release</b>		
Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>3,900 cfm @ 8" wg</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Stack flow velocity was derived from the manufacturer's fan specifications in an e-mail January 20<sup>th</sup>, 2012.</b>	
Stack Temperature <sup>e</sup> : <b>17.3 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>	
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>		
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>	
Signature:		Date: <b>04-13-2012</b>

- <sup>a.</sup> Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- <sup>b.</sup> The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- <sup>c.</sup> Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- <sup>d.</sup> Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- <sup>e.</sup> Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

## STACK PARAMETER VERIFICATION/DOCUMENTATION FORM

Source/Stack ID: <b>Herding Filtration Unit No. 1 for Seed Enhancement (Powder/Blending) / HERD 1</b>	Stack Description: <b>The exhaust point is a horizontal vent at the top of the south side of the filtration unit.</b>	
Stack Coordinates (UTMs): E	N	Datum:
Stack Height: <b>17 feet 7 inches</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>	
Groundlevel Elevation:		
Stack Diameter at Point of Release to Atmosphere: <b>31 inch by 16 inch vent.</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>	
Is Stack Capped or a Horizontal Release? <b>Horizontal Release on side of baghouse.</b>		
Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>1,716 fpm or 5,910 cfm</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>	
Stack Temperature <sup>e</sup> : <b>21.1 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>	
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>		
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>	
Signature:		Date: <b>04-16-2012</b>

- <sup>a.</sup> Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- <sup>b.</sup> The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- <sup>c.</sup> Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- <sup>d.</sup> Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design

calculations; fan specifications.

- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

<b>STACK PARAMETER VERIFICATION/DOCUMENTATION FORM</b>		
Source/Stack ID: <b>Herding Filtration Unit No. 2 for Seed Enhancement (Pelleting) / HERD 2</b>	Stack Description: <b>The stack runs vertically, alongside and above the filtration unit. The stack is capped on the top.</b>	
Stack Coordinates (UTMs): E	N	Datum:
Stack Height: <b>27 feet 2 inches</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Stack height was verified by direct measurement.</b>	
Groundlevel Elevation:		
Stack Diameter at Point of Release to Atmosphere: <b>30 inches</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Stack diameter was Verified via direct measurement.</b>	
Is Stack Capped or a Horizontal Release? <b>Vertical, Capped Release</b>		
Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>3,500 fpm or 68,722 cfm</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Stack flow velocity was verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>	
Stack Temperature <sup>e</sup> : <b>21.4 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>	
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>		
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>	
Signature:	Date: <b>04-16-2012</b>	

<sup>a</sup> Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;

- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

### STACK PARAMETER VERIFICATION/DOCUMENTATION FORM

<b>Source/Stack ID:</b> <b>FARR Cartridge Collector No. 5 for Warehousing (Bulk Unloading) / FARR 5</b>	<b>Stack Description:</b> <b>The exhaust piping extends several feet vertically from an exhaust fan atop the cartridge collector unit. A 90 degree bend at the end of the piping vents emissions horizontally over the roof of the building.</b>
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Stack Coordinates (UTMs): E	N	Datum:
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Stack Height: <b>21 feet 6 inches</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>
Groundlevel Elevation:	

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Stack Diameter at Point of Release to Atmosphere: <b>18 inches</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>
Is Stack Capped or a Horizontal Release? <b>Horizontal Release</b>	

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Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>6,014 fpm or 10,627 cfm</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>
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Stack Temperature <sup>e</sup> : <b>24.1 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>
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Name of Person Verifying Stack Parameters: **Jim Duncan**

<b>Company: Nunhems USA, Inc.</b>	<b>Position: Maintenance</b>
<b>Signature:</b>	<b>Date: 04-02-2012</b>

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

**STACK PARAMETER VERIFICATION/DOCUMENTATION FORM**

<b>Source/Stack ID:</b> <b>Two propane building heaters ("Q") for temperature and humidity control / Heat 1</b>	<b>Stack Description:</b> <b>Volume source</b>
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<b>Stack Coordinates (UTMs): E</b>	<b>N</b>	<b>Datum:</b>
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<b>Stack Height: Emissions vented out the side of a building or in building's immediate vicinity.</b>	<b>Describe how stack height was verified, providing copies of any materials used<sup>a</sup>:</b>
<b>Groundlevel Elevation:</b>	

<b>Stack Diameter at Point of Release to Atmosphere: NA</b>	<b>Describe how stack diameter was verified, providing copies of any materials used<sup>b</sup>:</b>
<b>Is Stack Capped or a Horizontal Release?</b>	

<b>Stack Flow Rate (velocity or volumetric flow)<sup>c</sup>:</b>	<b>Describe how stack flow was verified, providing copies of any materials used<sup>d</sup>:</b>
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<b>Stack Temperature<sup>e</sup>:</b>	<b>Describe how stack temperature was verified, providing copies of any</b>
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materials used <sup>e</sup> :	
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>	
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>
Signature:	Date: <b>04-02-2012</b>

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

<b>STACK PARAMETER VERIFICATION/DOCUMENTATION FORM</b>	
Source/Stack ID: <b>Four building heaters south of building "L" / Heat 2</b>	Stack Description: <b>Volume source</b>
Stack Coordinates (UTMs): E	N Datum:
Stack Height: <b>Emissions vented out the side of a building or in building's immediate vicinity.</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> :
Groundlevel Elevation:	
Stack Diameter at Point of Release to Atmosphere:	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> :
Is Stack Capped or a Horizontal Release?	
Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> :	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> :

Stack Temperature <sup>c</sup> :	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> :
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>	
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>
Signature:	Date: <b>04-16-2012</b>

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

<b>STACK PARAMETER VERIFICATION/DOCUMENTATION FORM</b>	
Source/Stack ID: <b>Two Enclosed Propane Seed Dryers within building "L" for Seed Warehousing / Dryer 1</b>	Stack Description: <b>Combustion exhaust is vented vertically through a pipe in the roof of the enhancement building.</b>
Stack Coordinates (UTMs): E	N Datum:
Stack Height: <b>30 feet</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>
Groundlevel Elevation:	
Stack Diameter at Point of Release to Atmosphere: <b>18 inches</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> : <b>Verified via direct measurement.</b>
Is Stack Capped or a Horizontal Release? <b>Vertical, Capped</b>	

Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> : <b>2,600 fpm</b>	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>
Stack Temperature <sup>e</sup> : <b>44 °C</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement using and ExTech Thermo-Anemometer (AN100)</b>
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>	
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>
Signature:	Date: <b>04-16-2012</b>

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

<b>STACK PARAMETER VERIFICATION/DOCUMENTATION FORM</b>		
Source/Stack ID: <b>Seed Dryer northwest of building "K" for Seed Warehousing (Drying) / Dryer 2</b>	Stack Description: <b>Combustion emissions are a volume source. Emissions are from 14 vents.</b>	
Stack Coordinates (UTMs): E	N	Datum:
Stack Height: <b>Emissions vented out in building's immediate vicinity.</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> :	
Groundlevel Elevation:		
Stack Diameter at Point of Release to Atmosphere: <b>14 different</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> :	

vents; each vent is 8 inches by 20 inches.	Verified via direct measurement.
Is Stack Capped or a Horizontal Release? Vertical Release from vents. Drying unit resides underneath a covered shelter.	
Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> :	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> :
Stack Temperature <sup>c</sup> :	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> :
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>	
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>
Signature:	Date: <b>04-16-2012</b>

- a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;
- b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.
- c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).
- d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.
- e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

STACK PARAMETER VERIFICATION/DOCUMENTATION FORM		
Source/Stack ID: <b>Box chamber fumigation as part of Warehousing (fumigation) process / Fume</b>	Stack Description: <b>Volume source. Pollutants emitted from one 114 inch by 157 inch boxcar-type door.</b>	
Stack Coordinates (UTMs): E	N	Datum:
Stack Height: <b>Volume Source; Door dimensions are 114 inches by 157 inches</b>	Describe how stack height was verified, providing copies of any materials used <sup>a</sup> : <b>Verified via direct measurement.</b>	

Groundlevel Elevation:		
Stack Diameter at Point of Release to Atmosphere: <b>Volume Source; Door dimensions are 114 inches by 157 inches</b>	Describe how stack diameter was verified, providing copies of any materials used <sup>b</sup> :	
Is Stack Capped or a Horizontal Release? <b>Horizontal Release from door.</b>		
Stack Flow Rate (velocity or volumetric flow) <sup>c</sup> :	Describe how stack flow was verified, providing copies of any materials used <sup>d</sup> :	
Stack Temperature <sup>e</sup> : <b>Ambient air; 10.3 °C at time of measurement.</b>	Describe how stack temperature was verified, providing copies of any materials used <sup>e</sup> : <b>Verified via direct measurement.</b>	
Name of Person Verifying Stack Parameters: <b>Jim Duncan</b>		
Company: <b>Nunhems USA, Inc.</b>	Position: <b>Maintenance</b>	
Signature:	Date: <b>04-16-2012</b>	

a. Values must be distance from a specified ground-level elevation and be accurate to the nearest foot. Acceptable methods include (but not limited to): direct measurement; difference measurement; contractual/purchasing agreements combined with "ball-park" visual verification;

b. The diameter is for the inside of the stack at the point of release to the atmosphere. Acceptable measurement methods are the same as that for stack height.

c. Values used should be representative of typical operational conditions and the location at the point of release to the atmosphere (accounting for in-stack cooling).

d. Acceptable methods include (but not limited to): direct measurement; combustion evaluation; other design calculations; fan specifications.

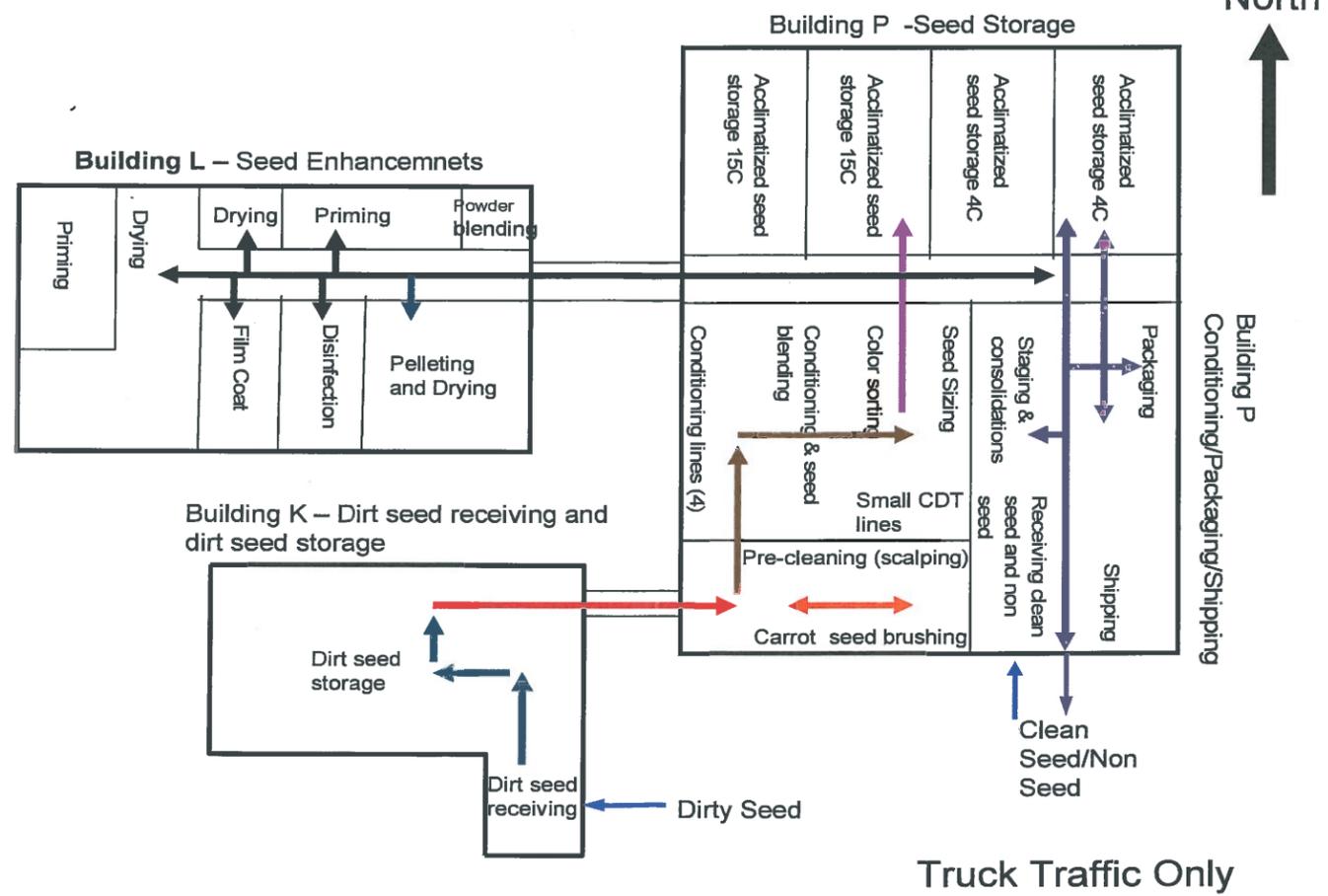
e. Acceptable methods include (but not limited to): direct measurement; measurements from similar sources; engineering calculations.

# **APPENDIX C**

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## **Process Flow Diagram**

# CARROT AND ONION SEED FLOW THROUGH PROCESSING



## **APPENDIX D**

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### **Manufacturer Information**



CAROTHERS AND SON, LTD.  
INDUSTRIAL SYSTEMS

P.O. Box 2709, Eugene, Oregon 97402

Phone: (541) 484-4270

Fax: (541) 484-5681

[www.cslsystems.com](http://www.cslsystems.com)

November 16<sup>th</sup> 2010

Nunhems USA, Inc.  
1200 Anderson Corner Road  
Parma, Idaho 83660  
PH: 1-208-674-4079 office  
FAX: 1-208-674-4379 fax

Attn: Project Engineers  
Re: Dust Collection System Standards and Summary

To whom it may concern,

The purpose of this letter is to summarize our standards and illustrate the "Best Practice" of dust collection system design for features, function and price. These standards were recently utilized at the Nunhems USA vegetable seed processing facility in Parma Idaho. Included in this summary are the complete system specifications for that project.

#### Filter Design:

Carothers & Son Ltd. "CSL" Designs a specific filter for the seed cleaning industry. This filter utilizes a "High Side Inlet" (HEI). This design allows the dust laden air to come in across the sides of the filters in lieu of other manufacturers that enter through the bottom of the filters. With the CSL design, when the pulse-jet cleaning system is activated, there are no opposing forces between inlet air and cleaning air. The effect is a much more fluid cleaning cycle while in operation.

#### Filter Media:

CSL primary filter systems use a traditional filter bag manufactured from 16 ounce singed polyester. This filter media is very cost effective and functions well with screenings and fibrous materials. Cartridge filters are not recommended in seed cleaning processes due to the fibrous material plugging in between the cartridge pleats. 6:1 air to cloth ratios are recommended, although can operate at up to 8:1 AC. Filter bags are installed from the top clean air plenum through hinged top doors. This eliminates maintenance personnel from entering confined space, and allows the worker to avoid direct contact with the dust. A filter cage supports the filter fabric and incorporates a venturi to aid in bag cleaning.

### Filter Cleaning:

CSL primary filter systems use a pulse jet cleaning mechanism. This cleaning system uses a small blast of compressed air (4 SCFM @ 90 psig) to pulse down a row of bags. The pulse is every 15 to 20 seconds using a total of approximately 16 SCFM of compressed air. The cleaning is performed on-line while the system is running. The compressed air is controlled electronically using a sequential timer that activates a solenoid valve which allows a diaphragm valve to open and close in approximately 200 milliseconds. With the CSL filters the valves are located in the clean air plenum keeping them enclosed in a warm dry environment. An added benefit to the valves being located inside is the reduced noise outside the filter and safe ease of access for the worker.

### Fans:

CSL uses an airfoil wheel design for the fans in their dust collection systems. The airfoil wheel is the most energy efficient and produces the least amount of noise. CSL mounts the fan wheel directly to the motor shaft, referred to as arrangement 4. This eliminates additional bearings and a belt drive. The load to the motor shaft is subsequently less than a belt drive, having no belt pull. The other added benefit is there is no drive loss (typically 5%). The fan uses an inlet vane control damper for flow adjustment while not effecting system pressure.

### System Noise Reduction:

When system fan discharge noise is an issue, CSL utilizes their unique fan discharge silencer. These units are designed with a perforated interior and an internal perforated "Bullet". The bullet directs the sound waves perpendicular to the air flow into high density mineral wool insulation that is between the perforated interior and the housing. A single silencer reduces the sound decibels by half. The case study utilized at Nunhems USA in Parma Idaho, the fan operated without the silencer and the sound level was at 97 dBA. With one silencer the sound level was reduced to 85 dBA. Upon adding an additional silencer, the sound level was reduced to 74 dBA.

### Ductwork:

CSL uses flanged, slip fit and quick lock ductwork within the system design. Main trunk sections 36"Ø and larger use angle ring flanges with sprirolock straight duct runs and fabricated transitions and elbows. Gages range from 12 to 16 gage. 34"Ø to 14"Ø use slip fit connections with "TEK" screw connections and silicone seals. Gages range from 16 to 18 gage. 12"Ø to 3"Ø use quick lock connections with smooth wall straight duct runs. Gages range from 20 to 22 gage.

## Spark Detection and Abort Gates:

When returning the air back into the building from a dust collection system, the collected dust **MUST** be checked for flammability and explosibility. In the event that the dust proves to be hazardous, spark detection and abort gates must be used.

The spark detection system uses infrared sensors to detect a spark. This activates an abort gate to close and exhaust the dust collection air to atmosphere outside the building. This protects the building and workers inside the building and shuts off the system to prevent further damage.

The following equipment and components make up the recent Nunhems USA dust collection system:

### **ITEM NO. 1: PRIMARY FILTER SYSTEMS "DC1, DC2, DC3 & DC6" (4) REQ.** **CSL 300TR12HEI Primary Filter**

#### Specifications:

- (300) 6"Ø by 144.5" long filter bags, 5,700 FT<sup>2</sup> of 16 OZ polyester.
- Reverse jet cleaning mechanism will incorporate the use of a 5" internal compressed air header. Valves and solenoids are located inside the filter top plenum to provide excellent access and protection from outside temperatures. 20-30 SCFM @ 90-100 PSIG is required to be supplied and connected by customer.
- Removable diaphragm valves will be activated by electric pilot valves in turn activated by a 120 volt adjustable solid state sequential timer which is shipped loose for customer wiring.
- Top loaded tool free bag and cage removal through hinged lift open top doors. This prevents confined space and aid in maintenance down time eliminating the need to remove several bags to replace one.
- Magnehelic pressure gauge will be included for indication of bag permeability.
- High side inlet is specially designed for extended filter bag life.
- Plenum, Housing and hopper construction will be of 10 GA plate carbon steel. Tubesheet is constructed of 7 GA plate with structural steel reinforcing for system pressure.
- Support legs included for 5' vertical clearance below hopper opening.
- Exterior will be of SP-2 shop finish with enamel paint.

**ITEM NO. 2: PRIMARY FAN SYSTEMS "DC1, DC2, DC3 & DC6" (4) REQ.**  
**CBC SIZE 36½ DESIGN 10 SW CENTRIFUGAL FAN**

Specifications:

- "DC1"- 34,900 CFM @ 16" SP, 70° F, sea level.
- "DC2"- 34,900 CFM @ 16" SP, 70° F, sea level.
- "DC3"- 35,000 CFM @ 16" SP, 70° F, sea level.
- "DC6"- 32,500 CFM @ 16" SP, 70° F, sea level.
- 1,780 RPM, 115 BHP @ 0.075 lb./FT<sup>3</sup> density.
- 125 HP TEFC 1,800 RPM 3/60/460v motor.
- Arrangement 4 constant speed direct drive.
- Inlet vane control damper for volume adjustment.
- Heavy-duty carbon steel construction throughout.

**ITEM NO. 3: PRIMARY FILTER SYSTEM "DC4" (1) REQ.**  
**CSL 110TR12HEI Primary Filter**

Specifications:

- (110) 6"Ø by 144.5" long filter bags, 2,090 FT<sup>2</sup> of 16 OZ polyester.
- Reverse jet cleaning mechanism will incorporate the use of a 5" internal compressed air header. Valves and solenoids are located inside the filter top plenum to provide excellent access and protection from outside temperatures. 20-30 SCFM @ 90-100 PSIG is required to be supplied and connected by customer.
- Removable diaphragm valves will be activated by electric pilot valves in turn activated by a 120 volt adjustable solid state sequential timer which is shipped loose for customer wiring.
- Top loaded tool free bag and cage removal through hinged lift open top doors. This prevents confined space and aid in maintenance down time eliminating the need to remove several bags to replace one.
- Magnehelic pressure gauge will be included for indication of bag permeability.
- High side inlet is specially designed for extended filter bag life.
- Plenum, Housing and hopper construction will be of 12 GA plate carbon steel. Tube sheet is constructed of 10 GA plate with structural steel reinforcing for system pressure.
- Support legs included for 5' vertical clearance below hopper opening.
- Exterior will be of SP-2 shop finish with enamel paint.

**ITEM NO. 4: PRIMARY FAN SYSTEM "DC4" (1) REQ.**  
**CBC SIZE 3300 DESIGN 1904 SW CENTRIFUGAL FAN**

Specifications:

- "DC4"- 12,800 CFM @ 18" SP, 70° F, sea level.
- 1,780 RPM, 47 BHP @ 0.075 lb./FT<sup>3</sup> density.
- 50 HP TEFC 1,800 RPM 3/60/460v motor.
- Arrangement 4 constant speed direct drive.
- Inlet vane control damper for volume adjustment.
- Heavy-duty carbon steel construction throughout.

**ITEM NO. 5: PRIMARY FILTER SYSTEM "DC5" (1) REQ.**  
**CSL 130TR12HEI Primary Filter**

Specifications:

- (130) 6"Ø by 144.5" long filter bags, 2,470 FT<sup>2</sup> of 16 OZ polyester.
- Reverse jet cleaning mechanism will incorporate the use of a 5" internal compressed air header. Valves and solenoids are located inside the filter top plenum to provide excellent access and protection from outside temperatures. 20-30 SCFM @ 90-100 PSIG is required to be supplied and connected by customer.
- Removable diaphragm valves will be activated by electric pilot valves in turn activated by a 120 volt adjustable solid state sequential timer which is shipped loose for customer wiring.
- Top loaded tool free bag and cage removal through hinged lift open top doors. This prevents confined space and aid in maintenance down time eliminating the need to remove several bags to replace one.
- Magnehelic pressure gauge will be included for indication of bag permeability.
- High side inlet is specially designed for extended filter bag life.
- Plenum, Housing and hopper construction will be of 12 GA plate carbon steel. Tube sheet is constructed of 10 GA plate with structural steel reinforcing for system pressure.
- Support legs included for 5' vertical clearance below hopper opening.
- Exterior will be of SP-2 shop finish with enamel paint.

**ITEM NO. 6: PRIMARY FAN SYSTEM "DC5" (1) REQ.**  
**CBC SIZE 36½ DESIGN 1903 SW CENTRIFUGAL FAN**

Specifications:

- 20,000 CFM @ 13" SP, 70° F, sea level.
- 1,780 RPM, 50 BHP @ 0.075 lb./FT<sup>3</sup> density.
- 60 HP TEFC 1,800 RPM 3/60/460v motor.
- Arrangement 4 constant speed direct drive.
- Inlet vane control damper for volume adjustment.
- Heavy-duty carbon steel construction throughout.

**ITEM NO. 7: PRIMARY FILTER SYSTEM "DC7" (1) REQ.**

**CSL 64TR10HEI Primary Filter**

Specifications:

- (64) 6"Ø by 120.5" long filter bags, 1,216 FT<sup>2</sup> of 16 OZ polyester.
- Reverse jet cleaning mechanism will incorporate the use of a 5" internal compressed air header. Valves and solenoids are located inside the filter top plenum to provide excellent access and protection from outside temperatures. 20-30 SCFM @ 90-100 PSIG is required to be supplied and connected by customer.
- Removable diaphragm valves will be activated by electric pilot valves in turn activated by a 120 volt adjustable solid state sequential timer which is shipped loose for customer wiring.
- Top loaded tool free bag and cage removal through hinged lift open top doors. This prevents confined space and aid in maintenance down time eliminating the need to remove several bags to replace one.
- Magnehelic pressure gauge will be included for indication of bag permeability.
- High side inlet is specially designed for extended filter bag life.
- Plenum, Housing and hopper construction will be of 12 GA plate carbon steel. Tube sheet is constructed of 10 GA plate with structural steel reinforcing for system pressure.
- Support legs included for 5' vertical clearance below hopper opening.
- Exterior will be of SP-2 shop finish with enamel paint.

**ITEM NO. 8: PRIMARY FAN SYSTEM "DC7" (1) REQ.**

**CBC SIZE 2000 DESIGN 1903 CENTRIFUGAL FAN**

Specifications:

- "DC7"- 6,800 CFM @ 19" SP, 70° F, sea level.
- 3,450 RPM, 24 BHP @ 0.075 lb./FT<sup>3</sup> density.
- 30 HP TEFC 3,500 RPM 3/60/460v motor.
- Arrangement 4 constant speed direct drive.
- Inlet vane control damper for volume adjustment.
- Heavy-duty carbon steel construction throughout.

**ITEM NO. 9: PRIMARY FILTER SYSTEM "DC8" (1) REQ.**

**CSL 225TR12HEI Primary Filter**

Specifications:

- (225) 6"Ø by 144.5" long filter bags, 4,275 FT<sup>2</sup> of 16 OZ polyester.
- Reverse jet cleaning mechanism will incorporate the use of a 5" internal compressed air header. Valves and solenoids are located inside the filter top plenum to provide excellent access and protection from outside temperatures. 20-30 SCFM @ 90-100 PSIG is required to be supplied and connected by customer.
- Removable diaphragm valves will be activated by electric pilot valves in turn activated by a 120 volt adjustable solid state sequential timer which is shipped loose for customer wiring.
- Top loaded tool free bag and cage removal through hinged lift open top doors. This prevents confined space and aid in maintenance down time eliminating the need to remove several bags to replace one.
- Magnehelic pressure gauge will be included for indication of bag permeability.
- High side inlet is specially designed for extended filter bag life.
- Plenum, Housing and hopper construction will be of 12 GA plate carbon steel. Tubesheet is constructed of 10 GA plate with structural steel reinforcing for system pressure.
- Support legs included for 5' vertical clearance below hopper opening.
- Exterior will be of SP-2 shop finish with enamel paint.

**ITEM NO. 10: PRIMARY FAN SYSTEM "DC8" (1) REQ.**

**CBC SIZE 36½ DESIGN 1904 SW CENTRIFUGAL FAN**

Specifications:

- "DC8"- 25,000 CFM @ 16" SP, 70° F, sea level.
- 1,780 RPM, 88 BHP @ 0.075 lb./FT<sup>3</sup> density.
- 100 HP TEFC 1,800 RPM 3/60/460v motor.
- Arrangement 4 constant speed direct drive.
- Inlet vane control damper for volume adjustment.
- Heavy-duty carbon steel construction throughout.

**ITEM NO. 11: AUGER/AIRLOCK "DC1, 2, 3, 5 & 6 (5) REQ.**

**RAL-10X10-SCR-9-1.5HP ROTARY AIRLOCK DISCHARGER**

Specifications:

- .75 CFR @ 20 RPM for 15 FT<sup>3</sup>/Min. capacities.
- Cast iron housing with carbon steel open-end rotor.
- 1 ½ HP slave driven common drive gear reducer.
- Standard helical discharge screw auger for filter surge unloading.

**ITEM NO. 12: ROTARY AIRLOCK "DC4 & DC8 (2) REQ.**

**RAL-10X10-.5HP**

Specifications:

- 10" inlet with square connection flange.
- Cast iron housing with A36 carbon steel rotor (relieved tips).
- ½ HP TEFC motor with right angle gearbox and chain final drive.
- Safety guards to enclose chain drive.

**ITEM NO. 13: DISCHARGE AIRLOCK "DC7" (1) REQ.**

**CSL FT24-3HP ROTARY AIRLOCK DISCHARGER**

Specifications:

- 5.7 CFR @ 35 RPM for 100 FT<sup>3</sup>/Min. capacity @ 50% loading
- A36 carbon steel housing with carbon steel open-end rotor
- 5 HP drive gear reducer.

**EXTERIOR AND INTERIOR DUCTWORK**

**ITEM NO. 14: SYSTEM DUCTWORK (1) LOT REQ.**

**CSL HD-A36CS-DUCTWORK**

Specifications:

- Exterior systems "DC1,2,3,4,5,6,7 & 8"
- Exterior ductwork connections include from building wall to the collector, from the collector to the fan and from the fan to the building wall.
- Includes all systems return air perforated duct.
- Interior main trunks are 16-18 gauges Spiro-lock with 12-16 gauge elbows and transitions.
- Interior machine branches and riser ducts are "Quick Connect" ductwork with clamps and adjustable ducts.
- Includes all rigid hangers with seismic bracing.
- Includes wall flashing.

**PNEUMATIC CONVEYING SYSTEMS**

**ITEM NO. 15: RELAY BLOWERS (3) REQ.**

**CSL PD-5M-15HP-PACK**

Specifications:

- 465 ACFM, @ 4.0PSIG
- Sutorbilt California series 5M positive displacement blower.
- Premium quality horizontal mounted Stoddard inlet and discharge silencers.
- Oversized Stoddard in-line air filter inlet
- 15HP TEFC motor with constant speed belt drive
- Safety belt guard
- Pressure relief valve

**ITEM NO. 16: RELAY BLOWER PIPING (3) LOTS REQ.**

**CSL-A36-PTB-4.0-11GA-A36**

Specifications:

- A36 CS 4"Ø EW Tubing, 11 GA.
- (3) Bolt HP Couplings every 20' and at transitions.
- Includes 36" CLR A36 CS elbow sweeps.
- Includes airlock tee-injectors for each airlock discharge.
- Includes "Dump Station" inside the building.

**ITEM NO. 17: HIGH SPEED ABORT GATE**

**CSL ABT-HS ABORT GATE**

Specifications:

- (1) Abort gate required for each baghouse.
- High speed electronically activated electromagnet release.
- 120 VAC limit switch indicator.
- 120 VAC input with DC rectifier.
- Chrome plated magnet plate.
- Replaceable bubble gasket atmosphere top seal.
- Zero clearance replaceable crush seal.
- Pre-loaded anti-recoil spring.
- HD SCM style (4) bolt flange bearings.
- A36 carbon steel construction.



**FARR APC**  
*Air Pollution Control*

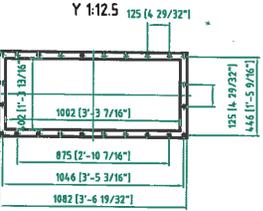
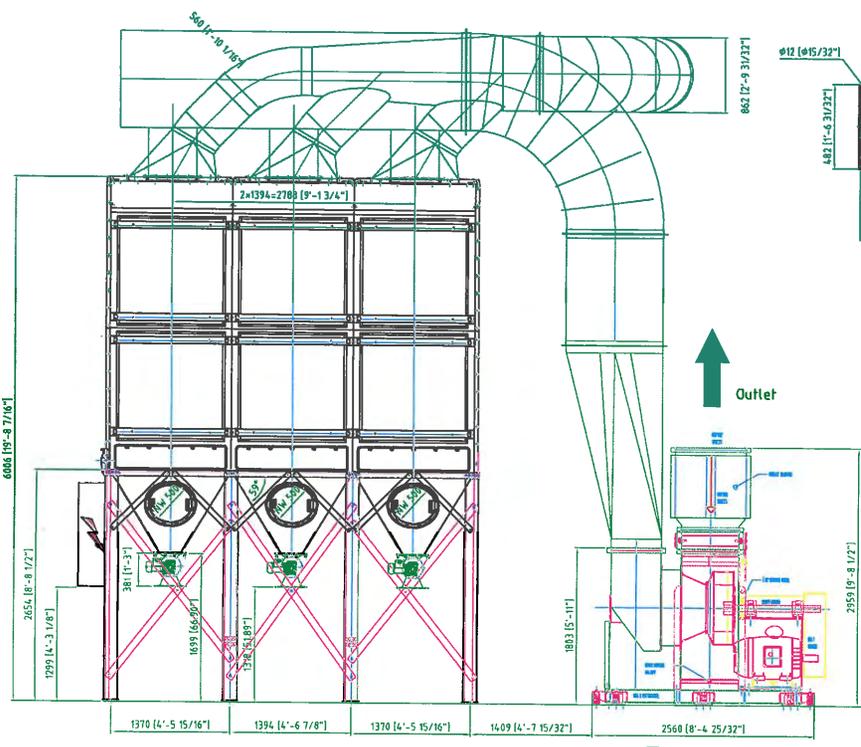
**POLYTECH MEDIA GRAVIMETRIC EFFICIENCY**

<b>PARTICLE SIZE MICRONS</b>	<b>UPSTREAM AVERAGE COUNT</b>	<b>DOWNSTREAM AVERAGE COUNT</b>	<b>PARTICLE SIZE EFFICIENCY</b>
0.3 - 0.4	400816	30	99.993%
0.4 - 0.5	269616	4	99.999%
0.5 - 0.6	147600	1	100.000%
0.6 - 0.8	171872	0	100.000%
0.8 - 1.0	67371	1	99.999%
1.0 - 1.5	88101	0	100.000%
1.5 - 2.0	32078	0	100.000%
2.0 - 3.0	20467	0	100.000%

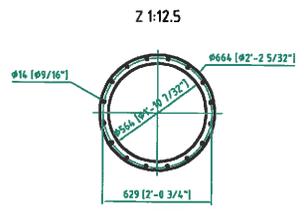
<b>GRAV.CONC. MG/CU.M</b>	<b>6300.00</b>	<b>0.0032</b>	<b>OVERALL GRAVIMETRIC EFFICIENCY: 99.9994%</b>
<b>GR/CU.FT</b>	<b>2.75</b>	<b>0.0000</b>	

Nunhems USA, Inc. Parma, ID  
Herding Filter Units

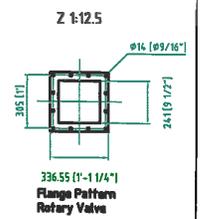
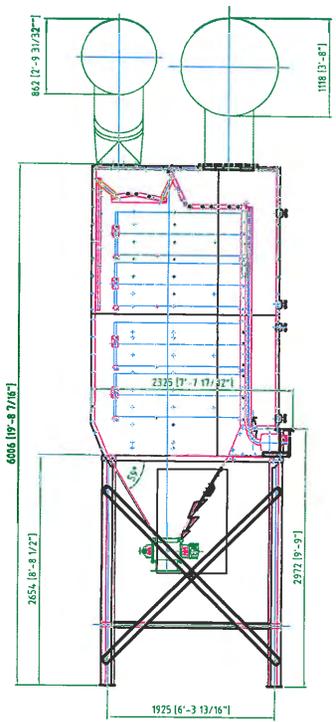
Project:	Type:	CFM - m3/h:	% Efficiency / Air Quality
P-1899	HSL 1500-12/18 SZ	4700 - 7985	<0.1mg/m3 (=0.0004 gr/ft3) or 99.97% @ 0.3micron
P-2112	Delta Sys 1500-144/9 (3KA) GZ	23200 - 39417	<0.1mg/m3 (=0.0004 gr/ft3) or 99.97% @ 0.3micron



Raw Gas Flange Pattern



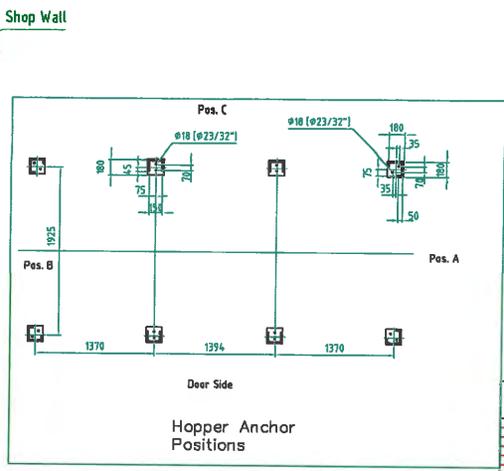
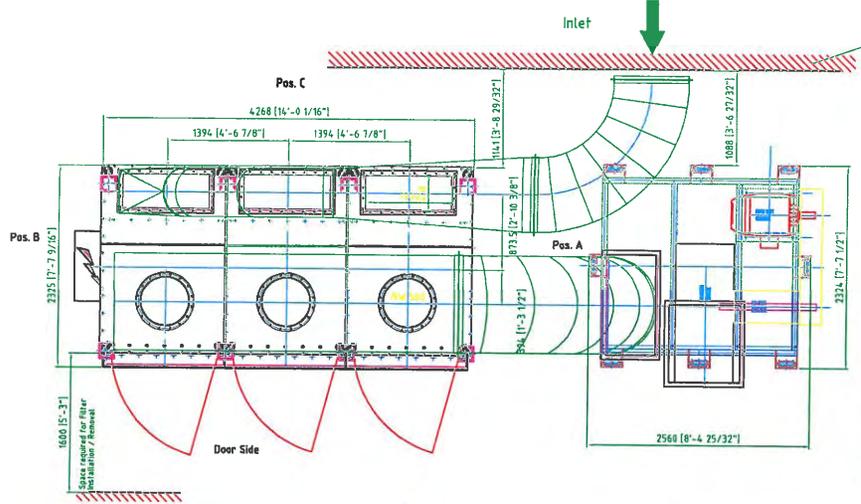
Clean Gas Flange Pattern



Flange Pattern Rotary Valve

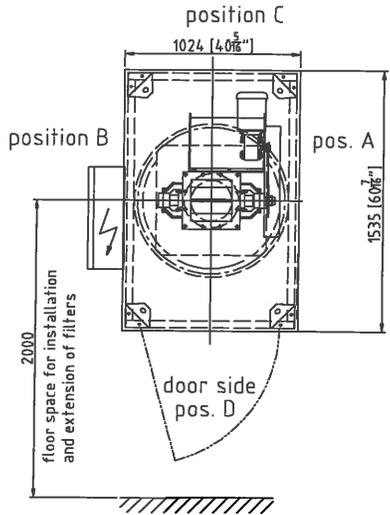
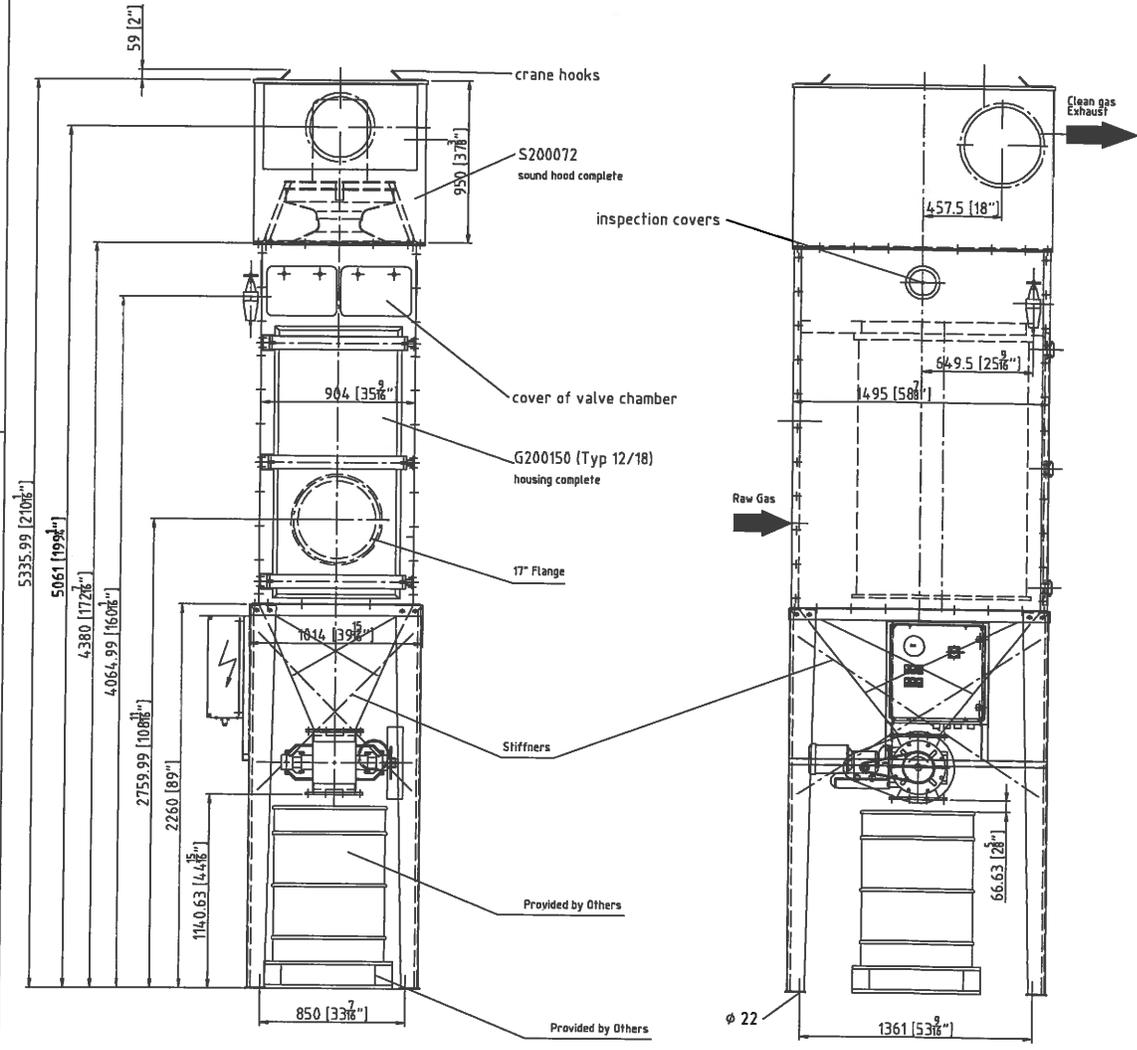
Fan Details  
 Weight [Appr.]: 4100 lbs  
 SP in inches: 16  
 (for further details see fan data sheet)

Filter Unit Details  
 Weight [appr.]: 6000 kg (13,200 lbs)  
 Operation Pressure +/- 0.1 bar  
 Operation Temperature: max. 50°C  
 Outside Installation  
 3x NW 560 nach DIN 24 154-R2  
 3x NW 1000x400 nach DIN 24 193-R2  
 Electrical Panel in Pos. B  
 Air Regulator in Pos. B  
 Paint Color: RAL 2004 (Orange)



### CERTIFIED DRAWING

Wir stellen Zeichnung hersteller und anwender haftbar machen.	Projektleiter Technischer Zeichner Geometer Ingenieur	Herstellungs- Datum 15.07.2014 1530505	Name HERDING - Filteranlage 1530505 1530505
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P-1899

**REQUIRED INFORMATION**

1. CLEAN AIR OUTLET POS D
2. COMPRESSED AIR HOOK UP - POS B
3. ELECTRIC PANEL POS B
4. PAINT COLOR ORANGE

weight (max.) 1450 kg  
 operating pressure: -0,1 / +0,1 bar

**CERTIFIED DRAWING**

Für diese Zeichnung behalten wir uns die Rechte nach DIN 34.		Allgemein-toleranzen		Maßstab: 1:25		Stapel-Info	
				Werkstoff:			
				Reihenl:			
h		Datum	Name	HERDING-Filter unit Typ HSL 1500-8-12/18 SZ			
g		Bearb.					
f		Gepr.					
e		Norm					
d							
c		 August-Berag-Str. 3 D-52224 Jülich Tel.: 09921/630-6		P-1899		Blatt A3 h	
b							
a		Zust	Mitteilung	Datum	Name		

Elektronisch weitergeleitete Daten dürfen nur mit schriftlicher Genehmigung des Urhebers geändert werden!

**From:** Craig Brooks [c.brooks@nrmurphy.com]  
**Sent:** Friday, January 20, 2012 12:24 PM  
**To:** Andrew Wilkin  
**Subject:** Re: Murphy-Rodgers, Inc. Filtration Unit Manufacturer's Specifications  
**Attachments:** MRM-12.PDF

Collector in question...MRM-12-4D...capacity and specs I have attached as gleaned from the brochure...

...stated capacity is 3,900cfm @ 8" wg, 352 sq/ft of filter area with a realized air to filter ratio of approx. 11 to 1

The usual efficiency of dry filter units is 99.9% on particle sizes of 1 micron or larger. The efficiency as stated is after an initial run in period and the filters have had sufficient time to accumulate a dust cake.

Should you require anything further do not hesitate to call on us...

Craig Brooks  
N. R. Murphy Limited  
430 Franklin Blvd.,  
Cambridge, Ontario,  
N1R 8G6  
phone: 1-519-621-6210 x 207  
fax: 1-519-621-2841  
website: [www.nrmurphy.com](http://www.nrmurphy.com)

----- Original Message -----

**From:** [Andrew Wilkin](mailto:Andrew.Wilkin@nrmurphy.com)  
**To:** [c.brooks@nrmurphy.com](mailto:c.brooks@nrmurphy.com)  
**Cc:** [Scott Labbe](mailto:Scott.Labbe@nrmurphy.com) ; [Shane Roe](mailto:Shane.Roe@nrmurphy.com) ; [Dan Heiser](mailto:Dan.Heiser@nrmurphy.com)  
**Sent:** Tuesday, January 17, 2012 5:25 PM  
**Subject:** Murphy-Rodgers, Inc. Filtration Unit Manufacturer's Specifications

Craig,

I'm e-mailing you as a follow-up to our recent phone conversation regarding the identification and manufacturing information request for the Murphy-Rodgers, Inc. filtration unit depicted in the attached photos. These photos were taken at the Nunhems USA, Inc. facility in Parma, ID. If possible, would you please identify this unit, its associated rating (i.e. % control efficiency or grains/dscf) and the manufacturer's guarantee? Your assistance is appreciated.

Model #: MRM 12 4 D  
Serial #: 1858

If you require any additional information, please do not hesitate to call or email me.

Thanks!

**Andrew R. Wilkin**

JBR Environmental Consultants, Inc.

7669 West Riverside Drive, Suite 101

Boise, ID 83714

208-853-0883 (phone)

208-853-0884 (fax)

208-901-2917 (cell)

[www.jbrenv.com](http://www.jbrenv.com)



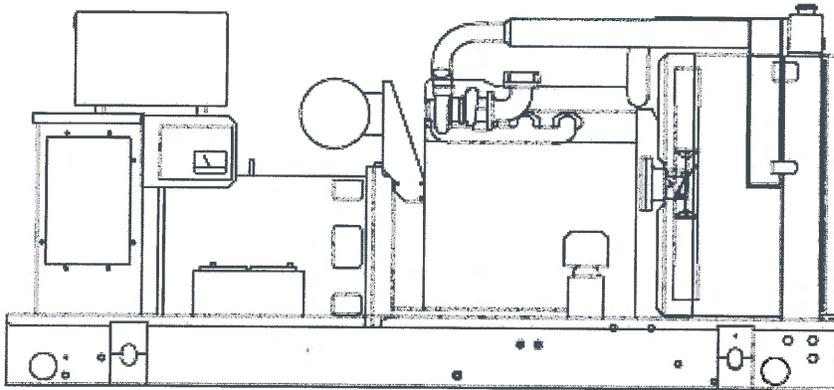
creating solutions for today's environment

# SD080

## Liquid Cooled Diesel Engine Generator Sets

Standby Power Rating  
80KW 60 Hz / 80KVA 50 Hz

Prime Power Rating  
64KW 60 Hz / 64KVA 50 Hz



Power Matched  
**GENERAC 4.8DTA ENGINE**  
Naturally Aspirated

## FEATURES

- **INNOVATIVE DESIGN & PROTOTYPE TESTING** are key components of GENERAC'S success in "IMPROVING POWER BY DESIGN." But it doesn't stop there. Total commitment to component testing, reliability testing, environmental testing, destruction and life testing, plus testing to applicable CSA, NEMA, EGSA, and other standards, allows you to choose GENERAC POWER SYSTEMS with the confidence that these systems will provide superior performance.
- **TEST CRITERIA:**
  - ✓ PROTOTYPE TESTED
  - ✓ SYSTEM TORSIONAL TESTED
  - ✓ ELECTRO-MAGNETIC INTERFERENCE
  - ✓ NEMA MG1 EVALUATION
  - ✓ MOTOR STARTING ABILITY
  - ✓ SHORT CIRCUIT TESTING
  - ✓ UL COMPLIANCE AVAILABLE
- **SOLID-STATE, FREQUENCY COMPENSATED VOLTAGE REGULATION.** This state-of-the-art power maximizing regulation system is standard on all Generac models. It provides optimized
- **FAST RESPONSE** to changing load conditions and **MAXIMUM MOTOR STARTING CAPABILITY** by electronically torque-matching the surge loads to the engine.
- **SINGLE SOURCE SERVICE RESPONSE** from Generac's dealer network provides parts and service know-how for the entire unit, from the engine to the smallest electronic component. You are never on your own when you own a GENERAC POWER SYSTEM.
- **ECONOMICAL DIESEL POWER.** Low cost operation due to modern diesel engine technology. Better fuel utilization plus lower cost per gallon provide real savings.
- **LONGER ENGINE LIFE.** Generac heavy-duty diesels provide long and reliable operating life.
- **GENERAC TRANSFER SWITCHES, SWITCHGEAR AND ACCESSORIES.** Long life and reliability is synonymous with GENERAC POWER SYSTEMS. One reason for this confidence is that the GENERAC product line includes its own transfer systems, accessories, switchgear and controls for total system compatibility.

# GENERAC®

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## POWER SYSTEMS, INC.

# APPLICATION & ENGINEERING DATA

SD080

## GENERATOR SPECIFICATIONS

TYPE .....	Four-pole, revolving field
ROTOR INSULATION .....	Class H
STATOR INSULATION .....	Class H
TOTAL HARMONIC DISTORTION .....	<3%
TELEPHONE INTERFERENCE FACTOR (TIF) .....	<50
ALTERNATOR .....	Self-ventilated and drip-proof
BEARINGS (PRE-LUBED & SEALED) .....	1
COUPLING .....	Direct, Flexible Disc
LOAD CAPACITY (STANDBY) .....	100%
LOAD CAPACITY (PRIME) .....	110%

**NOTE:** Emergency loading in compliance with NFPA 99, NFPA 710, paragraph 5-13.2.c. Generator rating and performance in accordance with ISO8528-5, B55514, SAE J1349, ISO3046 and DIN6271 standards.

### EXCITATION SYSTEM

<input type="checkbox"/> BRUSHLESS .....	Magnetically coupled DC current / Eight-pole exciter w/ battery-driven field boost / Mounted outboard of main bearing /
<input type="checkbox"/> PERMANENT MAGNET EXCITER .....	Eighteen pole exciter / Magnetically coupled DC current / Mounted outboard of main bearing /
REGULATION .....	Solid-state / ±1% regulation /

## GENERATOR FEATURES

- Four pole, revolving field generator, directly connected to the engine shaft through a heavy-duty, flexible disc for permanent alignment.
- Generator meets the temperature rise standards for class "F" insulation as defined by NEMA MG1-32.6, while the insulation system meets the requirements for the higher class "H" rating.
- All prototype models have passed a three-phase symmetrical short circuit test to assure system protection and reliability.
- All prototype models are tested for motor starting ability by measuring the instantaneous voltage dip with a waveform data acquisition system.
- All models utilize an advanced wire harness design for reliable interconnection within the circuitry.
- Magnetic circuit, including amortisseur windings, tooth and skewed stator design, provides a minimal level of waveform distortion and an electromagnetic interference level which meets accepted requirements for standard AM radio, TV, and marine radio telephone applications.
- Voltage waveform deviation, total harmonic content of the AC waveform, and T.I.F. (Telephone Influence Factor) have been evaluated to acceptable standards in accordance with NEMA MG1-32.
- Alternator is self-ventilated and drip-proof constructed.
- Fully life-tested protective systems, including "field circuit and thermal overload protection" and optional main-line circuit breakers capable of handling full output capacity.
- System Torsional acceptability confirmed during Prototype Testing.

Noting defined on Standby. Applicable for supplying emergency power for the duration of the US type power outage. However, our capability does not extend to the rating. (A) Rating in accordance with ISO8528-5, ISO3046 and DIN6271. (B) Prime, limited duration rating. (C) Prime, applicable for supplying double power in lieu of normally purchased power. (D) Prime power for the maximum power for 1 hour in 12 hours. (A) Rating in accordance with B55514, SAE J1349, ISO3046 and DIN6271.

## ENGINE SPECIFICATIONS

MAKE .....	GENERAC/DEUTZ
MODEL .....	BF4M1013EC Deutz
CYLINDERS .....	4
DISPLACEMENT .....	4.5 Liter (283 cu.in.)
BORE .....	108 mm (4.25 in.)
STROKE .....	130 mm (5.12 in.)
COMPRESSION RATIO .....	19.9:1
INTAKE AIR .....	Turbocharged/Aftercooled
NUMBER OF MAIN BEARINGS .....	5
CONNECTING RODS .....	4-Drop Forged Steel
CYLINDER HEAD .....	Cast Iron
PISTONS .....	4- Aluminum Alloy
CRANKSHAFT .....	Die Forged, Induction Hardened Steel

### VALVE TRAIN

LIFTER TYPE .....	Solid
INTAKE VALVE MATERIAL .....	Heat Resistant Steel
EXHAUST VALVE MATERIAL .....	Heat Resistant Steel
HARDENED VALVE SEATS .....	Replaceable

### ENGINE GOVERNOR

<input type="checkbox"/> ELECTRONIC .....	Standard
FREQUENCY REGULATION, NO-LOAD TO FULL LOAD ...	0.5%
STEADY STATE REGULATION .....	0.25%

### LUBRICATION SYSTEM

TYPE OF OIL PUMP .....	Gear
OIL FILTER .....	Full flow, Cartridge
CRANKCASE CAPACITY .....	11 Liters (11.7 qts.)

### COOLING SYSTEM

TYPE OF SYSTEM .....	Pressurized, Closed Recovery
WATER PUMP .....	Pre-Lubed, Self-Sealing
TYPE OF FAN .....	Pusher
NUMBER OF FAN SLADES .....	6
DIAMETER OF FAN .....	550 mm (22 in.)
COOLANT HEATER .....	120V, 1600 W

### FUEL SYSTEM

FUEL .....	#20 Fuel (Min Cetane #40) (Fuel should conform to ASTM Spec.)
FUEL FILTER .....	5 Micron
FUEL INJECTION PUMP .....	Bosch, Unit type cam driven
FUEL PUMP .....	Mechanical
INJECTORS .....	Multi-Hole, Nozzle Type
ENGINE TYPE .....	Direct Injection
FUEL LINE (Supply) .....	6.35 mm (0.25 in.)
FUEL RETURN LINE .....	6.35 mm (0.25 in.)

### ELECTRICAL SYSTEM

BATTERY CHARGE ALTERNATOR .....	20 Amps at 12 V
STARTER MOTOR .....	12 V
RECOMMENDED BATTERY .....	12 Volt, 50 A.H., 27F
GROUND POLARITY .....	Negative

SD080

**OPERATING DATA**

	STANDBY		PRIME	
	SD080		SD080	
<b>GENERATOR OUTPUT VOLTAGE/KW-60Hz</b>		<u>Rated AMP</u>		<u>Rated AMP</u>
120/240V, 1-phase, 1.0 pf	80	333	84	267
120/208V, 3-phase, 0.8 pf	80	278	84	222
120/240V, 3-phase, 0.8 pf	80	241	84	192
277/480V, 3-phase, 0.8 pf	80	120	84	96
600V, 3-phase, 0.8 pf	0	96	84	77
<b>GENERATOR OUTPUT VOLTAGE/KVA-50Hz</b>		<u>Rated AMP</u>		<u>Rated AMP</u>
110/220V, 1-phase, 1.0 pf	84	291	51.2	233
115/200V, 3-phase, 0.8 pf	80	231	84	165
100/200V, 3-phase, 0.8 pf	80	231	84	165
231/400V, 3-phase, 0.8 pf	80	115	84	92
460V, 3-phase, 0.8 pf	80	96	84	77
<b>MOTOR STARTING KVA</b>				
Maximum at 35% instantaneous voltage dip				
with standard alternator, 50/60 Hz	<u>208/240/415V</u>	<u>480V</u>	<u>208/240/415V</u>	<u>480V</u>
with optional alternator, 50/60 Hz	134/164 250/281	158/193 271/331	134/164 230/261	158/193 271/331
<b>FUEL</b>				
Fuel consumption—50 Hz	Load	<u>25%</u> <u>50%</u> <u>75%</u> <u>100%</u>	<u>25%</u> <u>50%</u> <u>75%</u> <u>100%</u>	
	gal./hr.	1.6   3.2   4.5   5.9	1.4   2.8   3.6   4.7	
	liters/hr.	6.7   12.3   17.2   22.3	5.4   9.8   13.5   17.9	
Fuel consumption—60 Hz	gal./hr.	1.5   2.9   3.9   5.1	1.2   2.2   3.1   4.1	
	liters/hr.	5.8   10.6   14.8   19.2	4.6   8.5   11.8   15.4	
Fuel pump lift		40'	40'	
<b>COOLING</b>				
Coolant capacity	System - US gal. (lit.)	4.5 (17.0)	4.5 (17.0)	
	Engine - US gal. (lit.)	2.75 (10.4)	2.75 (10.4)	
Coolant flow/min.	50 Hz - US gal. (lit.)	19 (72)	19 (72)	
	50 Hz - US gal. (lit.)	16 (60)	16 (60)	
Heat rejection to coolant 60 Hz full load	BTU/hr.	223,688	189,493	
Heat rejection to coolant 50 Hz full load	BTU/hr.	191,330	157,848	
Inlet air	60 Hz - cfm (m³/min.)	7500 (212.4)	7500 (212.4)	
	50 Hz - cfm (m³/min.)	6225 (176.3)	6225 (176.3)	
Max. air temperature to radiator	°C (°F)	50 (122)	50 (122)	
Max. ambient temperature	°C (°F)	54 (130)	54 (130)	
<b>COMBUSTION AIR REQUIREMENTS</b>				
Flow at rated power	60 Hz - cfm (m³/min.)	295 (8.4)	236 (6.7)	
	50 Hz - cfm (m³/min.)	246 (7.0)	197 (5.6)	
<b>EXHAUST</b>				
Exhaust flow at rated output 60 Hz	cfm (m³/min.)	830 (23.5)	706 (20.0)	
	50 Hz - cfm (m³/min.)	692 (19.6)	596 (16.7)	
Max recommended back pressure	Hg	3.3	3.0	
Exhaust temperature 60 Hz (full load)	°F (°C)	1360 (571)	954 (512)	
Exhaust outlet size		2.5" O.D. Turbo	3.0" O.D. Muffler	
<b>ENGINE</b>				
Rated RPM	60 Hz / 50 Hz	1800 / 1500	1800 / 1500	
HP at rated KW	60 Hz / 50 Hz	125 / 104	100 / 83	
Piston speed	60 Hz - ft./min. (m/min.)	1536 (469)	1536 (468)	
	50 Hz - m/min.	393	393	
BMEP	60 Hz / 50 Hz - psi	139 / 137	151 / 150	
<b>DERATION FACTORS</b>				
Temperature				
	5% for every 10°C above - °C	25	25	
	2.77% for every 10°F above - °F	77	77	
Altitude				
	1.3% for every 100 m above - m	1524	1524	
	3.5% for every 1000 ft. above - ft.	5000	5000	



**Power  
Generation**

# EPA Tier 2 Exhaust Emission Compliance Statement 1500DQGAB 60 Hz Diesel Generator Set

### Compliance Information:

The engine used in this generator set complies with the Tier 2 emissions limits of U.S EPA New Source Performance Standards for Stationary Emergency engines under the provisions of 40 CFR 60 Subpart IIII when tested per ISO 8178 D2.

Engine Manufacturer:	Cummins Inc
EPA Certificate Number:	CEX-STATCI-11-04
Effective Date:	06/08/2010
Date Issued:	06/08/2010
EPA Diesel Engine Family:	BCEXL050.AAD
CARB Executive Order:	

### Engine Information:

Model:	Cummins Inc QSK50-G4 NR2	Bore:	6.25 in. (159 mm)
Engine Nameplate HP:	2220		
Type:	4 Cycle, 60°V, 16 Cylinder Diesel	Stroke:	6.25 in. (159 mm)
Aspiration:	Turbocharged and Low Temperature Aftercooled	Displacement:	3067 cu. in. ( 50.2 liters )
Compression Ratio:	15.0:1		
Emission Control Device:	Turbocharged and Low Temperature Aftercooled		

### U.S. Environmental Protection Agency NSPS Stationary Emergency Tier 2 Limits

(All values are Grams per HP-Hour)

<u>COMPONENT</u>	
NOx + HC (Oxides of Nitrogen as NO2 + Non Methane Hydrocarbons)	4.77
CO (Carbon Monoxide)	2.61
PM (Particulate Matter)	0.15

Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

**EMISSIONS DATA [S9L01887]**

**APRIL 18, 2012**

(S9L01887)-ENGINE (C9E01098)-GENSET (G5A02403)-GENERATOR

For Help Desk Phone Numbers [Click here](#)

## Engine Emissions Data

For Emissions feedback and questions contact: [engine\\_certification@cat.com](mailto:engine_certification@cat.com)

\*\*This link is case sensitive.\*\*

[Emissions Definitions](#)

This emission data is Caterpillar's best estimate for this rating. If actual emissions are required then an emission test needs to be run on your engine.

Serial Number (Machine)	
Serial Number (Engine)	<b>S9L01887</b>
Sales Model	C9
Build Date	2008-06-25
Interlock Code Progression	No Interlock Code Progression
<b>As Shipped Data</b>	
Engine Arrangement Number	2575707
Test Spec Number	0K6612
Certification	EPA/CARB @ Constant speed
Labeled Model Year	2008
Family Code	8CPXL08.8ESK
Family Certification	EPA Tier 3
Family Certification	
Family Certification	
Flash File	3170727
Flash File Progression	3838631
CORR FL Power at RPM	398 HP (297.0 KW ) at 1800 rpms
Advertised Power	398hp 1,800RPM
Total Displacement	

This is not an official emission certificate. This is for emission data information only.

Caterpillar Confidential: **Green**  
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 Current Date: Wednesday, April 18, 2012 3:27:41 PM  
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## 1 Identification of substance

### Product details

Trade name: **C31**

Article number: C031 - IU

Application of the substance / the preparation: Coating material

Manufacturer/Supplier: INCOTEC  
1293 Harkins Road  
Salinas, CA 93901  
Phone: 831-784-1564  
Fax: 831-757-9404

Further information available from: msds@incotec.com

Emergency information: IPR Department  
Telephone: 831-784-6683  
Fax: 831-424-8613  
Or consult a local intoxication information center.

## 2 Composition/Data on components

### Chemical characterization

Description: Mixture of the substances listed below with nonhazardous additions.

#### Dangerous components:

CAS: 1317-65-3	Calcium carbonate, natural, ground		50-100%
CAS: 61790-53-2	Diatomaceous earth (Silica-Amorphous)		25-50%
CAS: 12001-26-2	Mica		1-10%
CAS: 14808-60-7 RTECS: VV 7330000	Quartz (SiO <sub>2</sub> )	Warning: ⚠ 3.9/2	1-10%
CAS: 14464-46-1 RTECS: VV 7325000	crystalite	Warning: ⚠ 3.9/2	1-10%

## 3 Hazards identification

### Hazard description:

Not applicable.

### Information pertaining to particular dangers for man and environment:

The product does not have to be labelled due to the calculation procedure of international guidelines.

### Classification system:

The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.

### NFPA ratings (scale 0 - 4)



Health = 0  
Fire = 0  
Reactivity = 0

### HMIS-ratings (scale 0 - 4)



HEALTH 0 Health = 0  
FIRE 0 Fire = 0  
REACTIVITY 0 Reactivity = 0

### GHS label elements

Void

## 4 First aid measures

### General information:

No special measures required.

### After inhalation:

Supply fresh air; consult doctor in case of complaints.

### After skin contact:

Generally the product does not irritate the skin.

(Contd. on page 2)

Trade name: **C31**

(Contd. of page 1)

**After eye contact:** Rinse opened eye for several minutes under running water,  
**After swallowing:** If symptoms persist consult doctor.

**5 Fire fighting measures**

**Suitable extinguishing agents:** CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.  
**For safety reasons unsuitable extinguishing agents:** Not applicable  
**Special hazards caused by the material, its products of combustion or resulting gases:** Not applicable.  
**Protective equipment:** Mouth respiratory protective device.  
**Additional information:** Collect contaminated fire fighting water separately. It must not enter the sewage system.

**6 Accidental release measures**

**Person-related safety precautions:** Avoid formation of dust.  
Mount respiratory protective device.  
**Measures for environmental protection:** No special measures required.  
**Measures for cleaning/collecting:** Pick up mechanically.  
**Additional information:** No dangerous substances are released.

**7 Handling and storage**

**Handling:**  
**Information for safe handling:** Take note of emission threshold.  
Prevent formation of dust.  
Provide suction extractors if dust is formed.  
**Information about protection against explosions and fires:** No special measures required.  
**Storage:**  
**Requirements to be met by storerooms and containers:** No special requirements.  
**Information about storage in one common storage facility:** Not required.  
**Further information about storage conditions:** None.  
**Specific applications:** Not applicable.

**8 Exposure controls and personal protection**

**Additional information about design of technical systems:** Provide adequate dust suction at working place.

<b>Components with limit values that require monitoring at the workplace:</b>	
<b>1317-65-3 Calcium carbonate, natural, ground</b>	
TLV	10 mg/m <sup>3</sup>
<b>61790-53-2 Diatomaceous earth (Silica-Amorphous)</b>	
PEL	20mppcf or 80mg/m <sup>3</sup> /%SiO <sub>2</sub> mg/m <sup>3</sup>
REL	6 mg/m <sup>3</sup>
TLV	TLV withdrawn

(Contd. on page 3)

Trade name: **C31**

(Contd. of page 2)

<b>12001-26-2 Mica</b>	
PEL	20 mppcf ppm <1% crystalline silica
REL	3* mg/m <sup>3</sup> *respirable dust; containing < 1% quartz
TLV	3* mg/m <sup>3</sup> *as respirable fraction
<b>14808-60-7 Quartz (SiO<sub>2</sub>)</b>	
PEL	see Quartz listing
REL	0.05* mg/m <sup>3</sup> *respirable dust
TLV	0.025* mg/m <sup>3</sup> *as respirable fraction
<b>14464-46-1 cristobalite</b>	
PEL	½ value from respirable dust formulae for Quartz
REL	0.05* mg/m <sup>3</sup> *respirable dust
TLV	0.025* mg/m <sup>3</sup> *as respirable fraction

**Additional information:**

The lists that were valid during the creation were used as basis.

**Personal protective equipment:  
General protective and hygienic  
measures:**

The usual precautionary measures for handling chemicals should be followed.

**Breathing equipment:**

Filter P2

**Protection of hands:**

Rubber gloves

**Eye protection:**

Safety glasses

**Body protection:**

Light weight protective clothing

**9 Physical and chemical properties****General Information**

<b>Form:</b>	Powder
<b>Color:</b>	Whitish
<b>Odor:</b>	Odorless

**Change in condition**

<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	2201°C (3994°F)

**Flash point:** Not applicable.**Flammability (solid, gaseous):** Product is not flammable.**Auto Igniting:** Product is not selfigniting.**Danger of explosion:** Product does not present an explosion hazard.**Explosion limits:  
Oxidizing properties** Product is not oxidative.**Vapor pressure:** Not applicable.**Density at 20°C (68°F):** 2.45 g/cm<sup>3</sup>

(Contd. on page 4)

Trade name: **C31**

(Contd. of page 3)

<b>Solubility in / Miscibility with Water:</b>	Insoluble.
<b>pH-value:</b>	No data available.
<b>Viscosity:</b>	
<b>Dynamic:</b>	No data available.
<b>Solvent content:</b>	
<b>Organic solvents:</b>	0.0 %

**10 Stability and reactivity**

<b>Thermal decomposition / conditions to be avoided:</b>	No decomposition if used according to specifications.
<b>Materials to be avoided:</b>	Not applicable.
<b>Dangerous reactions</b>	No dangerous reactions known.
<b>Dangerous products of decomposition:</b>	No dangerous decomposition products known.

**11 Toxicological information**

<b>Acute toxicity:</b>	No acute toxic effects known.
<b>LD/LC50 values that are relevant for classification:</b>	No data available.
<b>Primary irritant effect:</b>	
<b>on the skin:</b>	No irritant effect.
<b>on the eye:</b>	No irritant effect.
<b>Sensitization:</b>	No sensitizing effects known.
<b>Subacute to chronic toxicity:</b>	Prolonged exposure to dust above TLV/REL value may lead to silicosis or even lung cancer.
<b>Additional toxicological information:</b>	When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information available to us.
<b>Most likely routes of exposure</b>	By inhalation.

**12 Ecological information**

<b>Behavior in environmental systems:</b>	
<b>Mobility and bioaccumulation potential:</b>	Does not accumulate in organisms
<b>Ecotoxicological effects:</b>	
<b>Acquatic toxicity:</b>	No data available.
<b>Other information:</b>	No data available.
<b>Additional ecological information:</b>	
<b>General notes:</b>	Generally not hazardous for water

**13 Disposal considerations**

<b>Product:</b>	
<b>Recommendation:</b>	Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

(Contd. on page 5)

Trade name: **C31**

(Contd. of page 4)

**Uncleaned packagings:  
Recommendation:**

Dispose of packaging according to regulations on the disposal of packagings.

**14 Transport information**

**DOT regulations:**  
Hazard class: -

**Land transport ADR/RID (cross-border):**  
ADR/RID class: -

**Maritime transport IMDG:**  
IMDG Class: -  
Marine pollutant: No

**Air transport ICAO-TI and IATA-DGR:**  
ICAO/IATA Class: -  
UN "Model Regulation": -

**15 Regulations**

**Sara**

**Section 355 (extremely hazardous substances):**  
None of the ingredients is listed.

**Section 313 (Specific toxic chemical listings):**  
None of the ingredients is listed.

**TSCA (Toxic Substances Control Act):**  
All ingredients are listed.

**Proposition 65**

**Chemicals known to cause cancer:**

14808-60-7	Quartz (SiO <sub>2</sub> )
14464-46-1	cristobalite

**Chemicals known to cause reproductive toxicity for females:**  
None of the ingredients is listed.

**Chemicals known to cause reproductive toxicity for males:**  
None of the ingredients is listed.

**Chemicals known to cause developmental toxicity:**  
None of the ingredients is listed.

**Carcinogenic categories**

**EPA (Environmental Protection Agency)**  
None of the ingredients is listed.

<b>IARC (International Agency for Research on Cancer)</b>		
61790-53-2	Diatomaceous earth (Silica-Amorphous)	3
14808-60-7	Quartz (SiO <sub>2</sub> )	1
14464-46-1	cristobalite	1
	Cristalline silica (respirable)	1

(Contd. on page 6)



Trade name: **C31**

(Contd. of page 5)

<b>NTP (National Toxicology Program)</b>		
14808-60-7	Quartz (SiO <sub>2</sub> )	K
14464-46-1	crystalite	K
	Cristalline silica (respirable)	K
<b>TLV (Threshold Limit Value established by ACGIH)</b>		
14808-60-7	Quartz (SiO <sub>2</sub> )	A2
14464-46-1	crystalite	A2
	Cristalline silica (respirable)	A2
<b>NIOSH-Ca (National Institute for Occupational Safety and Health)</b>		
14808-60-7	Quartz (SiO <sub>2</sub> )	
14464-46-1	crystalite	
	Cristalline silica (respirable)	
<b>OSHA-Ca (Occupational Safety &amp; Health Administration)</b>		
None of the ingredients is listed.		

**Product related hazard informations:**

Observe the general safety regulations when handling chemicals.  
The product is not subject to identification regulations according to directives on hazardous materials.

**16 Other information**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

**Department issuing MSDS:**  
**Contact:**

Department ITR.  
msds@incotec.com

**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
RID: Règlement International concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
IMDG: International Maritime Code for Dangerous Goods  
DOT: US Department of Transportation  
IATA: International Air Transport Association  
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)  
ICAO: International Civil Aviation Organization  
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)  
GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
ACGIH: American Conference of Governmental Industrial Hygienists  
NFPA: National Fire Protection Association (USA)  
HMIS: Hazardous Materials Identification System (USA)

\* Data compared to the previous version altered.

First edition.



## Dicalite 476 GENERAL INFORMATION

### **SPECIFICATIONS**

Mineralogical.....	Perlite—Amorphous Silicate
Physical Form.....	Dry Powder
Particle Shape.....	Semi-Polyhedron/Plate-like
Color.....	White
Permeability Flowrate.....	80.0 - 95.0 0.64-0.9 Darcy
Permeability Cake Density.....	13.5 – 16.5
Max. Wt. % Retained on U.S. Std. Sieve No. 40 (1) .....	2.0
Max. Wt. % Retained on U.S. Std. Sieve No. 140 (1).....	2.0 – 14.0

### **INHERENT PROPERTIES (NOT PART OF SPECIFICATION)**

Bulk Density (Dry), Lbs. / ft <sup>3</sup> .....	7.0 - 9.0
PH, (10% slurry).....	5.0 – 8.0
Oil Absorption, lbs / 100 lbs.....	200 – 250
Water Absorption, lbs / 100 lbs.....	300 - 360
Moisture Content, WT. %.....	<1.5
mL Float.....	10.0 – 25.0

### **OTHER INFORMATION**

Shipping Points.....	Crawfordsville, IN
Packaging.....	50 lbs paper bag

(1) Rotap Screens

For further information please contact your Dicapert Sales District or our Technical Service at (575) 838-4436

**DICALITE® PERLITE FILTER AIDS**

**DATA SHEET Nr. 5: Dicalite 478**

**SPECIFICATIONS:**

MINERALOGICAL .....	Perlite: Amorphous Silicate
Physical Form .....	Dry powder
Particle Shape .....	Multihedral Plates
Color .....	White to Off-white
Flowrate (PFRv) .....	60 - 110
Cake density (wet).....	12.5 - 15.2 lbs/ft <sup>3</sup>
Float .....	max. 10 (ml/20g)

**INHERENT PROPERTIES (NOT PART OF THE PRODUCT SPECIFICATIONS):**

Moisture content .....	Lower than 1.7 g%
pH .....	min. 5.0 - max. 9.0
Softening point .....	900 °C - 1100 °C
Bulk density .....	
Alpha quartz content .....	Lower than 0.1 %

**OTHER INFORMATION:**

Shipping point .....	Dicalite Europe Ghent
Packaging .....	Paper bags, big bags or bulk

FOR FURTHER INFORMATION PLEASE CONTACT YOUR LOCAL DICALITE SALES DISTRICT OR OUR TECHNICAL SERVICE REPRESENTATIVE AT TEL. +32-9-250.95.50.

Nr.: QF-15.05.5 Page: 1/1	Date: 11-01-1994 Revised: 5 Updated: 23/06/09	Written by: SHEQ-Mgr.	Reviewed by: SHEQ-Mgr.
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**MSDS**  
acc. to ISO/DIS 11014



Printing date 02/21/2011

Version 1

Reviewed on 02/21/2011

**1 Identification of the substance/mixture and of the company/undertaking**

**Product identifier**

**Trade name:** F018  
**Article number:** F018  
**Application of the substance / the preparation:** Seed coating material

**Details of the supplier of the safety data sheet**

**Manufacturer/Supplier:** Integrated Coating and Seed Technology, Inc.  
 1293 Harkins Road  
 Salinas, CA 93901  
 USA  
 Phone: 001-831-784-1564  
 Fax: 001-831-757-9404

**Further information available from:** msds@incotec.com  
**Emergency telephone number:** IPR Department  
 Telephone: 001-831-784-6683  
 Fax: 001- 831-424-8613  
 Or consult a local intoxication information center.

**2 Composition/information on ingredients**

**Chemical characterization: Mixtures**

**Description:** Mixture of non/low-hazardous mineral powders and additives.

**Dangerous components:**

12001-26-2	Mica	50-100%
------------	------	---------

**3 Hazards identification**

**Classification of the substance or mixture**

The product is not classified according to the Globally Harmonized System (GHS).

**Label elements**

**GHS label elements:** Void  
**Hazard pictograms:** Void  
**Signal word:** Void  
**Hazard statements:** Void

**Classification system:**

**NFPA ratings (scale 0 - 4)**



Health = 0  
 Fire = 0  
 Reactivity = 0

(Contd. on page 2)



**MSDS**  
acc. to ISO/DIS 11014

Printing date 02/21/2011

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Reviewed on 02/21/2011

Trade name: **F018**

(Contd. of page 1)

HMIS-ratings (scale 0 - 4)

HEALTH	0	Health = 0
FIRE	0	Fire = 0
REACTIVITY	0	Reactivity = 0

**4 First aid measures**

<b>General information:</b>	No special measures required.
<b>After inhalation:</b>	Supply fresh air; consult doctor in case of complaints.
<b>After skin contact:</b>	Wash with soap and much water.
<b>After eye contact:</b>	Rinse opened eye for ten minutes under running water.
<b>After swallowing:</b>	If symptoms persist consult doctor.

**5 Firefighting measures**

<b>Suitable extinguishing agents:</b>	CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
<b>For safety reasons unsuitable extinguishing agents:</b>	Not applicable
<b>Special hazards arising from the substance or mixture</b>	Not applicable.
<b>Protective equipment:</b>	No special measures required.
<b>Additional information</b>	Collect contaminated fire fighting water separately. It must not enter the sewage system.

**6 Accidental release measures**

<b>Personal precautions, protective equipment and emergency procedures</b>	Not required.
<b>Environmental precautions:</b>	Do not allow to enter sewers/ surface or ground water.
<b>Methods and material for containment and cleaning up:</b>	Pick up mechanically.
<b>Reference to other sections</b>	No dangerous substances are released. See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 13 for disposal information.

**7 Handling and storage**

<b>Handling:</b>	
<b>Precautions for safe handling</b>	Provide suction extractors if dust is formed. Take note of emission threshold.
<b>Information about protection against explosions and fires:</b>	No special measures required.
<b>Storage:</b>	
<b>Requirements to be met by storerooms and containers:</b>	No special requirements.

(Contd. on page 3)



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Reviewed on 02/21/2011

Trade name: **F018**

**Information about storage in one common storage facility:** Not required.  
**Further information about storage conditions:** None.  
**Specific end use(s):** Not applicable.

(Contd. of page 2)

**8 Exposure controls/personal protection**

**Additional information about design of technical systems:** Provide adequate dust suction at working place.  
Provide eye showers.

**Components with limit values that require monitoring at the workplace:**

12001-26-2 Mica

PEL	20 mppcf ppm <1% crystalline silica
REL	3* mg/m <sup>3</sup> *respirable dust; containing < 1% quartz
TLV	3* mg/m <sup>3</sup> *as respirable fraction

**Additional information:** The lists that were valid during the creation were used as basis.

**Personal protective equipment:**  
**General protective and hygienic measures:** The usual precautionary measures for handling chemicals should be followed.

**Breathing equipment:** Filter P2  
**Protection of hands:** Rubber gloves  
**Eye protection:** Safety glasses  
**Body protection:** Light weight protective clothing

**9 Physical and chemical properties**

**General Information**

**Appearance:**  
**Form:** Powder  
**Color:** Off-white  
**Odor:** Odorless  
**Odour threshold:** Not determined.  
**pH-value:** Not applicable.  
**Change in condition**  
**Melting point/Melting range:** Not determined.  
**Boiling point/Boiling range:** > 999°C (> 1830 °F)  
**Flash point:** Not applicable.  
**Flammability (solid, gaseous):** Product is not flammable.

(Contd. on page 4)



**MSDS**  
acc. to ISO/DIS 11014

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Reviewed on 02/21/2011

Trade name: **F018**

(Contd. of page 3)

**Ignition temperature:**

**Decomposition temperature:** Not determined.

**Auto igniting:** Product is not selfigniting.

**Danger of explosion:** Product does not present an explosion hazard.

**Explosion limits:**

**Lower:** Not determined.

**Upper:** Not determined.

**Oxidizing properties** Product is not oxidative.

**Vapor pressure:** Not applicable.

**Density at 20°C (68 °F):** 2.75 g/cm<sup>3</sup> (22.949 lbs/gal)

**Relative density** Not determined.

**Solubility in / Miscibility with Water:**

Insoluble.

**Viscosity:**

**Dynamic:** Not applicable.

**Kinematic:** Not applicable.

**Solvent content:**

**Organic solvents:** 0.0 %

**Other information** No further relevant information available.

**10 Stability and reactivity**

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

**Incompatible materials:** Not applicable.

**Hazardous decomposition products:** No dangerous decomposition products known.

**11 Toxicological information**

**Acute toxicity:** No acute toxic effects known.

**LD/LC50 values that are relevant for classification:** No data available.

**Primary irritant effect: on the skin:** No irritant effect.

**on the eye:** No irritant effect.

**Sensitization:** No sensitizing effects known.

**Subacute to chronic toxicity:** Chronic overexposure to mica powder may cause fibrotic pneumoconiosis (lung scarring) to develop.

**Most likely routes of exposure** Not applicable.

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**MSDS**  
acc. to ISO/DIS 11014



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Version 1

Reviewed on 02/21/2011

Trade name: **F018**

(Contd. of page 4)

**12 Ecological information**

<b>Aquatic toxicity:</b>	No data available.
<b>Persistence and degradability</b>	No further relevant information available.
<b>Behavior in environmental systems:</b>	
<b>Bioaccumulative potential</b>	Does not accumulate in organisms
<b>Ecotoxicological effects:</b>	
<b>Other information:</b>	No data available.
<b>Additional ecological information:</b>	
<b>General notes:</b>	Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

**13 Disposal considerations**

<b>Waste treatment methods</b>	
<b>Recommendation:</b>	Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
<b>Uncleaned packagings:</b>	
<b>Recommendation:</b>	Dispose of packaging according to regulations on the disposal of packagings.

**14 Transport information**

<b>DOT regulations:</b>	
<b>Hazard class:</b>	-
<b>Land transport ADR/RID (cross-border):</b>	
<b>ADR/RID class:</b>	-
<b>Maritime transport IMDG:</b>	
<b>IMDG Class:</b>	-
<b>Marine pollutant:</b>	No
<b>Air transport ICAO-TI and IATA-DGR:</b>	
<b>ICAO/IATA Class:</b>	-
<b>UN "Model Regulation":</b>	-

**15 Regulatory information**

Sara

<b>Section 355 (extremely hazardous substances):</b>
None of the ingredients is listed.
<b>Section 313 (Specific toxic chemical listings):</b>
None of the ingredients is listed.
<b>TSCA (Toxic Substances Control Act):</b>
All ingredients are listed.

(Contd. on page 6)

**MSDS**  
acc. to ISO/DIS 11014

Printing date 02/21/2011

Version 1

Reviewed on 02/21/2011

Trade name: **F018**

(Contd. of page 5)

**Proposition 65**

<b>Chemicals known to cause cancer:</b>
None of the ingredients is listed.
<b>Chemicals known to cause reproductive toxicity for females:</b>
None of the ingredients is listed.
<b>Chemicals known to cause reproductive toxicity for males:</b>
None of the ingredients is listed.
<b>Chemicals known to cause developmental toxicity:</b>
None of the ingredients is listed.

**Carcinogenic categories**

<b>EPA (Environmental Protection Agency)</b>
None of the ingredients is listed.
<b>IARC (International Agency for Research on Cancer)</b>
None of the ingredients is listed.
<b>NTP (National Toxicology Program)</b>
None of the ingredients is listed.
<b>TLV (Threshold Limit Value established by ACGIH)</b>
None of the ingredients is listed.
<b>NIOSH-Ca (National Institute for Occupational Safety and Health)</b>
None of the ingredients is listed.
<b>OSHA-Ca (Occupational Safety &amp; Health Administration)</b>
None of the ingredients is listed.

<b>GHS label elements</b>	Void
<b>Hazard pictograms</b>	Void
<b>Signal word</b>	Void
<b>Hazard statements</b>	Void

**16 Other information**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

**Department issuing MSDS:** Incotec Holding BV  
Enkhuizen, The Netherlands  
Department ITR

**Contact for questions about content:** msds@incotec.com

**Abbreviations and acronyms:**  
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
RID: Règlement International concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
IMDG: International Maritime Code for Dangerous Goods  
DOT: US Department of Transportation  
IATA: International Air Transport Association

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**MSDS**  
acc. to ISO/DIS 11014



Printing date 02/21/2011

Version 1

Reviewed on 02/21/2011

Trade name: **F018**

(Contd. of page 6)  
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)  
ICAO: International Civil Aviation Organization  
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)  
ACGIH: American Conference of Governmental Industrial Hygienists  
NFPA: National Fire Protection Association (USA)  
HMIS: Hazardous Materials Identification System (USA)  
GHS: The Globally Harmonized System of Classification and Labelling of Chemicals

\* Data compared to the previous version altered.

First edition.

# QUALITÄTSMANAGEMENT SPECIFICATION

## LIGAMED MF-2-K

Magnesium Stearate

**BSW:** 31400527

**version:** 4 / 21.09.2009

**appearance:** A white or almost white, very fine, light powder, greasy to the touch, practically insoluble in water and ethanol.

**composition:** Magnesium salt of vegetable fatty acids consisting mainly of stearic acid and palmetic acid.

**properties:** Magnesium Stearate for special applications in Pharma-, food- and cosmetic industries.  
The product is in accordance with the USP32/NF27/BP2007/Ph.Eur 6th ed./DAB10/  
JP 15th. ed./FCC 6 th. ed.

parameter	unit	methode	specification limit		
			lower	target	upper
Identification A	øC	Ph.Eur	54		
Identification A	metal reaction	USP/NF		passes test	
Identification B	retention time GC	USP/NF		retentions match	
Acidity or	ml 0,01N HCl	Ph.Eur			0,5
Alkalinity	ml 0.01 N NaOH	Ph.Eur			0,5
Heavy metals as Pb	ppm	JP			20
Lead	ppm	BAE 300-B			5
Cadmium	ppm	BAE 300-B			3
Nickel	ppm	BAE 300-B			5
Chloride	ppm	BAE-627			100
Sulphate	%	Ph.Eur			0,5
Acid value of the fatty acid	mg KOH/g	Ph.Eur	195		210
Relative content of stearic acid	%	USP/NF	60		70
Rel. cont. of stearic and palmetic acid	%	USP/NF	95		
Aerobic microbial count	cfu/g	USP/NF			1000
Moulds & Yeasts	cfu/g	USP/NF			100
Escherichia coli	cfu/g	USP/NF		absent	
Salmonella Species	cfu/10g	USP/NF		absent	
Residual Solvents		USP/NF		meets USP/NF	
Loss on drying	%	BAE 600			4
Magnesium content	%	BAE 200 o	4,2		4,8
Free fatty acid	%	BAE 400			2
Sieve residue at 200 mesh	%	BAE 605			1
Sieve residue at 325 mesh	%	BAE 605			0,5
Bulk density tapped	g/ml	BAE 611a	0,27		0,37
specific surface area BET	m2/g	USP/NF	6		9

The information and data given in this sheet represent our best knowledge but are not a guarantee for any properties or performance of the products including patent infringement and legislation of other countries. They don't release the customer from making his own assessment under his own conditions and requirements.

Peter Greven Nederland

Edisonstraat 1

NL-5928PG Venlo

Phone: +31 (0) 248 3239311



Phone: +31 (77) 3239311

# QUALITÄTSMANAGEMENT SPECIFICATION

## LIGAMED MF-2-K

Magnesium Stearate

**BSW:** 31400527

**version:** 4 / 21.09.2009

parameter	unit	methode	specification limit		
			lower	target	upper
Contamination		BAE 601		in accordance	

The information and data given in this sheet represent our best knowledge but are not a guarantee for any properties or performance of the products including patent infringement and legislation of other countries. They don't release the customer from making his own assessment under his own conditions and requirements.

Peter Greven Nederland

Edisonstraat 1

NL-5928PG Venlo

Phone: +31 (77) 3239



DIN EN ISO 9001  
DIN EN ISO 14001

Phone: +31 (77) 3239311

### LIGAMED MF-3-V

### Magnesium Stearate

**appearance:** A white or almost white, very fine, light powder, greasy to the touch, practically insoluble in water and ethanol.

**composition:** Magnesium salt of vegetable fatty acids consisting mainly of stearic acid and palmitic acid.

**properties:** Magnesium Stearate with high specific surface area for special applications in Pharma-, food- and cosmetic industries. The product is in accordance with the USP33/NF28/BP2010/Ph.Eur 6.5th ed./DAB10/JP 15th ed./FCC 6th ed.

parameter	unit	data			
		methode	specification limit		
			lower	target	upper
Identification A	øC	Ph.Eur	53		
Identification A	metal reactio	USP/NF		passes tes	
Identification B	retention tim	USP/NF		retentions	
Acidity EP	ml 0,1N HCl	Ph.Eur			0,05
Alkalinity	ml 0,1N NaC	Ph.Eur			0,05
Heavy metals as Pb	ppm	JP			20
Lead	ppm	BAE 300-B			5
Cadmium	ppm	BAE 300-B			3
Nickel	ppm	BAE 300-B			5
Chloride	ppm	BAE-627			100
Sulphate	%	Ph.Eur			0,5
Acid value of the fatty acid	mg KOH/g	Ph.Eur	195		210
Relative content of stearic acid	%	USP/NF	60		70
Rel. cont. of stearic and palmitic	%	USP/NF	95		
Aerobic microbial count	cfu/g	USP/NF			1000
Moulds & Yeasts	cfu/g	USP/NF			100
Escherichia coli	cfu/g	USP/NF		absent	
Salmonella Species	cfu/10g	USP/NF		absent	
Residual Solvents		USP/NF		meets USI	
Loss on drying	%	BAE 600			4
Magnesium content	%	BAE 200 o	4,2		4,8
Free fatty acid	%	BAE 400			2
Sieve residue at 200 mesh	%	BAE 605			1
Bulk density tapped	g/ml	BAE 611a	0,2		0,3
specific surface area BET	m2/g	USP/NF	8		12

Our advice for technical applications and other recommendations are based on many years of experience, but are no guarantee for the properties of our products. They are, however, free from obligation - particularly with respect to the protective rights of third parties and legal regulations in Germany and abroad - and do not free our customers from their obligation to test our products and methods themselves for their suitability in particular applications. 11.01.2011

data					
parameter	unit	methode	specification limit		
			lower	target	upper
Contamination		BAE 601		in accorda	

# product information



**product:** Mikrosöhl 40

**description:** fine calciumcarbonate (chalk) with very low sieve residues

chemical analysis	property	typical value	unit
	CaCO <sub>3</sub>	88	mass.-%
	MgCO <sub>3</sub>	1,0	mass.-%
	Fe <sub>2</sub> O <sub>3</sub>	0,5	mass.-%
	HCl-insoluble components	10,0	mass.-%

physical values	property	typical value	unit
	bulk density	550	g/l
	mass density	2,7	g/cm <sup>3</sup>
	weight loss at 105° C	0,35	mass.-%
	pH-value	9	
	oil absorption	23	g/100 g

## application

Used as filler in cables, rubber, adhesives, ceramics and in the chemical industry as raw material.

The product and it's physico-chemical properties depend on the geological structure of the quarry Söhlde (Germany).  
The above mentioned data are typical values, which do not represent specification limits.

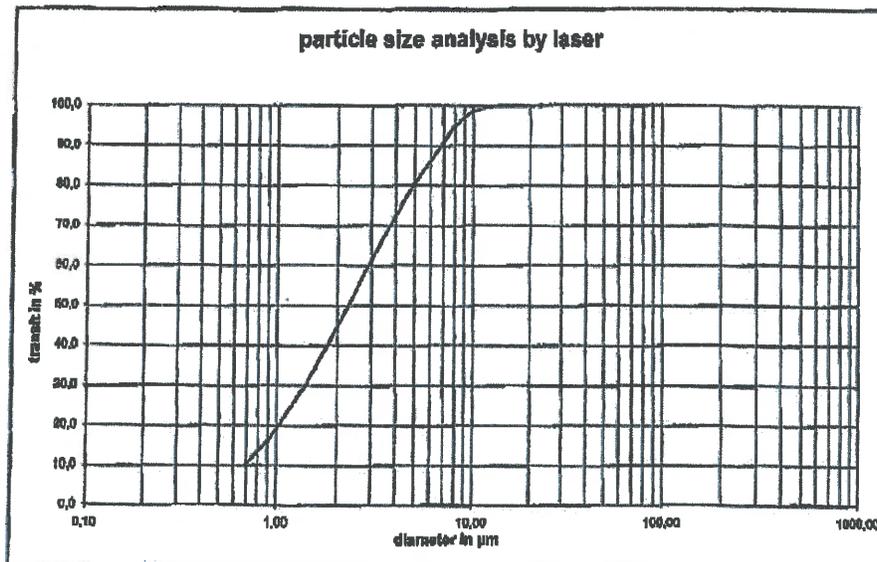
Vereinigte Kreidewerke DAMMANN KG \* Hildesheimer Straße 3 \* D-31185 Söhlde  
Phone: +49 5129/78-0 \* Fax: +49 5129/78-1200 \* e-mail: info@dammann.de

# product information



**product: Mikrosöhl 40**

sieve analysis	property	typical value	unit
	sieve residus 0,04 mm	0,05	mass.-%



## packaging

bulk on truck, packaged in paper bags of 25 kg, big bags of 650 kg

The product and its physico-chemical properties depend on the geological structure of the quarry Söhlde (Germany).  
The above mentioned data are typical values, which do not represent specification limits.

Vereinigte Kreidwerke DAMMANN KG \* Hildesheimer Straße 3 \* D-31185 Söhlde  
Phone: +49 5129/78-0 \* Fax: +49 5129/78-1200 \* e-mail: info@dammann.de



Vereinigte Kreidewerke  
Dammann KG



Page 1/8

**Material Safety Data Sheet**  
According to 91/155 EEC(2001/58 EC)

Version: 1.5

Reviewed on: 19.07.2006

### 1 Identification of substance:

- Product details:

- Trade name: **Aerodyn Kreide**  
**Brecoöl**  
**Calciumcarbonat 5, 15, 45, 60, 90**  
**Calciumcarbonat Wacarb**  
**F 30**  
**Kalksteinmehl**  
**Mikrosöhl 20, 40, 40 K, 40/F 56**  
**Perikalk I, Perikalk fein, Perikalk 3 - 7 mm**  
**Teakreide**  
**Kittkreide**  
**ZoFoRall**  
**Gärtnerkalk Körnig**  
**Reasorb**  
**VIBO 51**

- Application of the substance / the preparation

Basic raw material for the industry  
Environment protection  
Animal feed  
Treatment of sewage sludge  
Water treatment

- Supplier/Manufacturer:

Vereinigte Kreidewerke Dammann KG  
Hildesheimer Straße 3  
D-31185 Söhde  
Tel: +49-5129-78-0  
Fax: +49-5129-78-1200

- Manufacturer:

Vereinigte Kreidewerke Dammann KG  
Werk Söhde  
Hildesheimer Straße 3  
D-31185 Söhde

- Information department:

Sales department  
Quality management Tel.: +49-5129-78223

- Emergency information: National Poisons Information Centre

Tel.: +44 (0)870 8006266

### 2 Composition/Data on components:

- Chemical characterization:
- CAS No. Description:  
471-34-1 calcium carbonate
- Identification number(s):
- EINECS Number: 207-430-9

### 3 Hazards identification

- Hazard description: not applicable
- Information pertaining to particular dangers for man and environment:  
No hazards to be particularly mentioned. Please note the information of this Material Safety Data Sheet.  
According to current European laws and regulations the product is not dangerous or toxic material (based on the available data).

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**Material Safety Data Sheet  
According to 91/155 EEC(2001/58 EC)**

Version: 1.5

Reviewed on: 19.07.2006

Trade name: **Aerodyn Kreide**  
**Betonöhl**  
**Calciumcarbonat 5, 15, 45, 60, 90**  
**Calciumcarbonat Vitacarb**  
**F 30**  
**Kalksteinmehl**  
**Mikrosöhl 20,40, 40 K, 40/F 56**  
**Perikalk I, Perikalk fein, Perikalk 3 - 7 mm**  
**Textkreide**  
**Kittkreide**  
**ZeFoRalt**  
**Gärtnerkalk körnig**  
**Reasorb**  
**VIBo 91**

(Contd. of page 1)

**4 First aid measures**

- **General information:** No special measures required.
- **After inhalation:** Supply fresh air, consult doctor in case of complaints.
- **After skin contact:** Wash with water and soap.
- **After eye contact:**  
Rinse opened eye for several minutes under running water.  
If symptoms persist consult a doctor.
- **After swallowing:**  
Rinse mouth with water.  
Give some milk.  
If symptoms occur or after swallowing of larger quantities consult a doctor.
- **Information for doctor:**
- **The following symptoms may occur:**  
Redness of the skin  
Irritation of eyes and mucous membrane.

**5 Fire fighting measures**

- **Suitable extinguishing agents:**  
The product is not combustible and does not support the combustion.  
Use fire fighting measures that suit the environment.
- **Special hazards caused by the material, its products of combustion or resulting gases:**  
Dangerous decomposition product see chapter 10: stability and reactivity
- **Protective equipment:** Wear self-contained respiratory protective device.

**6 Accidental release measures**

- **Person-related safety precautions:**  
Ensure adequate ventilation  
Avoid formation of dust.  
Use respiratory protective device against the effects of fumes/dust/aerosol.  
Wear protective clothing.
- **Measures for environmental protection:** No special measures required.
- **Measures for cleaning/collecting:**  
Pick up mechanically.  
Send for recovery or disposal in suitable receptacles.  
Dispose contaminated material as waste according to item 13.

**7 Handling and storage**

- **Handling**
- **Information for safe handling:**  
Ensure good ventilation/exhaustion at the workplace.  
Prevent formation of dust.

(Contd. on page 3)

02

Vereinigte Kreidewerke  
Dammann KG



Page 3/6

**Material Safety Data Sheet**  
According to 91/455 EEC(2001/58 EC)

Version: 1.5

Reviewed on: 19.07.2006

Trade name: Aerodyn Kreide

Betosohl  
Calciumcarbonat 5, 15, 45, 60, 90  
Calciumcarbonat Vitacarb  
F 30  
Kalksteinmehl  
Mikroschl 20,40, 40 K, 40/F 56  
Perikalk I, Perikalk fein, Perikalk 3 - 7 mm  
Textkreide  
Kittkreide  
ZuFoRalt  
Gärtnerkalk körnig  
Reasorb  
VIBo 81

(Contd. of page 2)

- Avoid contact with eyes and skin.
- Avoid inhalation of dust.
- Information about protection against explosions and fires: No special measures required.
- Storage
  - Requirements to be met by storerooms and receptacles: Not required
  - Information about storage in one common storage facility: Do not store together with acids.
  - Further information about storage conditions: Store in dry conditions.
  - Storage class 13 Non combustible solid

### 8 Exposure controls and personal protection

- Additional information about design of technical systems: No further data; see item 7.
- Components with limit values that require monitoring at the workplace:
  - 471-34-1 calcium carbonate
  - OES Long-term value: 10<sup>4</sup> mg/m<sup>3</sup>
  - \*total inhalable dust \*\*respirable dust
- Additional Occupational Exposure Limit Values for possible hazards during processing: Observe general threshold limit for dust.
- Additional information: The lists that were valid during the creation were used as basis.
- Personal protective equipment
- General protective and hygienic measures:
  - The usual precautionary measures should be adhered to when handling chemicals.
  - Wash hands before breaks and at the end of work.
  - Do not inhale dust / smoke / mist.
  - Avoid close or long term contact with the skin.
  - Avoid contact with the eyes.
  - Ensure that washing facilities are available at the work place.
  - Do not eat or drink while working.
  - Vacuum clean contaminated clothing. Do not blow or brush off contamination.
  - Use skin protection cream for skin protection.
- Breathing equipment:
  - Use suitable respiratory protective device in case of insufficient ventilation.
  - Short term filter device:
    - Filter P1.
    - Filter P2.
    - Filter P3.
- Protection of hands:
  - Protective gloves or protective skin cream.
  - To avoid skin problems reduce the wearing of gloves to the required minimum.
  - Prior to contact with the waterinsoluble substance / product / preparation apply watersoluble skin-protecting agent (fat-free film former or CMV-emulsions).
  - After use of gloves apply skin-cleaning agents and skin cosmetics.
- Material of gloves: Adjust selection of glove material to the other substances used.

(Contd. on page 4)

-GB-

Vereinigte Kreidewerke  
Dammann KG



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**Material Safety Data Sheet**  
According to 91/155 EEC(2001/58 EC)

Version: 1.5

Reviewed on: 19.07.2006

**Trade name: Aerodyn Kreide**

Betosöhle  
Calciumcarbonat 5, 15, 45, 60, 90  
Calciumcarbonat Vitacarb  
F 30  
Kalksteinmehl  
Mikrosöhle 20,40, 40 K, 40/F 55  
Perikalk I, Perikalk fein, Perikalk 3 - 6 mm  
Textkreide  
Kittkreide  
ZeFoRalit  
Gärtnerkalk körnig  
Reasorb  
ViBo 91

- (Contd. of page 3)
- Penetration time of glove material:  
The exact break-through time has to be found out by the manufacturer of the protective gloves and has to be observed.
  - Eye protection: At formation of dust or insufficient ventilation: Tightly sealed goggles.
  - Body protection: Protective work clothing.

**9 Physical and chemical properties:****• General Information**

- |                |                        |
|----------------|------------------------|
| <b>Form:</b>   | particulate<br>Powder  |
| <b>Colour:</b> | Grey<br>Beige<br>White |
| <b>Odour:</b>  | Odourless              |
- Change in condition:  
Melting point/Melting range: -  
Boiling point/Boiling range: -
  - Flash point: not applicable
  - Flammability (solid, gaseous) Product is not flammable.
  - Ignition temperature:
  - Decomposition temperature: 900°C
  - Danger of explosion: Product does not present an explosion hazard.
  - Density at 20°C: 2.7 g/cm<sup>3</sup>
  - Solubility in / Miscibility with  
Water at 20°C: 18 mg/l (ISO 787/8)
  - pH-value at 20°C: 8-10 (DIN/ISO 787/9)

**10 Stability and reactivity**

- Thermal decomposition / conditions to be avoided:  
No decomposition if used and stored according to specifications.  
To avoid thermal decomposition do not overheat.
- Decomposition will begin at: 800° C forming CaO and CO<sub>2</sub>
- Materials to be avoided: Acids
- Dangerous reactions: Violent reactions with acids forming carbon dioxide.
- Dangerous products of decomposition:  
Can react with acids by forming carbon dioxide which displaces oxygen (danger of asphyxiation).

(Contd. on page 5)

Vereinigte Kreidewerke  
Dammann KG



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**Material Safety Data Sheet**  
According to 91/155 EEC(2001/58 EC)

Version: 1.4

Reviewed on: 19.07.2006

Trade name: Aerodyn Kreide

Betosöhrl  
Calciumcarbonat 6, 15, 45, 60, 90  
Calciumcarbonat Vitacarb  
F 30  
Kalksteinmehl  
Mikrosöhrl 20,40, 40 K, 40/F 56  
Perlkalk I, Perlkalk fein, Perlkalk 3 - 7 mm  
Tezkreide  
Kittkreide  
ZuFoRalk  
Gärtnerkalk körnig  
Reasorb  
VIBO 91

(Contd. on page 4)

### 11 Toxicological information

- **Acute toxicity:**
- **LD<sub>50</sub>/GD<sub>50</sub> values that are relevant for classification:**  
471-34-1 calcium carbonate  
Oral LD<sub>50</sub> 6450 mg/kg (rat)
- **Primary irritant effects:**
- **on the skin:** No irritation, but slight irritation or redness is possible after long or repeatedly mechanical contact.
- **on the eye:** Light irritation possible
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**  
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.  
The substance is not subject to classification according to the latest version of the EU lists.

### 12 Ecological information

- **Information about elimination (persistence and degradability):**
- **Other information:** Not biodegradable
- **Ecotoxicological effects:**
- **Aquatic toxicity:** Presently there are no ecotoxicological values available.
- **Remark:**  
Calcium carbonate in solid and dissolved state is a natural component of the geosphere. Adverse effects on the environment are not to be expected.  
However, concentrated slurries of calcium carbonate may have adverse effects on aquatic organisms (disturbance of microbes and microfauna) when entering natural surface water.
- **General notes:** Not hazardous for water according to VwVwS (German regulation) appendix 1 dated 17.05.1999

### 13 Disposal considerations

- **Product:**
- **Recommendation:** Disposal according to instructions of local authorities.
- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

### 14 Transport information

- **Land transport ADR/RID (cross-border)**
- **ADR/RID class:** -  
No hazardous good according to the regulation.
- **Maritime transport IMDG:**
- **IMDG Class:** No hazardous good according to the regulation.

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Vereinigte Kreidewerke  
Dammann KG



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**Material Safety Data Sheet**  
According to 91/155 EEC(2001/58 EC)

Version: 1.5

Reviewed on: 19.07.2006

**Trade name: Aerodyn Kreide**

Betosöh!  
Calciumcarbonat 5, 15, 45, 60, 90  
Calciumcarbonat Vitacarb  
F 30  
Kalksteinmehl  
Mikrosöh!  
Perlkalk I, Perlkalk fein, Perlkalk 3 - 7 mm  
Textkreide  
Kalkkreide  
ZeFoRafit  
Gärtnerkalk körnig  
Reasorb  
VIBo 91

(Contd. of page 6)

- Air transport ICAO-TI and IATA-DGR:
- ICAO/IATA Class: No hazardous good according to the regulation.

**15 Regulations**

- **Markings according to EC guidelines:**  
Observe the general safety regulations when handling chemicals  
The substance (product) is not subject to classification according to EC-directives and other sources of literature known to us.
- **National regulations**
- **Water hazard class:** Not hazardous for water

**16 Other information:**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing MSDS:**  
KFT-Chemiaservice Marienstr. 3 D-84347 Griesheim  
Postfach 1451 D-84346 Griesheim  
Tel: +49-6155-823241 Fax: +49-6155-823246
- **Contact:** Angelika Torges
- **Sources:**  
RTECS database  
International Chemical Safety Cards

03



**CR Minerals Company, LLC**  
*Innovative Solutions with Pumice*

**Technical Data Sheet**  
**Navajo Brand® Grade FFF**

TYPICAL CHEMICAL ANALYSIS

	<u>% By Wt</u>
SiO <sub>2</sub>	75
Al <sub>2</sub> O <sub>3</sub>	12
K <sub>2</sub> O	4
Na <sub>2</sub> O	4
Fe <sub>2</sub> O <sub>3</sub>	<2
CaO	<1
MgO	<1
TiO <sub>2</sub>	<1

TYPICAL PHYSICAL PROPERTIES

Moisture Percent	<1%
Reflectance (Green Filter)	80
Specific Gravity	2.4
pH (10% in Water)	8.0-10.0
Refractive Index	1.5
Hardness, Mohs	5.5

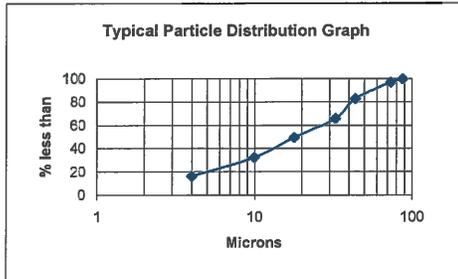
PARTICLE TEST SIZE SPECIFICATIONS

US Mesh	Microns	% Residing*
200	74	1-5
325	44	10-25
Pass		75-90

GRADE SPECIFIC PROPERTIES

Bulk Density (lbs/ft <sup>3</sup> )	34
Bulk Density (gm/cm <sup>3</sup> )	0.7
Oil absorption*	45

\* Tested on Rotap Shaker at 10 minutes run time with sieves meeting ASTM E11



<u>Typical Particle Distribution*</u>	
<u>% less than</u>	<u>microns</u>
100	88
97	74
83	44
66	33
50	18
33	10
17	4

\*Actual particle distribution will vary within test parameters.  
 10/6/2009

[www.cminerals.com](http://www.cminerals.com)



**CR Minerals Co, LLC**

P.O. BOX 708 • SAN JUAN PUEBLO, NEW MEXICO 87566

**SAFETY DATA SHEET**

Wimer 100/130/140

**1. Identification of the substance/preparation and of the company/undertaking**Identification of the substance or preparation

Product name : Wimer 100/130/140  
 Synonyms : Clay.  
 Use of the substance/preparation : Various applications.

Company/undertaking identification

Supplier : Ankerpoort n.v.  
 Op de bos 300  
 6223 EP Maastricht  
 Postbus 260  
 6200 AG Maastricht  
 Tel: +31 (0)43 - 366 37 37  
 Fax: +31 (0)43 - 364 95 95  
 The Netherlands

Emergency telephone number : Tel: +31 (0)43 - 366 37 37

**2. Composition/information on ingredients**

Ingredient name	CAS number	%	EC Number	Classification
Main component: aluminium silicate Silica, crystalline (quartz) See section 16 for the full text of the R Phrases declared above	12141-46-7 14808-60-7	53	235-253-8 238-878-4	Not classified. Not classified.

\* Occupational Exposure Limit(s), if available, are listed in Section 8

**3. Hazards identification**

The preparation is not classified as dangerous according to Directive 1999/45/EC and its amendments.

Physical/chemical hazards : Not applicable.  
 Human health hazards : This product contains a certain quantity of quartz. Long term inhalation of respirable crystalline quartz may lead to silicosis if the limit values are exceeded.  
 Environmental hazards : Not applicable.

**4. First aid measures**Effects and symptoms

Inhalation : No known significant effects or critical hazards.  
 Ingestion : No known significant effects or critical hazards.  
 Skin Contact : No known significant effects or critical hazards.  
 Eye contact : No known significant effects or critical hazards.

First aid measures

Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Obtain medical attention.  
 Ingestion : Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Obtain medical attention.  
 Skin Contact : Wash with soap and water. Get medical attention if irritation develops.  
 Eye contact : In case of contact, immediately flush eyes with a copious amount of water for at least 15 minutes. Get medical attention if irritation occurs.

Date of issue : 15-11-2004.

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## 5. Fire-fighting measures

- Extinguishing media : Use an extinguishing agent suitable for surrounding fires.  
 Special exposure hazards : No specific hazard.  
 Hazardous thermal decomposition products : Not applicable.  
 Special protective equipment for fire-fighters : Standard protection.

## 6. Accidental release measures

- Personal Precautions : Keep unnecessary personnel away. Use suitable protective equipment (Section 8).  
 Environmental precautions : Avoid dispersal of spilled material and run-off and contact with soil, waterways, drains and sewers.  
 Methods for cleaning up : Place spilled material in an appropriate container for disposal. Avoid creating dusty conditions and prevent wind dispersal.

## 7. Handling and storage

- Handling : Avoid creating dusty conditions and prevent wind dispersal.  
 Storage : Keep container tightly closed.  
Packaging materials  
 Recommended : Use original container.  
 Specific uses : Not applicable.

## 8. Exposure controls/personal protection

<u>Ingredient name</u>	<u>Occupational exposure limits</u>
Silica, crystalline (quartz)	EH40-MEL (United Kingdom (UK), 5/2003). TWA: 0,3 mg/m <sup>3</sup> 8 hour(s). Form: Dust EH40-OES (United Kingdom (UK), 2002). TWA: 2,4 mg/m <sup>3</sup> 8 hour(s). Form: Dust

### Exposure controls

- Occupational exposure controls : Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.  
 Personal protection : Use appropriate protective clothing.  
 Respiratory protection : Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.  
 Hand protection : Gauntlets.  
 Eye protection : Safety glasses.  
 Skin protection : Industrial clothing.

## 9. Physical and chemical properties

- Physical state : Solid. (Powdered solid.)  
 Colour : Brown.  
 Odour : Odourless.  
 pH : Not available.  
 Boiling point : Not available.  
 Melting point : >1000°C (1832°F)  
 Flash point : Not applicable.  
 Flammability (solid, gas) : Not applicable.  
 Explosive properties : Not applicable.  
 Explosion limits : Not applicable.  
 Oxidising properties : Not available.  
 Vapor pressure : Not applicable.

## Wimer 100/130/140

Relative density	: 2.65
Solubility	: Not available.
Octanol/water partition coefficient	: Not applicable.
Viscosity	: Not applicable.
Vapor density	: Not applicable.
Evaporation rate (butyl acetate = 1)	: Not applicable.
Auto-ignition temperature	: Not applicable.

## 10. Stability and reactivity

Stability	: The product is stable.
Conditions to Avoid	: Not applicable.
Materials to avoid	: Not applicable.
Hazardous Decomposition Products	: Not applicable.

## 11. Toxicological information

### Potential acute health effects

Inhalation	: No known significant effects or critical hazards.
Ingestion	: No known significant effects or critical hazards.
Skin Contact	: No known significant effects or critical hazards.
Eye contact	: No known significant effects or critical hazards.

### Potential chronic health effects

Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Reproductive toxicity	: No known significant effects or critical hazards.

### Over-exposure signs/symptoms

Inhalation	: This product contains a certain quantity of quartz. Long term inhalation of respirable crystalline quartz may lead to silicosis if the limit values are exceeded.
Ingestion	: No known significant effects or critical hazards.
Skin	: No known significant effects or critical hazards.
Target organs	: No known significant effects or critical hazards.
Other adverse effects	: No known significant effects or critical hazards.

## 12. Ecological information

<u>Ecotoxicity data</u>	: No known significant effects or critical hazards.
<u>Other ecological information</u>	
Mobility	: Not available.
Other adverse effects	: No known significant effects or critical hazards.

## 13. Disposal considerations

Methods of disposal	: Avoid dispersal of spilled material and run-off and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
Hazardous waste	: To present knowledge of the supplier, this product is not regarded as hazardous waste as defined by EU Directive 91/689/EC.

## 14. Transport information

### International transport regulations

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional Information
ADR/RID Class	Not regulated.	-	-	Not applicable.		Not applicable.
ADN Class	Not regulated.	-	-	Not applicable.		Not applicable.
IMDG Class	Not regulated.	-	-	Not applicable.		Not applicable.
IATA-DGR Class	Not regulated.	-	-	Not applicable.		Not applicable.

## 15. Regulatory information

### EU Regulations

- Risk Phrases : This product is not classified according to the EU regulations.  
 Product use : Classification and labelling have been performed according to EU directives 67/548/EEC, 1999/45/EC, including amendments and the intended use.

### Other EU regulations

- Additional warning phrases : Safety data sheet available for professional user on request.  
 Restrictions on the marketing and use directive : Not applicable.

### National regulations

- COSHH : The use of this product must be in compliance with provisions included in COSHH (1999) and COSHH Essentials (1999).

## 16. Other information

### History

- Date of printing : 15-11-2004.  
 Date of issue : 15-11-2004.  
 Date of previous Issue : No Previous Validation.  
 Version : 1

### Notice to reader

*To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.*

*Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.*



**Material Safety Data Sheet**

**ETHREL® BRAND ETHEPHON PLANT REGULATOR**

MSDS Number: 102000004255  
 MSDS Version 2.0  
 Revision Date: 10/28/2005

**SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION**

**Product Name** ETHREL® BRAND ETHEPHON PLANT REGULATOR  
**MSDS Number** 102000004255  
**EPA Registration No.** 264-267  
**Product Use** Plant growth regulator.

Bayer CropScience  
 2 T.W. Alexander Drive  
 Research Triangle PK, NC 27709  
 USA

For MEDICAL, TRANSPORTATION or other EMERGENCY call 1-800-334-7577 (24 hours/day)  
 For Product Information call 1-866-99BAYER (1-866-992-2937)

**SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Hazardous Component Name</u>	<u>CAS-No.</u>	<u>Average % by Weight</u>
Ethephon	16672-87-0	21.70

**SECTION 3. HAZARDS IDENTIFICATION**

*NOTE: Please refer to Section 11 for detailed toxicological information.*

**Emergency Overview** Danger! Corrosive - causes irreversible eye damage. Hazard to humans and domestic animals. Harmful if swallowed, inhaled or absorbed through the skin. Do not get in eyes, on skin, or on clothing. Do not breathe vapours or spray mist. Irritation of mucous membranes.

**Physical State** liquid

**Odor** not significant

**Appearance** colourless to amber

**Routes of Exposure** Inhalation, Skin contact, Ingestion, Eye contact

**Immediate Effects**

**Eye** Corrosive - causes irreversible eye damage. Liquid or vapor can cause irritation, redness, tearing. Eye injury may persist for several days. Do not get in eyes.

**Skin** May cause irritation, redness, swelling on prolonged contact. Avoid contact with skin.



**Material Safety Data Sheet**

**ETHREL® BRAND ETHEPHON PLANT REGULATOR**

MSDS Number 102000004255  
MSDS Version 2.0

<b>Ingestion</b>	May cause burns to mouth and esophagus, chest pain, abdominal pain. Harmful if swallowed.
<b>Inhalation</b>	Mists may cause upper respiratory tract irritation, coughing, sore throat. Irritation of mucous membranes. Harmful if inhaled.
<b>Medical Conditions Aggravated by Exposure</b>	Skin contact may aggravate existing skin disease. Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis.

**SECTION 4. FIRST AID MEASURES**

<b>Eye</b>	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
<b>Skin</b>	Wash off immediately with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a poison control center or doctor for treatment advice.
<b>Ingestion</b>	Never give anything by mouth to an unconscious person. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Have person sip a glass of water if able to swallow. Call a poison control center or doctor immediately for treatment advice.
<b>Inhalation</b>	If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice. Take affected person to fresh air.
<b>Notes to Physician Hazards</b>	Consideration should be given to the possibility that over exposure to materials other than this product may have occurred.
<b>Treatment</b>	There is no specific antidote. All treatment should be based on observed signs and symptoms of distress in the patient. Probable mucosal damage may contraindicate the use of gastric lavage.  In case of ingestion, the stomach should be emptied by gastric lavage under qualified medical supervision. This material is an acid, but the use of alkaline substances to neutralize is contraindicated.

**SECTION 5. FIRE FIGHTING MEASURES**

<b>Flash Point</b>	not applicable
<b>Fire and Explosion Hazards</b>	The product itself does not burn.



**Material Safety Data Sheet**

**ETHREL® BRAND ETHEPHON PLANT REGULATOR**

MSDS Number 102000004255  
MSDS Version 2.0

Under fire conditions, toxic, corrosive fumes are emitted.

**Suitable Extinguishing Media**

Product itself is non-combustible; fire extinguishing measures to suit surroundings.

**Fire Fighting Instructions**

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

**Methods for Cleaning Up**

Wear appropriate gear for the situation. See Personal Protection information in Section 8.

Pump any free liquid into an appropriate closed container. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Clean floors and contaminated objects with plenty of water. Collect washings for disposal. Decontaminate tools and equipment following cleanup.

**Additional Advice**

Do not empty into drains. If spilled on the ground, the affected area should be removed to a depth of one or two inches and placed in an appropriate container. Do not allow to enter soil, waterways or waste water canal.

**SECTION 7. HANDLING AND STORAGE**

**Handling Procedures**

Smoking, eating and drinking should be prohibited in the application area.

Avoid inhalation of vapour or mist. Do not contaminate water sources, food or feedstuffs when disposing of left-over material. Avoid getting material on clothing. Do not ingest. Do not get in eyes, on skin, or on clothing.

**Storing Procedures**

Keep out of the reach of children. Protect against frost.

Store in original container in a secured, dry storage area. Do not contaminate water, food, or feed by storage or disposal. Store in cool place.

**Work/Hygienic Procedures**

Handle in accordance with good industrial hygiene and safety practice.

Wash hands always before eating, drinking, smoking or using the toilet.

Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Wash contaminated clothing before reuse.



**Material Safety Data Sheet**

**ETHREL® BRAND ETHEPHON PLANT REGULATOR**

MSDS Number 102000004255  
MSDS Version 2.0

Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. Then wash thoroughly and put on clean clothing. Keep and wash PPE separately from other laundry.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your local and regional regulatory agencies, consult the agency responsible for pesticide regulation.

**SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

<b>General Protection</b>	Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.
<b>Eye/Face Protection</b>	Safety glasses, and in case of increased risk face shield or splash goggles  An emergency eye wash must be readily accessible to the work area.
<b>Hand Protection</b>	Chemical resistant nitrile rubber gloves
<b>Body Protection</b>	Wear long-sleeved shirt and long pants and shoes plus socks.  An emergency shower must be readily accessible to the work area.
<b>Respiratory Protection</b>	When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or Industry recommendations.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	colourless to amber
<b>Physical State</b>	liquid
<b>Odor</b>	not significant
<b>pH</b>	0.8 Determined in the undiluted form.
<b>Vapor Pressure</b>	< 0.013 hPa at 25 °C
<b>Vapor Density (Air = 1)</b>	no data available
<b>Specific Gravity</b>	1.106 at 25 °C



**Material Safety Data Sheet**

**ETHREL® BRAND ETHEPHON PLANT REGULATOR**

MSDS Number 102000004255  
MSDS Version 2.0

Density	1.11 g/cm <sup>3</sup> at 20 °C
Boiling Point	no data available
Melting/Freezing Point	-5 °C / 23 °F
Water Solubility	soluble
Decomposition Temperature	170 °C

**SECTION 10. STABILITY AND REACTIVITY**

Chemical Stability	Stable under normal conditions.
Conditions to Avoid	Elevated temperatures. Extreme humidity.
Incompatibility	zinc iron copper strong oxidizing agents bases mild steel aluminium
Hazardous Decomposition Products	Thermal decomposition Carbon monoxide carbon dioxide (CO <sub>2</sub> ) hydrogen chloride (HCl) nitrogen oxides (NO <sub>x</sub> )
Hazardous Reactions	Corrodes metals in the presence of water or moisture. Risk of ethylene emission in case of increasing pH. No dangerous reaction known under conditions of normal use.

**SECTION 11. TOXICOLOGICAL INFORMATION**

NOTE: Acute inhalation and sensitization studies were bridged from studies on the technical-grade active ingredient, ethephon. All other acute toxicity data have been bridged from similar formulations containing similar percentages of ethephon. The non-acute information pertains to technical-grade ethephon.

Acute Oral Toxicity	male/female rat: LD50: > 5,000 mg/kg
Acute Dermal Toxicity	male/female rabbit: LD50: > 2,000 mg/kg



**Material Safety Data Sheet**

**ETHREL® BRAND ETHEPHON PLANT REGULATOR**

MSDS Number 102000004255  
MSDS Version 2.0

<b>Acute Inhalation Toxicity</b>	male/female rat: LC50: 4.5 mg/l Exposure time: 4 h The value mentioned relates to the active ingredient. Determined in the form of liquid aerosol. (actual)  male/female rat: LC50: 18.0 mg/l Exposure time: 1 h The value mentioned relates to the active ingredient. Determined in the form of liquid aerosol. Extrapolated from the 4 hr LC50. (actual)
<b>Skin Irritation</b>	rabbit: Moderate skin irritation.
<b>Eye Irritation</b>	rabbit: corrosive
<b>Sensitization</b>	guinea pig: Non-sensitizing. The value mentioned relates to the active ingredient.
<b>Chronic Toxicity</b>	Ethephon caused decreased body weights, cholinesterase inhibition, and organ effects (thyroid, kidney, liver) in chronic toxicity studies in rats.  Cholinesterase inhibition, smooth muscle atrophy in the gut and decreases in body weight, spleen weight, hemoglobin and hematocrit, were observed in chronic toxicity studies in dogs treated with ethephon.
<b>Assessment Carcinogenicity</b>	Ethephon was not carcinogenic in oncogenicity studies in rats and mice.
<b>ACGIH</b>	None.
<b>NTP</b>	None.
<b>IARC</b>	None.
<b>OSHA</b>	None.
<b>Reproductive &amp; Developmental Toxicity</b>	<b>DEVELOPMENTAL:</b> Data from the ethephon developmental toxicity studies in rats and rabbits show no evidence of a potential for developmental effects (malformations or variations) at doses that are not maternally toxic.  <b>REPRODUCTION:</b> Ethephon caused decreased pup body weights at the highest dose in a two generation study in rats. No effects were observed on fertility, gestation, mating, organ weights or histopathology.
<b>Neurotoxicity</b>	There was no evidence of ethephon causing delayed neurotoxicity in hens.  Ethephon produced transient neurobehavioral effects at high doses without correlating morphological changes in the neural tissues in an acute neurotoxicity



**Material Safety Data Sheet**

**ETHREL® BRAND ETHEPHON PLANT REGULATOR**

MSDS Number 102000004255  
MSDS Version 2.0

**SECTION 13. DISPOSAL CONSIDERATIONS**

**General Disposal  
Guidance**

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**Container Disposal**

Triple rinse containers. Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke.

**SECTION 14. TRANSPORT INFORMATION**

**DOT CLASSIFICATION:**

Corrosive Liquids, Acidic, Organic, N.O.S.(Ethephon) // 8 // UN3265 // PG III

**IMDG and IATA CLASSIFICATION:**

Corrosive Liquids, Acidic, Organic, N.O.S.(Ethephon 21.7%) // 8 // UN3265 // PG III

Note: It is the shipper's responsibility to comply with IATA's more restrictive packaging requirements.

**FREIGHT CLASSIFICATION:**

Inhibitors, Modifiers or Regulators, plant growth

**SECTION 15. REGULATORY INFORMATION**

**EPA Registration No.** 264-267

**US Federal Regulations**

**TSCA list**

None.

**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**

None.

**SARA Title III - Section 302 - Notification and Information**

None.

**SARA Title III - Section 313 - Toxic Chemical Release Reporting**

None.

**US States Regulatory Reporting**

**CA Prop65**

This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

Bayer CropScience



**Material Safety Data Sheet**  
**ETHREL® BRAND ETHEPHON PLANT REGULATOR**

MSDS Number: 102000004255  
MSDS Version 2.0

**US State Right-To-Know Ingredients**  
None.

**Canadian Regulations**  
**Canadian Domestic Substance List**  
None.

**Environmental**  
**CERCLA**  
None.  
**Clean Water Section 307 Priority Pollutants**  
None.  
**Safe Drinking Water Act Maximum Contaminant Levels**  
None.

**International Regulations**  
**European Inventory of Existing Commercial Substances (EINECS)**  
Ethephon 16672-87-0

**SECTION 16. OTHER INFORMATION**

NFPA 704 (National Fire Protection Association):  
Health - 3      Flammability - 1      Reactivity - 0      Others - none  
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason to Revise: Revised due to Material Safety Data Sheet system number changes.

Revision Date: 10/28/2005

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.



# Material Safety Data Sheet

Catalog Number: 102117  
Revision date: 26-Apr-2006

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY INFORMATION

Catalog Number: 102117

Product name: KINETIN

Synonyms: 6-Furfurylaminopurine; FAP

**Supplier:**

MP Biomedicals, LLC  
29525 Fountain Parkway  
Solon, OH 44139  
tel: 440-337-1200

Emergency telephone number: CHEMTREC: 1-800-424-9300 (1-703-527-3887)

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA Exposure Limits:
KINETIN	525-79-1	90 - 100%	None	None

## 3. HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW:** May cause skin irritation and/or dermatitis

**Principle routes of exposure:** Skin

**Inhalation:** May cause irritation of respiratory tract

**Ingestion:** May be harmful if swallowed.

**Skin contact:** May cause allergic skin reaction

**Eye contact:** Avoid contact with eyes

**Statements of hazard** MAY CAUSE ALLERGIC SKIN REACTION.

**Statement of Spill or Leak - ANSI Label** Eliminate all ignition sources. Absorb and/or contain spill with inert materials (e.g., sand, vermiculite). Then place in appropriate container. For large spills, use water spray to disperse vapors, flush spill area. Prevent runoff from entering waterways or sewers.

## 4. FIRST AID MEASURES

**General advice:** In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**Inhalation:** Move to fresh air. Call a physician immediately.

**Skin contact:** Rinse immediately with plenty of water and seek medical advice

**Ingestion:** Do not induce vomiting without medical advice.

**Eye contact:** In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

**Protection of first-aiders:** No information available

**Medical conditions aggravated by exposure:** None known

## 5. FIRE FIGHTING MEASURES

<b>Suitable extinguishing media:</b>	Use dry chemical, CO <sub>2</sub> , water spray or "alcohol" foam
<b>Specific hazards:</b>	Burning produces irritant fumes.
<b>Unusual hazards:</b>	None known
<b>Special protective equipment for firefighters:</b>	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear
<b>Specific methods:</b>	Water mist may be used to cool closed containers.
<b>Flash point:</b>	Not determined
<b>Autoignition temperature:</b>	Not determined
<b>NFPA rating:</b>	
NFPA Health:	1
NFPA Flammability:	1
NFPA Reactivity:	0

## 6. ACCIDENTAL RELEASE MEASURES

<b>Personal precautions:</b>	Use personal protective equipment.
<b>Environmental precautions:</b>	Prevent product from entering drains.
<b>Methods for cleaning up:</b>	Sweep up and shovel into suitable containers for disposal.

## 7. HANDLING AND STORAGE

<b>Storage:</b>	
0°C	
<b>Handling:</b>	Use only in area provided with appropriate exhaust ventilation.
<b>Safe handling advice:</b>	Wear personal protective equipment.
<b>Incompatible products:</b>	Oxidising and spontaneously flammable products

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering measures:** Ensure adequate ventilation.

### PERSONAL PROTECTIVE EQUIPMENT

**Respiratory protection:** Breathing apparatus only if aerosol or dust is formed.

**Hand protection:** Pvc or other plastic material gloves

**Skin and body protection:** Usual safety precautions while handling the product will provide adequate protection against this potential effect.

**Eye protection:** Safety glasses with side-shields

**Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice.



## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance and Odor</b>	Off-white
<b>Physical state:</b>	Powder
<b>Formula:</b>	C <sub>10</sub> H <sub>9</sub> N <sub>5</sub> O
<b>Molecular weight:</b>	215.2
<b>Melting point/range:</b>	264-266°C (dec.)
<b>Boiling point/range:</b>	No Data available at this time.
<b>Density:</b>	No data available
<b>Vapor pressure:</b>	No data available
<b>Catalog Number: 102117</b>	<b>Product name: KINETIN</b>

<b>Evaporation rate:</b>	No data available
<b>Vapor density:</b>	No data available
<b>Solubility (in water):</b>	No data available
<b>Flash point:</b>	Not determined
<b>Autoignition temperature:</b>	Not determined

## 10. STABILITY AND REACTIVITY

<b>Stability:</b>	Stable under recommended storage conditions.
<b>Polymerization:</b>	None under normal processing.
<b>Hazardous decomposition products:</b>	Nitrogen oxides (NOx)/ammonia/CN-
<b>Materials to avoid:</b>	Strong oxidising agents
<b>Conditions to avoid:</b>	Exposure to air or moisture over prolonged periods.

## 11. TOXICOLOGICAL INFORMATION

### Product Information

#### Acute toxicity

Components  
KINETIN

**RTECS Number:**  
AU6270000

**Selected LD50s and LC50s**  
Not Determined

<b>Chronic toxicity:</b>	Chronic exposure may cause nausea and vomiting, higher exposure causes unconsciousness.
<b>Local effects:</b>	Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.
<b>Specific effects:</b>	May include moderate to severe erythema (redness) and moderate edema (raised skin), nausea, vomiting, headache.
<b>Primary irritation:</b>	No data is available on the product itself.
<b>Carcinogenic effects:</b>	No data is available on the product itself.
<b>Mutagenic effects:</b>	No data is available on the product itself.
<b>Reproductive toxicity:</b>	No data is available on the product itself.

## 12. ECOLOGICAL INFORMATION

<b>Mobility:</b>	No data available
<b>Bioaccumulation:</b>	No data available
<b>Ecotoxicity effects:</b>	No data available
<b>Aquatic toxicity:</b>	May cause long-term adverse effects in the aquatic environment.

<b>Components</b>	<b>U.S. DOT - Appendix B - Marine Pollutan</b>	<b>U.S. DOT - Appendix B - Severe Marine Pollutants</b>	<b>United Kingdom - The Red List:</b>
KINETIN	Not Listed	Not Listed	Not Listed
<b>Components</b>	<b>Germany VCI (WGK)</b>	<b>World Health Organization (WHO) - Drinking Water</b>	<b>Ecotoxicity - Fish Species Data</b>
KINETIN	Not Listed	Not Listed	Not Listed
<b>Components</b>	<b>Ecotoxicity - Freshwater Algae Data</b>	<b>Ecotoxicity - Microtox Data</b>	<b>Ecotoxicity - Water Flea Data</b>
KINETIN	Not Listed	Not Listed	Not Listed
<b>Components</b>	<b>EPA - ATSDR Priority List</b>	<b>EPA - HPV Challenge Program Chemical List</b>	<b>California - Priority Toxic Pollutants</b>
KINETIN	Not Listed	Not Listed	Not Listed

Components  
KINETIN

California - Priority Toxic Pollutants  
Not Listed

California - Priority Toxic Pollutants  
Not Listed

**13. DISPOSAL CONSIDERATIONS**

**Waste from residues / unused products:**

Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority. Residue from fires extinguished with this material may be hazardous.

**Contaminated packaging:**

Do not re-use empty containers

**14. TRANSPORT INFORMATION**

UN/Id No:

Not regulated

DOT:

Proper shipping name:

Not Regulated

Components  
KINETIN

U.S. DOT - Appendix A Table 1 - Reportable Quantities  
Not Listed

**TDG (Canada):**

WHMIS hazard class:

Non-controlled

**IMDG/IMO**

IMDG - Hazard Classifications

Not Applicable

Components

U.S. DOT - Appendix B - Marine Pollutan

U.S. DOT - Appendix B - Severe Marine  
Pollutants

KINETIN

Not Listed

Not Listed

**IMO-labels:**

**15. REGULATORY INFORMATION**

**International Inventories**

Components

KINETIN

Inventory - United States TSCA - Sect. 8(b)

Present

Canada DSL Inventory List -

Present

Australia (AICS):

Present

Inventory - China:

Present

EU EINECS List -

208-382-2; C10H9N5O

Korean KECL:

KE-17367

**U.S. regulations:**

Catalog Number: 102117

Product name: KINETIN

<b>Components</b>	<b>California Proposition 65 -</b>	<b>Massachusetts Right to Know List:</b>	<b>New Jersey Right to Know List:</b>	<b>Pennsylvania Right to Know List:</b>
KINETIN	Not Listed	Not Listed	Not Listed	Not Listed
<b>Components</b>	<b>Florida substance List:</b>	<b>Rhode Island Right to Know List:</b>	<b>Illinois - Toxic Air Contaminants</b>	<b>Connecticut - Hazardous Air Pollutants</b>
KINETIN	Not Listed	Not Listed	Not Listed	Not Listed
<b>Components</b>	<b>SARA 313 Emission reporting/Toxic Release of Chemicals</b>	<b>CERCLA/SARA - Section 302 Extremely Haz</b>	<b>NTP:</b>	<b>IARC:</b>
KINETIN	Not Listed	Not Listed	None	None

**SARA 313 Notification:** The above is your notification as to the SARA 313 listing for this product(s) pursuant to Section 313 of Title III of the Superfund Ammendments and Reauthorization Act of 1986 and 40 CFR Part 372.

If you are unsure if you are subject to the reporting requirements of Section 313, or need more information, please call the EPA Emergency Planning and Community Right-To-Know Information Hotline: (800) 535-0202 or (202) 479-2499 (in Washington, DC or Alaska).

**State Notification:** The above information is your notice as to the Right-to-Know listings of the stated product(s). Individual states will list chemicals for a variety of reasons including, but not limited to, the compounds toxicity; carcinogenic, tumorigenic and/or reproductive hazards; and the compounds environmental impact if accidentally released.

**16. OTHER INFORMATION**

**Prepared by:** Health & Safety

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**End of Safety Data Sheet**

PRODUCT NAME: LIQUICHLOR/SODIUM HYPOCHLORITE 9-16%  
MSDS NUMBER: OX622680  
DATE ISSUED: 09/11/2007  
SUPERSEDES: 01/23/2006  
ISSUED BY: 008546

\*\*\*\*\*  
\*\*\*\*\*

MATERIAL SAFETY DATA SHEET

SECTION I IDENTIFICATION

Distribution:  
UNIVAR USA  
17425 NE Union Hill Road  
Redmond, WA 98052  
425-889-3400

TRADE NAME: LIQUICHLOR/SODIUM HYPOCHLORITE 9-16%  
CHEMICAL NAME: Sodium Hypochlorite  
FORMULA: NaOC1  
DOT SHIPPING NAME: Hypochlorite Solution  
DOT HAZARD CLASS: 8  
UN/NA NUMBER: UN 1791  
DOT LABEL: Corrosive  
DOT PLACARD: Corrosive  
PACKING GROUP: III  
REPORTABLE QUANTITY: Sodium Hypochlorite: 100 Pounds/45.4 Kilograms  
CAS NUMBER: 7681-52-9  
NFPA DESIGNATION: Health 3 Fire 0 Reactivity 1  
HMIS DESIGNATION: Health 3 Fire 0 Reactivity 1

SECTION II - HAZARDOUS INGREDIENTS

MATERIAL	% BY WEIGHT	CAS NO.	OSHA PEL	ACGIH TLV
Sodium Hypochlorite	9-16	7681-52-9	N/A	N/A
Sodium Hydroxide	0.1-2.0	1310-73-2	2mg/m3 ceiling	2mWm3 STEL /CEIL(c) ceiling
Inert Ingredients	Balance	N/A	N/A	N/A

CARCINOGENICITY STATUS: NTP - No, IARC - No, OSHA - No.

SECTION III - PHYSICAL DATA

APPEARANCE: Yellow-green liquid  
BOILING POINT: 219 deg F (104 deg C) for 12.5% NaOC1 by wt.  
FREEZING POINT: - 11 deg F (- 24 deg C) for 12.5% NaOC1 by wt.  
ODOR: Chlorine  
pH: 12.5 - 13.5 s.u. @ 25 deg C  
VISCOSITY (Cs): 2.15 @ 23 deg C for 12.5% NaOC1 by wt.  
% VOLATILE BY VOLUME: Variable water plus products of decomposition  
SOLUBILITY IN WATER: Complete  
SPECIFIC GRAVITY (Water----1): 1.196 @ 20 deg C for 12.5% NaOC1 by wt.  
VAPOR DENSITY (AIR=1): Not available  
VAPOR PRESSURE (mm Hg): Variable water plus products of decomposition

SECTION IV - FIRE AND EXPLOSION DATA

AUTO IGNITION TEMPERATURE: Not applicable

FLAMMABLE LIMITS IN AIR (Volume %): Not applicable

EXTINGUISHING MEDIA: Flood with water or carbon dioxide (CO2)

SPECIAL FIRE FIGHTING PROCEDURES: Use National Institute of Occupational Safety & Health (NIOSH) approved respirator with acid type canister or use self-contained breathing apparatus. Unusual fire and explosion hazards: material is a strong oxidizer. Contact with combustibles may initiate or promote combustion. Acid and heat accelerate decomposition. Decomposition products may include chlorine.

#### SECTION V - HEALTH HAZARD INFORMATION

##### MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

No medical conditions are known to be aggravated by exposure.

##### ROUTES OF EXPOSURE

INHALATION: Fumes from spills can cause severe irritation and chemical burns to the nose, throat, and lungs. Very little hazard from properly stored solution.

SKIN CONTACT: Severe irritant, reddening of skin, can cause chemical burns to skin.

SKIN ABSORPTION: Same as skin contact.

EYE CONTACT: Severe irritant, corrosive, can severely burn eyes.

INGESTION: Causes irritation of membranes of the mouth, throat, and stomach pain and possible ulceration. LD50 (oral, rat) for 12.5% NaOCl is approximately 5 g/kg body weight.

##### EFFECTS OF OVEREXPOSURE

ACUTE OVEREXPOSURE (see Routes of Exposure above)

SWALLOWING: See "ingestion" under routes of exposure.

SKIN CONTACT: severe Irritant, reddening of skin, skin damage, chemical burns.

INHALATION: Fumes from spills are very irritating to mucous membranes.

EYE CONTACT: Extreme irritant, corrosive.

CHRONIC OVEREXPOSURE (see Routes of Exposure above)

EYE: Can cause damage.

SKIN: Can cause damage, chemical burns.

##### EMERGENCY AND FIRST AID PROCEDURES

IF ON SKIN OR CLOTHING: Take off contaminated clothing rinse skin immediately with plenty of water for 15-20 minutes; call a poison control center or doctor for treatment advice.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes; remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye; call a poison control center or doctor for treatment advice.

IF SWALLOWED: Call poison control center or doctor immediately for treatment

Univar, Usa FaxServer 4/28/2009 1:57:00 PM PAGE 4/006 Fax Server  
advice, have person sip a glass of water if able to swallow, do not induce vomiting unless told to do so by the poison control center or doctor, do not give anything by mouth to an unconscious person.

IF INHALED: Move person to fresh air; if person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible; call a poison control center or doctor for further treatment advice. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

## SECTION VI - REACTIVITY DATA

### CONDITIONS CONTRIBUTING TO INSTABILITY

Solutions are fairly stable in concentrations below 10%. Stability decreases with concentration, heat, light, exposure, decrease in pH, and contamination with heavy metals, such as nickel, cobalt, copper, and iron.

### INCOMPATIBILITY

Acids, alcohols, amines, ammonia, chlorinated isocyanurates, combustibles, cyanides, detergents, ethers, hydrocarbons, oxidizable materials, reducing agents. Corrosive to most metals.

### DECOMPOSITION PRODUCTS

Hypochlorous Acid (HOCl), chlorine, hydrochloric acid. Composition depends upon temperature and decrease in pH. Additional decomposition products, which depend upon pH, temperature and time, are sodium chloride, sodium chlorate and oxygen.

### CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

Will not occur.

## SECTION VII - SPILL OR LEAK PROCEDURES

IN THE EVENT OF A TRANSPORTATION EMERGENCY, CALL CHEMTREC: (800) 424-9300

### STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Cleanup personnel must wear proper protective equipment (See Section VIII). Contain in diked area. Neutralize with sodium bisulfite or ferrous salt solutions. Place neutralized material in DOT specification approved container(s). Flush area with large amounts of water. Comply with all Federal, State and Local reporting requirements.

### WASTE DISPOSAL

Contact Federal, State, County, and Local environmental regulators for guidance regarding proper disposal.

RCRA: Test waste material for corrosivity, D002, prior to disposal.

## SECTION VIII - SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS: Local exhaust is recommended.

### SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY: Use National Institute of Occupational Safety and Health (NIOSH) or Mine Safety and Health Administration (MSHA) approved respirator appropriate for this product when permissible exposure limits are exceeded.

EYES: Use chemical goggles and face shield.

GLOVES: Use chemical resistant rubber, plastic, or neoprene gloves.

OTHER: Use chemical resistant splash apron and boots. Safety shower and eye wash fountain should be located nearby.

## SECTION IX - SPECIAL PRECAUTIONS

~~PRECAUTIONS TO BE TAKEN IN HANDLING~~  
DANGER: This product is corrosive and may cause severe skin irritation or chemical burns to broken skin. Causes eye damage. Do not get in eyes, on skin or on clothing. Wear goggles and face shield and chemical resistant gloves when handling this product. Wash after handling. Avoid breathing vapors. Vacate poorly ventilated areas as soon as possible. Do not return until odors have dissipated.

PROPER STORAGE AND DISPOSAL REQUIREMENTS

Store this product in a cool, dry area away from direct sunlight and heat to avoid deterioration. In case of spill, flood areas with large quantities of water.

Disposal for domestic use: Do not reuse container. Rinse thoroughly before discarding in trash. Disposal for all other uses: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Do not contaminate water, food, or feed by storage, disposal or cleaning of equipment. Store in an upright position!!!

OTHER PRECAUTIONS

STRONG OXIDIZING AGENT: Mix only with water according to label directions. Mixing this product with gross filth such as feces, urine, etc., or with ammonia, acids, detergents or other chemicals may release hazardous gases irritating to eyes, lungs and mucous membranes.

SECTION X REGULATORY STATUS INFORMATION

This product is listed in the Toxic Substances Control Act (TSCA) Inventory Of Chemical Substances.

Manufactured in Accordance with AWWA Standard for Hypochlorites, AWWA B300-99.

SARA Title III Extremely Hazardous Substance: No

SARA Title III Toxic Chemical: No

SARA 311/312:

Acute Hazard, Chronic Hazard, Fire Hazard, Reactivity Hazard

EPA CLEAN AIR ACT: This product does not contain nor is it manufactured with Ozone depleting substances.

Super fund Reportable Discharge = 100 pounds (100% NaOCl)

CERCLA Hazardous Material: Yes

California Proposition 65: No

----- FOR ADDITIONAL INFORMATION -----  
CONTACT: MSDS COORDINATOR UNIVAR USA INC.  
DURING BUSINESS HOURS, PACIFIC TIME (425)889-3400  
----- NOTICE -----

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\* \* \*    E N D   O F   M S D S    \* \* \*

KOH Merck  
CAS 215-181-3  
**Material Safety Data Sheet**

56.11g/mol

EMD

Potassium Hydroxide

**Section 1. Product and Company Identification**

**Product name** : Potassium Hydroxide  
**Product code** : PX1480  
**Synonym** : Potassium Hydrate, Caustic Potash  
**Material uses** : Industrial applications: Analytical reagent.  
Other non-specified industry: Analytical reagent.  
**Manufacturer** : EMD Chemicals Inc.  
P.O. Box 70  
480 Democrat Road  
Gibbstown, NJ 08027  
856-423-6300 Technical Service  
Monday - Friday: 8:00 - 5:00 PM  
**Validation date** : 1/12/2007.  
**Print date** : 1/12/2007.  
**In case of emergency** : 800-424-9300 CHEMTREC (USA)  
613-996-6666 CANUTEC (Canada)  
24 Hours/Day: 7 Days/Week

**Section 2. Hazards Identification**

**Physical state** : Solid. (Pellets.)  
**Odor** : Odorless.  
**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
**Emergency overview** : DANGER!  
POISON!  
MAY BE FATAL IF SWALLOWED.  
CAUSES SEVERE EYE AND SKIN BURNS.  
HARMFUL IF INHALED.  
CAUSES RESPIRATORY TRACT IRRITATION.  
CAUSES DAMAGE TO THE FOLLOWING ORGANS: LUNGS, RESPIRATORY TRACT, SKIN, EYES, EYE, LENS OR CORNEA.  
Do not ingest. Do not get in eyes or on skin or clothing. Avoid breathing dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.  
**Routes of entry** : Dermal contact. Eye contact. Inhalation. Ingestion.  
**Potential acute health effects**  
**Eyes** : Severely corrosive to the eyes.  
**Skin** : Severely corrosive to the skin.  
**Inhalation** : Toxic by inhalation. Irritating to respiratory system.  
**Ingestion** : Very toxic if swallowed. May cause burns to mouth, throat and stomach.  
**Carcinogenic effects** : No known significant effects or critical hazards.  
**Mutagenic effects** : No known significant effects or critical hazards.  
**Teratogenicity / Reproductive toxicity** : No known significant effects or critical hazards.  
**Medical conditions aggravated by over-exposure** : Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated or prolonged exposure to the substance can produce target organs damage.  
**See toxicological information (section 11)**

**Continued on Next Page**

### Section 3. Composition/Information on Ingredients

#### United States

<u>Name</u>	<u>CAS number</u>	<u>% by Weight</u>
Potassium Hydroxide	1310-58-3	100

### Section 4. First Aid Measures

- Eye contact** : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Inhalation** : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing or wear gloves.

### Section 5. Fire Fighting Measures

**Flammability of the product** : No specific hazard.

#### Extinguishing media

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Not available.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Special remarks on fire hazards** : Thermal decomposition may release toxic and/or hazardous gases.
- Special remarks on explosion hazards** : Contact with many metals produces highly flammable hydrogen gas. Violent reaction may occur.

**Continued on Next Page**

## Section 6. Accidental Release Measures

- Personal precautions** : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
- Methods for cleaning up** : If emergency personnel are unavailable, vacuum or carefully scoop up spilled material and place in an appropriate container for disposal by incineration. Avoid creating dusty conditions and prevent wind dispersal.

## Section 7. Handling and Storage

- Handling** : Do not ingest. Do not get in eyes or on skin or clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing dust. Wash thoroughly after handling.
- Storage** : Keep container tightly closed. Keep container in a cool, well-ventilated area.

## Section 8. Exposure Controls/Personal Protection

### Product name

### Exposure limits

#### United States

Potassium Hydroxide

**ACGIH TLV (United States, 2002).**

CEIL: 2 mg/m<sup>3</sup>

**NIOSH REL (United States, 2001).**

TWA: 2 mg/m<sup>3</sup> 10 hour/hours.

**OSHA Final Rule (United States, 1989).**

CEIL: 2 mg/m<sup>3</sup>

**OSHA PEL 1989 (United States, 1989).**

CEIL: 2 mg/m<sup>3</sup>

**ACGIH TLV (United States, 1/2005).**

CEIL: 2 mg/m<sup>3</sup> Form: All forms

**NIOSH REL (United States, 12/2001).**

TWA: 2 mg/m<sup>3</sup> 10 hour/hours. Form: All forms

**OSHA PEL 1989 (United States, 3/1989).**

CEIL: 2 mg/m<sup>3</sup> Form: All forms

### Consult local authorities for acceptable exposure limits.

- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

### Personal protection

#### Eyes

- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.

Recommended: safety glasses with side-shields face shield

#### Skin

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Body: Recommended: safety apron or lab coat and gloves

#### Respiratory

- : Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Recommended: disposable particulate mask

#### Hands

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

>8 hour/hours (breakthrough time): nitrile rubber

Continued on Next Page

## Section 8. Exposure Controls/Personal Protection

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

## Section 9. Physical and Chemical Properties

**Physical state** : Solid. (Pellets.)  
**Color** : White.  
**Odor** : Odorless.  
**Molecular weight** : 56.11 g/mole  
**Molecular formula** : H-K-O  
**Boiling/condensation point** : 1319.85°C (2407.7°F)  
**Melting/freezing point** : 380°C (716°F)  
**Relative density** : 2.04 (Water = 1)

## Section 10. Stability and Reactivity

**Stability and reactivity** : The product is stable.  
**Incompatibility with various substances** : Highly reactive or incompatible with the following materials: metals and moisture. Reactive or incompatible with the following materials: reducing materials, organic materials and acids. Contact with many metals produces highly flammable hydrogen gas. Incompatible with strong acids, ammonia, carbon dioxide, alkyl alcohol, aluminum, zinc, tetrahydrofuran, diazonium salts.  
**Hazardous decomposition products** : H<sub>2</sub>  
**Hazardous polymerization** : Will not occur.  
**Conditions of reactivity** : Contact with many metals produces highly flammable hydrogen gas. Violent reaction may occur.

## Section 11. Toxicological Information

### Toxicity data

#### United States

<u>Product/ingredient name</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
Potassium Hydroxide	LD50	273 mg/kg	Oral	Rat

**Chronic effects on humans** : Causes damage to the following organs: lungs, upper respiratory tract, skin, eyes, eye, lens or cornea.

**Other toxic effects on humans** : Extremely hazardous in case of skin contact (corrosive), of eye contact (corrosive), of ingestion, of inhalation (lung corrosive).  
 Very hazardous in case of inhalation (lung irritant).

### Specific effects

**Carcinogenic effects** : No known significant effects or critical hazards.  
**Mutagenic effects** : No known significant effects or critical hazards.  
**Teratogenicity / Reproductive toxicity** : No known significant effects or critical hazards.

### Sensitization

**Ingestion** : May cause burns to mouth, throat and stomach.  
**Inhalation** : Irritating to respiratory system.  
**Eyes** : Severely corrosive to the eyes.  
**Skin** : Severely corrosive to the skin.

**Continued on Next Page**

## Section 12. Ecological Information

- Environmental precautions** : No known significant effects or critical hazards.
- Products of degradation** : Some metallic oxides.
- Toxicity of the products of biodegradation** : The products of degradation are less toxic than the product itself.

## Section 13. Disposal Considerations

- Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

## Section 14. Transport Information

Regulatory Information	UN number	Proper shipping name	Class	PG*	Label	Additional information
DOT Classification	UN1813	POTASSIUM HYDROXIDE, SOLID	8	II		<b>Reportable quantity</b> 1000 lbs. (453.6 kg)

PG\* : Packing group

## Section 15. Regulatory Information

### United States

- HCS Classification** : Highly toxic material  
Corrosive material  
Target organ effects
- U.S. Federal regulations** : TSCA 8(b) inventory: Listed

Continued on Next Page

## Section 15. Regulatory Information

SARA 302/304/311/312 extremely hazardous substances: No products were found.  
 SARA 302/304 emergency planning and notification: No products were found.  
 SARA 302/304/311/312 hazardous chemicals: Potassium Hydroxide  
 SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Potassium Hydroxide: Immediate (acute) health hazard, Delayed (chronic) health hazard  
 Clean Water Act (CWA) 307: No products were found.  
 Clean Water Act (CWA) 311: Potassium Hydroxide  
 Clean Air Act (CAA) 112 accidental release prevention: No products were found.  
 Clean Air Act (CAA) 112 regulated flammable substances: No products were found.  
 Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

**State regulations** : Pennsylvania RTK: Potassium Hydroxide: (environmental hazard, generic environmental hazard)  
 Massachusetts RTK: Potassium Hydroxide  
 New Jersey: Potassium Hydroxide

### Canada

**WHMIS (Canada)** : Class D-1B: Material causing immediate and serious toxic effects (Toxic).  
 Class E: Corrosive material

**CEPA DSL/CEPA NDSL** : CEPA DSL: Potassium Hydroxide

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

### EU regulations

**Hazard symbol/symbols** :



**Risk phrases** : R22- Harmful if swallowed.  
 R35- Causes severe burns.

**Safety phrases** : S1/2- Keep locked up and out of the reach of children.  
 S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
 S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.  
 S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

### International regulations

**International lists** : Australia (NICNAS): Potassium Hydroxide  
 China: Potassium Hydroxide  
 Germany water class: Potassium Hydroxide  
 Japan (METI): Potassium Hydroxide  
 Korea (TCCL): Potassium Hydroxide  
 Philippines (RA6969): Potassium Hydroxide

## Section 16. Other Information

**Label requirements** : DANGER!  
 POISON!

Continued on Next Page

**Section 16. Other Information**

MAY BE FATAL IF SWALLOWED.  
CAUSES SEVERE EYE AND SKIN BURNS.  
HARMFUL IF INHALED.  
CAUSES RESPIRATORY TRACT IRRITATION.  
CAUSES DAMAGE TO THE FOLLOWING ORGANS: LUNGS, RESPIRATORY TRACT,  
SKIN, EYES, EYE, LENS OR CORNEA.

National Fire Protection  
Association (U.S.A.) :

**Notice to reader**

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MSDS# 23420

Section 1 - Chemical Product and Company Identification

MSDS Name: Thiourea  
Catalog Numbers: T101-100, T101-212, T101-212LC, T101-500  
Synonyms: Thiocarbamide; Thiourea; Isothiourea; Thiocarbonic acid diamide; Sulourea.

Company Identification: Fisher Scientific  
One Reagent Lane  
Fair Lawn, NJ 07410

For information in the US, call: 201-796-7100  
Emergency Number US: 201-796-7100  
CHEMTREC Phone Number, US: 800-424-9300

Section 2 - Composition, Information on Ingredients

-----  
CAS#: 62-56-6  
Chemical Name: Thiourea  
%: >99  
EINECS#: 200-543-5  
-----

Hazard Symbols:

XN N



Risk Phrases:

22 40 51/53 63

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

**Warning!** Causes respiratory tract irritation. May cause allergic skin reaction. This substance has caused adverse reproductive and fetal effects in animals. Harmful if swallowed. Causes eye and skin irritation. May cause cancer based on animal studies. Target Organs: Blood, liver, bone marrow, thyroid, reproductive system.

Potential Health Effects

Eye: Causes eye irritation.

Skin: Causes skin irritation. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.

Ingestion: Harmful if swallowed. May cause severe irritation of the digestive tract. May cause anemia, leukopenia (reduction in the number of white blood cells in the blood), and thrombocytopenia. May cause bone marrow depression.

Inhalation: May cause respiratory tract irritation.

Chronic: May cause cancer according to animal studies. May cause reproductive and fetal effects. Prolonged or repeated exposure may cause thyroid damage. Chronic exposure may cause liver damage. Laboratory experiments have resulted in mutagenic effects. Thiourea has an antithyroid effect and it is possible that fetal goiter might be produced by sufficient maternal exposure to this agent. Thiourea was teratogenic in rats exposed to a 0.2% solution as drinking water.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.

Skin: In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and

shoes. Get medical aid if symptoms occur. Wash clothing before reuse.

Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:

### Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Dusts may be an explosion hazard if mixed with air at critical proportions and in the presence of an ignition source.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Autoignition Temperature: 440 deg C ( 824.00 deg F)

Flash Point: Not available

Explosion Limits: Lower: Not available

Explosion Limits: Upper: Not available

NFPA Rating: health: 2; flammability: 0; instability: 0;

### Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

### Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Avoid breathing dust.

Storage: Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

### Section 8 - Exposure Controls, Personal Protection

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Thiourea	none listed	none listed	none listed

OSHA Vacated PELs: Thiourea: None listed

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

## Section 9 - Physical and Chemical Properties

Physical State: Crystals

Color: white

Odor: odorless

pH: Not available

Vapor Pressure: 2.5 mm Hg @ 25 deg C

Vapor Density: 2.6

Evaporation Rate: Not available

Viscosity: Not available

Boiling Point: Decomposes.

Freezing/Melting Point: 176 - 178 deg C

Decomposition Temperature:

Solubility in water: Soluble

Specific Gravity/Density: 1.405

Molecular Formula: CH<sub>4</sub>N<sub>2</sub>S

Molecular Weight: 76.12

## Section 10 - Stability and Reactivity

Chemical Stability:	Stable under normal temperatures and pressures. Polymerization may occur upon heating.
Conditions to Avoid:	Mechanical shock, dust generation, excess heat.
Incompatibilities with Other Materials	Oxidizing agents, strong acids, strong bases, acrolein, nitric acid, hydrogen peroxide, acrylaldehyde.
Hazardous Decomposition Products	Nitrogen oxides, carbon monoxide, oxides of sulfur, carbon dioxide.
Hazardous Polymerization	May occur.

## Section 11 - Toxicological Information

RTECS#:	CAS# 62-56-6: YU2800000
	RTECS:
LD50/LC50:	CAS# 62-56-6: Draize test, rabbit, eye: 14%; Oral, rat: LD50 = 125 mg/kg;
Carcinogenicity:	Thiourea - California: carcinogen, initial date 1/1/88 NTP: Suspect carcinogen IARC: Group 3 (not classifiable)
Other:	See actual entry in RTECS for complete information.

## Section 12 - Ecological Information

	Fish: Fathead Minnow: LC50 > 600 mg/L; 96 Hr; Unspecified
Ecotoxicity:	Bacteria: Phytobacterium phosphoreum: EC50 = 3400 mg/L; 15 min; Microtox test Water flea Daphnia: LC50 = 1.8 mg/L; Unspecified; Unspecified
Other:	Testicular toxicity of thiourea has been demonstrated in fish exposed to concentrations of 300 ppm.

## Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

## Section 14 - Transport Information

US DOT

Shipping Name: TOXIC SOLIDS, ORGANIC, N.O.S.

Hazard Class: 6.1

UN Number: UN2811

Packing Group: III

Canada TDG

Shipping Name: TOXIC SOLIDS, ORGANIC, N.O.S.

Hazard Class: 6.1

UN Number: UN2811

USA RQ: CAS# 62-56-6: 10 lb final RQ; 4.54 kg final RQ

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN N

Risk Phrases:

R 22 Harmful if swallowed.

R 40 Limited evidence of a carcinogenic effect.

R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R 63 Possible risk of harm to the unborn child.

Safety Phrases:

S 36/37 Wear suitable protective clothing and gloves.

S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)

CAS# 62-56-6: 2

Canada

CAS# 62-56-6 is listed on Canada's DSL List

Canadian WHMIS Classifications: D1B, D2A

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 62-56-6 is listed on Canada's Ingredient Disclosure List

US Federal

TSCA

CAS# 62-56-6 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: 6/04/1999

Revision #9 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

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**Material Safety Data Sheet**  
**ALLEGIANCE® FL SEED TREATMENT FUNGICIDE**

MSDS Number: 10200012827  
 MSDS Version 2.0  
 Revision Date: 04/07/2006

**SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION**

**Product Name** ALLEGIANCE® FL SEED TREATMENT FUNGICIDE  
**MSDS Number** 10200012827  
**EPA Registration No.** 264-935

Bayer CropScience  
 2 T.W. Alexander Drive  
 Research Triangle PK, NC 27709  
 USA

For MEDICAL, TRANSPORTATION or other EMERGENCY call: 1-800-334-7577 (24 hours/day)  
 For Product Information call: 1-866-99BAYER (1-866-992-2937)

**SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Hazardous Component Name</u>	<u>CAS-No.</u>	<u>Average % by Weight</u>
Metalaxyl	57837-19-1	28.35
Attapulgitte clay	12174-11-7	0.40

**SECTION 3. HAZARDS IDENTIFICATION**

*NOTE: Please refer to Section 11 for detailed toxicological information.*

**Emergency Overview** Warning! Harmful if swallowed or absorbed through skin. Causes skin irritation. Moderate eye irritation. Do not get in eyes, on skin, or on clothing. Avoid inhalation of vapour or mist.

**Physical State** liquid

**Appearance** light tan to brown

**Routes of Exposure** Skin Absorption, Skin contact, Eye contact, Ingestion, Inhalation

**Immediate Effects**

**Eye** Moderate eye irritation. Do not get in eyes.

**Skin** Causes skin irritation. Harmful if absorbed through skin. Do not get in eyes, on skin, or on clothing.

**Ingestion** Harmful if swallowed. Do not take internally.

**Inhalation** Avoid inhalation of vapour or mist.



**Material Safety Data Sheet**

**ALLEGIANCE® FL SEED TREATMENT FUNGICIDE**

MSDS Number: 102000012827  
MSDS Version 2.0

**Chronic or Delayed Long-Term**      This product or its components may have target organ effects.

**SECTION 4. FIRST AID MEASURES**

**General**      When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

**Eye**      Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.

**Skin**      Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Call a physician or poison control center immediately.

**Ingestion**      Call a physician or poison control center immediately. Rinse out mouth and give water in small gulps to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

**Inhalation**      Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

**Notes to Physician Treatment**      There is no specific antidote. Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended.

**SECTION 5. FIRE FIGHTING MEASURES**

**Flash Point**      > 93.4 °C / > 200.1 °F

**Suitable Extinguishing Media**      foam, dry chemical, carbon dioxide (CO2)

**Fire Fighting Instructions**      Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Dike area to prevent runoff and contamination of water sources. Equipment or materials involved in pesticide fires may become contaminated.

Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**



**Material Safety Data Sheet**

**ALLEGIANCE® FL SEED TREATMENT FUNGICIDE**

MSDS Number: 102000012827  
MSDS Version 2.0

- Personal Precautions** Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.
- Methods for Cleaning Up** Take up with absorbent material (e.g. sand, diatomaceous earth or a proprietary absorbent material). Keep in suitable, closed containers for disposal. Clean contaminated floors and objects thoroughly, observing environmental regulations.
- Additional Advice** Use personal protective equipment. Do not allow product to enter streams, sewers or other waterways.

**SECTION 7. HANDLING AND STORAGE**

- Handling Procedures** Handle and open container in a manner as to prevent spillage.
- Storing Procedures** Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.
- Work/Hygienic Procedures** Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.
- Take off contaminated clothing and shoes immediately. Then wash thoroughly and put on clean clothing.
- Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. As soon as practical, wash thoroughly and change into clean clothing.
- Min/Max Storage Temperatures** Do not transport or store below 3 °C / 37 °F  
Do not transport or store above 32 °C / 90 °F

**SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

- General Protection** Follow all label instructions. Train employees in safe use of the product.
- Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.
- Engineering Controls** Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.
- Eye/Face Protection** tightly fitting safety goggles
- Hand Protection** Chemical resistant nitrile rubber gloves
- Body Protection** Wear long-sleeved shirt and long pants and shoes plus socks.



**Material Safety Data Sheet**

**ALLEGIANCE® FL SEED TREATMENT FUNGICIDE**

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**Respiratory Protection** When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or Industry recommendations.

**Exposure Limits**  
Kaolin

1332-58-7	ACGIH	TWA	2 mg/m3
	Form of Exposure		Respirable fraction.
	Remarks		The value is for particulate matter containing no asbestos and <1% crystalline silica.
	NIOSH	REL	5 mg/m3
	Form of Exposure		Respirable.
	NIOSH	REL	10 mg/m3
	Form of Exposure		Total
	US CA OEL	TWA PEL	2 mg/m3
	Form of Exposure		Respirable dust.
	OSHA Z1	PEL	5 mg/m3
	Form of Exposure		Respirable fraction.
	OSHA Z1	PEL	15 mg/m3
	Form of Exposure		Total dust.
	OSHA Z1A	TWA	5 mg/m3
	Form of Exposure		Respirable fraction.
	OSHA Z1A	TWA	10 mg/m3
	Form of Exposure		Total dust.
	OSHA Z1	PEL	5 mg/m3
	Form of Exposure		Respirable fraction.
	OSHA Z1	PEL	15 mg/m3
	Form of Exposure		Total dust.
	OSHA Z1A	TWA	5 mg/m3
	Form of Exposure		Respirable fraction.
	OSHA Z1A	TWA	15 mg/m3
	Form of Exposure		Total dust.
	Z3	TWA	15 millions of particles per cubic foot of air
	Form of Exposure		Respirable fraction.
	Z3	TWA	50 millions of particles per cubic foot of air
	Form of Exposure		Total dust.
	Z3	TWA	5 mg/m3
	Form of Exposure		Respirable fraction.
	Z3	TWA	15 mg/m3
	Form of Exposure		Total dust.



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**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	light tan to brown
<b>Physical State</b>	liquid
<b>pH</b>	5.0 - 8.0 (undiluted)
<b>Bulk Density</b>	9.05 - 9.20 lb/gal.
<b>Water Solubility</b>	miscible
<b>Viscosity</b>	400 - 600 mPa.s

**SECTION 10. STABILITY AND REACTIVITY**

<b>Chemical Stability</b>	Stable under recommended storage conditions.
<b>Conditions to Avoid</b>	Exposure to extreme heat.
<b>Incompatibility</b>	strong acids strong bases oxidizing agents
<b>Hazardous Decomposition Products</b>	In case of fire hazardous decomposition products may be produced such as: nitrogen oxides (NOx) carbon dioxide (CO2) Carbon monoxide

**SECTION 11. TOXICOLOGICAL INFORMATION**

<b>Acute Oral Toxicity</b>	rat: LD50: > 2,900 mg/kg
<b>Acute Dermal Toxicity</b>	rabbit: LD50: > 2,000 mg/kg
<b>Acute Inhalation Toxicity</b>	rat: LC50: > 21.94 mg/l Exposure time: 1 h No deaths
<b>Skin Irritation</b>	Moderate skin irritation.
<b>Eye Irritation</b>	Slight irritation.
<b>Chronic Toxicity</b>	In lifetime feeding studies with high doses of Metalaxyl, experimental animals exhibited an increase in liver weights and circulating blood enzymes. No other target organs were affected.



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**Assessment Carcinogenicity**

**ACGIH**

None.

**NTP**

None.

**IARC**

Attapulgitic clay

12174-11-7

Overall evaluation: 2B

Attapulgitic clay

12174-11-7

Overall evaluation: 3

**OSHA**

None.

**SECTION 12. ECOLOGICAL INFORMATION**

**Environmental  
Precautions**

For terrestrial uses, do not apply directly to water, or to areas where surface water is present, or to intertidal areas below mean high water mark. Do not apply when weather conditions favor runoff or drift. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Apply this product only as specified on the label.

**SECTION 13. DISPOSAL CONSIDERATIONS**

**General Disposal  
Guidance**

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Open dumping is prohibited.

**Container Disposal**

Do not re-use empty containers. Triple rinse containers. Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke.

**SECTION 14. TRANSPORT INFORMATION**

**TRANSPORTATION CLASSIFICATION:**

Not regulated for Domestic Surface Shipment

**FREIGHT CLASSIFICATION:**

Insecticides or Fungicides, N.O.I.; other than poison

**SECTION 15. REGULATORY INFORMATION**

**EPA Registration No.** 264-935

**US Federal Regulations**

**TSCA list**

None.



**Material Safety Data Sheet**

**ALLEGIANCE® FL SEED TREATMENT FUNGICIDE**

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**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**  
None.

**SARA Title III - Section 302 - Notification and Information**  
None.

**SARA Title III - Section 313 - Toxic Chemical Release Reporting**  
None.

**US States Regulatory Reporting**  
**CA Prop65**

This product contains a chemical known to the State of California to cause cancer.  
Attapulgite clay 12174-11-7

This product does not contain any substances known to the State of California to cause reproductive harm.

**US State Right-To-Know Ingredients**  
Attapulgite clay 12174-11-7 CA

**Canadian Regulations**  
**Canadian Domestic Substance List**  
None.

**Environmental**  
**CERCLA**  
None.  
**Clean Water Section 307 Priority Pollutants**  
None.  
**Safe Drinking Water Act Maximum Contaminant Levels**  
None.

**International Regulations**  
**European Inventory of Existing Commercial Substances (EINECS)**  
Metalaxyl 57837-19-1

**SECTION 16. OTHER INFORMATION**

NFPA 704 (National Fire Protection Association):  
Health - 2 Flammability - 1 Reactivity - 0 Others - none  
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason to Revise: Updated to new system format.

Revision Date: 04/07/2006

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.



## MATERIAL SAFETY DATA SHEET

Syngenta Crop Protection, Inc.  
Post Office Box 18300  
Greensboro, NC 27419

In Case of Emergency, Call  
1-800-888-8372

### 1. PRODUCT IDENTIFICATION

Product Name: **APRON XL** Product No.: A9382A  
EPA Signal Word: Warning  
Active Ingredient(%): Mefenoxam (33.3%) CAS No.: 70630-17-0 & 69516-34-3  
Chemical Name: (R,S)-2-[(2,6-dimethylphenyl)-methoxyacetyl-amino]-propionic acid methyl ester  
Chemical Class: Phenylamide Fungicide  
EPA Registration Number(s): 100-799 Section(s) Revised: 14

### 2. HAZARDS IDENTIFICATION

#### Health and Environmental

Harmful if swallowed or inhaled. May be harmful in contact with skin. Causes eye and skin irritation.

#### Hazardous Decomposition Products

None known.

#### Physical Properties

Appearance: Amber liquid  
Odor: Light oily/petroleum

#### Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen
Mefenoxam (33.3%)	Not Established	Not Established	10 mg/m <sup>3</sup> TWA ***	No

\*\*\* Syngenta Occupational Exposure Limit (OEL)

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.  
Syngenta Hazard Category: B, S

### 4. FIRST AID MEASURES

Have the product container, label or Material Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison control center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Have the person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

- Eye Contact:** If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Skin Contact:** If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Inhalation:** If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Notes to Physician

There is no specific antidote if this product is ingested.

Treat symptomatically.

Medical Condition Likely to be Aggravated by Exposure

None known.

## 5. FIRE FIGHTING MEASURES

Fire and Explosion

Flash Point (Test Method):	> 200°F	
Flammable Limits (% in Air):	Lower: Not Applicable	Upper: Not Applicable
Autoignition Temperature:	Not Available	
Flammability:	Not Applicable	

Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

In Case of Fire

Use dry chemical, foam or CO2 extinguishing media. Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. If water is used to fight fire, dike and collect runoff.

## 6. ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

## 7. HANDLING AND STORAGE

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.**

**FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.**

- Ingestion:** Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.
- Eye Contact:** Where eye contact is likely, use chemical splash goggles. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

**Skin Contact:** Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear.

**Inhalation:** A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH approved respirator with any N, R, P or HE filter.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Amber liquid  
**Odor:** Light oily/petroleum  
**Melting Point:** Not Applicable  
**Boiling Point:** Not Available  
**Specific Gravity/Density:** 1.11 g/ml  
**pH:** 5 - 7 (1% suspension in water)

### Solubility in H<sub>2</sub>O

**Mefenoxam:** 26 g/l @ 77°F (25°C)

### Vapor Pressure

**Mefenoxam:**  $2.5 \times 10^{-5}$  mmHg @ 77°F (25°C)

## 10. STABILITY AND REACTIVITY

**Stability:** Stable under normal use and storage conditions.  
**Hazardous Polymerization:** Will not occur.  
**Conditions to Avoid:** None known.  
**Materials to Avoid:** None known.  
**Hazardous Decomposition Products:** None known.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity/Irritation Studies (Finished Product)

**Ingestion:**  
Oral (LD50 Rabbit) : 862 mg/kg body weight

**Dermal:**  
Dermal (LD50 Rat) : > 2020 mg/kg body weight

**Inhalation:**  
Inhalation (LC50 Rat) : 2.52 mg/l air - 4 hours

**Eye Contact:** Moderately Irritating (Rabbit)  
**Skin Contact:** Slightly Irritating (Rabbit)  
**Skin Sensitization:** Not a Sensitizer (Guinea Pig)

### Reproductive/Developmental Effects

Mefenoxam: None observed.

### Chronic/Subchronic Toxicity Studies

Mefenoxam: Liver effects at high dose animal tests.

### Carcinogenicity

Mefenoxam: None observed.

### Other Toxicity Information

None

Toxicity of Other Components

Not Applicable

Target Organs

Active Ingredients

Mefenoxam: Liver

Inert Ingredients

Not Applicable

**12. ECOLOGICAL INFORMATION**

Ecotoxicity Effects

Mefenoxam:

Fish (Rainbow Trout) 96-hour LC50 > 121 ppm

Invertebrate (Water Flea) Daphnia Magna 48-hour EC50 > 113 ppm

Bird (Bobwhite Quail) 14-day LD50 981 mg/kg

Environmental Fate

Mefenoxam:

The information presented here is for the active ingredient, mefenoxam.

Does not bioaccumulate. Not persistent in soil or water. Moderate mobility in soil. Mixes/sinks (after 24 h).

**13. DISPOSAL CONSIDERATIONS**

Disposal

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

**14. TRANSPORT INFORMATION**

DOT Classification

Ground Transport - NAFTA

Not regulated.

Comments

Water Transport - International

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Fatty Ammonium Ether Sulfate), Marine Pollutant

Hazard Class: Class 9

Identification Number: UN 3082

Packing Group: PG III

Air Transport

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Fatty Ammonium Ether Sulfate)

Hazard Class: Class 9

Identification Number: UN 3082

Packing Group: PG III

## 15. REGULATORY INFORMATION

### EPCRA SARA Title III Classification

Section 311/312 Hazard Classes: Acute Health Hazard

Section 313 Toxic Chemicals: Not Applicable

### California Proposition 65

Not Applicable

### CERCLA/SARA 302 Reportable Quantity (RQ)

None

### RCRA Hazardous Waste Classification (40 CFR 261)

Not Applicable

### TSCA Status

Exempt from TSCA, subject to FIFRA

## 16. OTHER INFORMATION

### NFPA Hazard Ratings

Health: 2  
Flammability: 1  
Instability: 0

### HMIS Hazard Ratings

Health: 1  
Flammability: 1  
Reactivity: 0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 9/7/2004

Revision Date: 11/18/2010

Replaces: 6/1/2009

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

End of MSDS



The Chemical Company

# Safety Data Sheet

## CORONET® FUNGICIDE

Revision date : 2009/09/16  
Version: 1.1

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### 1. Product and Company Identification

Company  
BASF CORPORATION  
100 Campus Drive  
Florham Park, NJ 07932, USA

24 Hour Emergency Response Information  
CHEMTREC: 1-800-424-9300  
BASF HOTLINE: 1-800-832-HELP

Substance number: 000000213820  
Molecular formula: C<sub>18</sub> H<sub>12</sub> Cl<sub>2</sub> N<sub>2</sub> ; C<sub>19</sub> H<sub>18</sub> Cl N<sub>3</sub> O<sub>4</sub>  
Chemical family: strobilurine, salt of organic acids, ester  
Synonyms: pyraclostrobin + boscalid

### 2. Hazards Identification

#### Emergency overview

**CAUTION:**  
KEEP OUT OF REACH OF CHILDREN.  
KEEP OUT OF REACH OF DOMESTIC ANIMALS.  
HARMFUL IF SWALLOWED.  
Prolonged or repeated skin contact may cause sensitization or allergic reactions.  
May cause moderate but temporary irritation to the eyes.  
Avoid contact with the skin, eyes and clothing.

See Product Label for additional precautionary statements.  
Colour: white  
Odour: product specific

#### Potential health effects

##### **Primary routes of exposure:**

Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquified gases.

##### **Acute toxicity:**

Slightly toxic after single ingestion. Relatively nontoxic after short-term skin contact. Relatively nontoxic after short-term inhalation.

##### **Irritation / corrosion:**

May cause moderate irritation to the skin. May cause slight but temporary irritation to the eyes.

##### **Sensitization:**

Caused skin sensitization in animal studies.

#### Potential environmental effects

**Aquatic toxicity:**

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Acutely toxic for fish. Very toxic (acute effect) to aquatic invertebrates. Acutely toxic for aquatic plants.

### Terrestrial toxicity:

With high probability not acutely harmful to terrestrial organisms.

### 3. Composition / Information on Ingredients

<u>CAS Number</u>	<u>Content (W/W)</u>	<u>Chemical name</u>
188425-85-6	<= 20.0 %	Boscalid
175013-18-0	<= 10.0 %	Pyraclostrobin
56-81-5	<= 9.0 %	glycerol
	<= 61.0 %	Proprietary ingredients

### 4. First-Aid Measures

#### General advice:

First aid providers should wear personal protective equipment to prevent exposure. Remove contaminated clothing. Move person to fresh air. If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or physician for treatment advice. Have the product container or label with you when calling a poison control center or doctor or going for treatment.

#### If inhaled:

Remove the affected individual into fresh air and keep the person calm.

#### If on skin:

Rinse skin immediately with plenty of water for 15 - 20 minutes.

#### If in eyes:

Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing.

#### If swallowed:

Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Do not induce vomiting. Have person sip a glass of water if able to swallow.

#### Note to physician

Antidote: No known specific antidote.  
Treatment: Treat symptomatically.

### 5. Fire-Fighting Measures

Flash point:	approx. > 100 °C	Based of the high water content the determination of the flash point seems not to be necessary.
Autoignition:	431 °C	(Directive 92/69/EEC, A.15)
Self-ignition temperature:		not self-igniting

#### Suitable extinguishing media:

foam, dry extinguishing media, carbon dioxide, water spray

#### Hazards during fire-fighting:

carbon monoxide, carbon dioxide, nitrogen dioxide, nitrogen oxide, Hydrogen chloride, halogenated hydrocarbons, Hydrocarbons,

If product is heated above decomposition temperature, toxic vapours will be released. The substances/groups of substances mentioned can be released in case of fire.

# Safety Data Sheet

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### Protective equipment for fire-fighting:

Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

### Further information:

Evacuate area of all unnecessary personnel. Contain contaminated water/firefighting water. Do not allow to enter drains or waterways.

---

## 6. Accidental release measures

### Personal precautions:

Take appropriate protective measures. Clear area. Shut off source of leak only under safe conditions. Extinguish sources of ignition nearby and downwind. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

### Environmental precautions:

Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater. Contain contaminated water/firefighting water.

### Cleanup:

Dike spillage. Pick up with suitable absorbent material. Place into suitable containers for reuse or disposal in a licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever possible. If application of spilled substance/product is not possible, then spills should be contained, solidified, and placed in suitable containers for disposal. After decontamination, spill area can be washed with water. Collect wash water for approved disposal.

---

## 7. Handling and Storage

### Handling

#### General advice:

RECOMMENDATIONS ARE FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS. PESTICIDE APPLICATORS & WORKERS must refer to the Product Label and Directions for Use attached to the product for Agricultural Use Requirements in accordance with the EPA Worker Protection Standard 40 CFR part 170. Ensure adequate ventilation. Provide good ventilation of working area (local exhaust ventilation if necessary). Keep away from sources of ignition - No smoking. Keep container tightly sealed. Protect contents from the effects of light. Protect against heat. Protect from air. Handle and open container with care. Do not open until ready to use. Once container is opened, content should be used as soon as possible. Avoid aerosol formation. Avoid dust formation. Provide means for controlling leaks and spills. Do not return residues to the storage containers. Follow label warnings even after container is emptied. The substance/product may be handled only by appropriately trained personnel. Avoid all direct contact with the substance/product. Avoid contact with the skin, eyes and clothing. Avoid inhalation of dusts/mists/vapours. Wear suitable personal protective clothing and equipment.

#### Protection against fire and explosion:

The relevant fire protection measures should be noted. Fire extinguishers should be kept handy. Avoid all sources of ignition: heat, sparks, open flame. Sources of ignition should be kept well clear. Avoid extreme heat. Keep away from oxidizable substances. Electrical equipment should conform to national electric code. Ground all transfer equipment properly to prevent electrostatic discharge. Electrostatic discharge may cause ignition.

### Storage

#### General advice:

Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect containers from physical damage. Protect against contamination. The authority permits and storage regulations must be observed.

#### Storage incompatibility:

General advice: Segregate from incompatible substances. Segregate from foods and animal feeds. Segregate from textiles and similar materials.

#### Temperature tolerance

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Protect from temperatures below: 0 °C  
Changes in the properties of the product may occur if substance/product is stored below indicated temperature for extended periods of time.  
Protect from temperatures above: 40 °C  
Changes in the properties of the product may occur if substance/product is stored above indicated temperature for extended periods of time.

### 8. Exposure Controls and Personal Protection

Users of a pesticidal product should refer to the product label for personal protective equipment requirements.

#### Components with workplace control parameters

glycerol	OSHA	PEL 5 mg/m3 Respirable fraction ; PEL 15 mg/m3 Total dust ;
	ACGIH	TWA value 10 mg/m3 Mist ;

#### **Advice on system design:**

Whenever possible, engineering controls should be used to minimize the need for personal protective equipment.

#### Personal protective equipment

#### RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

##### **Respiratory protection:**

Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator. For situations where the airborne concentrations may exceed the level for which an air purifying respirator is effective, or where the levels are unknown or Immediately Dangerous to Life or Health (IDLH), use NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions.

##### **Hand protection:**

Chemical resistant protective gloves, Protective glove selection must be based on the user's assessment of the workplace hazards.

##### **Eye protection:**

Safety glasses with side-shields. Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

##### **Body protection:**

Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

##### **General safety and hygiene measures:**

Wear long sleeved work shirt and long work pants in addition to other stated personal protective equipment. Work place should be equipped with a shower and an eye wash. Handle in accordance with good industrial hygiene and safety practice. Take off immediately all contaminated clothing. Store work clothing separately. Keep away from food, drink and animal feeding stuffs. No eating, drinking, smoking or tobacco use at the place of work. Hands and/or face should be washed before breaks and at the end of the shift.

### 9. Physical and Chemical Properties

Form:	liquid	
Odour:	product specific, mild	
Colour:	white	
pH value:	6.2	( 21.4 °C)
Freezing point:	approx. 0 °C	( 1,013.3 hPa) Information applies to the solvent.
Boiling point:	approx. 100 °C	( 1,013.3 hPa) Information applies to the solvent.

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Vapour pressure:	approx. 23.3 hPa	( 20 °C)	Information applies to the solvent.
Density:	1.116 g/cm <sup>3</sup>	( 20 °C)	
Bulk density:			not applicable
<i>Information on: Boscalid</i>			
Partitioning coefficient n-octanol/water (log Pow):	2.96		
<i>Information on: pyraclostrobin</i>			
Partitioning coefficient n-octanol/water (log Pow):	3.99	( 22 °C)	
Viscosity, dynamic:	approx. 326 mPa.s		
Solubility in water:			miscible

### 10. Stability and Reactivity

#### Conditions to avoid:

Avoid all sources of ignition: heat, sparks, open flame. Avoid extreme temperatures. Avoid prolonged exposure to extreme heat. Avoid contamination. Avoid electro-static discharge. Avoid prolonged storage.

#### Substances to avoid:

strong oxidizing agents

#### Hazardous reactions:

The product is chemically stable.

Hazardous polymerization will not occur. No hazardous reactions if stored and handled as prescribed/indicated.

#### Decomposition products:

Hazardous decomposition products: No hazardous decomposition products if stored and handled as prescribed/indicated., Prolonged thermal loading can result in products of degradation being given off.

#### Thermal decomposition:

165 °C, 2.5 K/min (DSC (OECD 113))

#### Corrosion to metals:

Corrosive effects to metal are not anticipated.

#### Oxidizing properties:

Not an oxidizer.

### 11. Toxicological information

#### Acute toxicity

##### Oral:

Type of value: LD50

Species: rat (female)

Value: > 2,000 mg/kg

##### Inhalation:

Type of value: LC50

Species: rat (male/female)

Value: > 2.58 mg/l

Exposition time: 4 h

An aerosol was tested.

##### Dermal:

Type of value: LD50

Species: rat (male/female)

Value: > 5,000 mg/kg

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### Irritation / corrosion

#### Skin:

Species: rabbit  
Result: moderately irritating

#### Eye:

Species: rabbit  
Result: Slightly irritating.

#### Sensitization:

modified Buehler test  
Species: guinea pig  
Result: Caused skin sensitization in animal studies.

### Genetic toxicity

*Information on: pyraclostrobin*  
*No mutagenic effect was found in various tests with microorganisms and mammalian cell culture.*

*Information on: Boscalid*  
*No mutagenic effect was found in various tests with microorganisms and mammals.*

*Information on: Boscalid*  
*No mutagenic effect was found in various tests with microorganisms and mammals.*

*Information on: pyraclostrobin*  
*No mutagenic effect was found in various tests with microorganisms and mammalian cell culture.*

### Carcinogenicity

*Information on: pyraclostrobin*  
*In long-term studies in rats and mice in which the substance was given by feed, a carcinogenic effect was not observed.*

*Information on: Boscalid*  
*In long-term studies in rats the substance induced thyroid tumors.*

### Reproductive toxicity

*Information on: pyraclostrobin*  
*The results of animal studies gave no indication of a fertility impairing effect.*

*Information on: Boscalid*  
*The results of animal studies gave no indication of a fertility impairing effect.*

### Development:

*Information on: pyraclostrobin*  
*No indications of a developmental toxic / teratogenic effect were seen in animal studies.*

*Information on: Boscalid*  
*No indications of a developmental toxic / teratogenic effect were seen in animal studies.*

---

## 12. Ecological Information

### Fish

*Information on: pyraclostrobin*

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**Acute:**  
*Cyprinus carpio*/LC50 (96 h): > 0.0121 - < 0.0258 mg/l  
*Lepomis macrochirus*/LC50 (96 h): > 0.0196 - < 0.0335 mg/l  
*Oncorhynchus mykiss*/LC50 (96 h): 0.00616 mg/l

**Information on: Boscalid**  
**Acute:**  
*Oncorhynchus mykiss*/LC50 (96 h): 2.7 mg/l  
*Lepomis macrochirus*/LC50: > 4.0 mg/l  
**Nominal concentration.**

### Aquatic Invertebrates

**Information on: pyraclostrobin**  
**Acute:**  
*Daphnia magna*/EC50 (48 h): 0.016 mg/l

**Information on: Boscalid**  
**Acute:**  
*Daphnia magna*/LC50 (48 h): 5.33 mg/l

### Aquatic plants

**Information on: pyraclostrobin**  
**Toxicity to aquatic plants:**  
*green algae*/EC50 (96 h): > 0.843 mg/l

**Information on: Boscalid**  
**Toxicity to aquatic plants:**  
*green algae*/EC50 (96 h): 3.75 mg/l

### Non-Mammals

**Information on: pyraclostrobin**  
**Other terrestrial non-mammals:**  
*bobwhite quail*/LD50: > 2,000 mg/kg  
*bobwhite quail*:  
*mallard duck*/LC50: > 5,000 ppm  
*Honey bee*/LD50: > 100 ug/bee

**Information on: Boscalid**  
**Other terrestrial non-mammals:**  
*bobwhite quail*/LD50: > 2,000 mg/kg  
*bobwhite quail*/LC50: > 5,000 ppm  
*mallard duck*/LC50: > 5,000 ppm  
*Honey bee*/LD50: > 200 ug/bee

### Degradability / Persistence

#### Biological / Abiological Degradation

**Evaluation:** Not readily biodegradable (by OECD criteria).

**Information on: Boscalid**  
**Test method:** OECD 301F; ISO 9408; 92/69/EEC, C.4-D, activated sludge, domestic  
**Degree of elimination:** 0 - 10 % (28 d)

**Information on: pyraclostrobin**

**Degree of elimination:** 0 - 10 % (28 d)  
**Evaluation:** Not readily biodegradable (by OECD criteria).

# Safety Data Sheet

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### Other adverse effects:

The ecological data given are those of the active ingredient. Do not release untreated into natural waters.

---

## 13. Disposal considerations

### Waste disposal of substance:

Pesticide wastes are regulated. Improper disposal of excess pesticide, spray mix or rinsate is a violation of federal law. If pesticide wastes cannot be disposed of according to label instructions, contact the State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

### Container disposal:

Rinse thoroughly at least three times (triple rinse) in accordance with EPA recommendations. Consult state or local disposal authorities for approved alternative procedures such as container recycling. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

### RCRA:

This product is not regulated by RCRA.

---

## 14. Transport Information

Reference Bill of Lading

---

## 15. Regulatory Information

### Federal Regulations

#### Registration status:

Chemical TSCA, US blocked / not listed

Crop Protection TSCA, US released / exempt

OSHA hazard category: Chronic target organ effects reported; ACGIH TLV established

EPCRA 311/312 (Hazard categories): Acute; Chronic

### State regulations

#### State RTK

MA, PA

#### CAS Number

56-81-5

#### Chemical name

glycerol

#### CA Prop. 65:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

---

## 16. Other Information

Refer to product label for EPA registration number.

Recommended use: fungicide

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---

### Local Contact Information

Product Stewardship  
919 547-2000

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## MATERIAL SAFETY DATA SHEET

Syngenta Crop Protection, Inc.  
Post Office Box 18300  
Greensboro, NC 27419

In Case of Emergency, Call  
1-800-888-8372

### 1. PRODUCT IDENTIFICATION

Product Name: **DYNASTY** Product No.: A12050C  
EPA Signal Word: Caution  
Active Ingredient(%): Azoxystrobin (9.6%) CAS No.: 131860-33-8  
Chemical Name: Methyl (E)-2-[2-[6-(2-cyanophenoxy)pyrimidin-4-yloxy]phenyl]-3-methoxyacrylate  
Chemical Class: A beta-methoxyacrylate fungicide  
EPA Registration Number(s): 100-1159 Section(s) Revised: 14

### 2. HAZARDS IDENTIFICATION

#### Health and Environmental

May be harmful if swallowed or in contact with skin. Causes mild eye and skin irritation.

#### Hazardous Decomposition Products

None known.

#### Physical Properties

Appearance: Opaque yellow liquid

Odor: Paint

#### Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen
Propylene Glycol	Not Established	Not Established	10 mg/m <sup>3</sup> TWA ****	No
Azoxystrobin (9.6%)	Not Established	Not Established	2 mg/m <sup>3</sup> TWA ***	No

\*\*\* Syngenta Occupational Exposure Limit (OEL)

\*\*\*\* Recommended by AIHA (American Industrial Hygiene Association)

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.  
Syngenta Hazard Category: B, S

### 4. FIRST AID MEASURES

Have the product container, label or Material Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison control center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Have the person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

- Eye Contact:** If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Skin Contact:** If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Inhalation:** If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Notes to Physician

There is no specific antidote if this product is ingested.

Treat symptomatically.

Medical Condition Likely to be Aggravated by Exposure

None known.

## 5. FIRE FIGHTING MEASURES

Fire and Explosion

Flash Point (Test Method): > 200°F  
Flammable Limits (% in Air): Lower: Not Applicable Upper: Not Applicable  
Autoignition Temperature: 1094+/- 41°F  
Flammability: Not Applicable

Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

In Case of Fire

Use dry chemical, foam or CO2 extinguishing media. Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. If water is used to fight fire, dike and collect runoff.

## 6. ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions in Protective Equipment Section. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

## 7. HANDLING AND STORAGE

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

**Ingestion:** Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

- Eye Contact: Where eye contact is likely, use chemical splash goggles.
- Skin Contact: Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear.
- Inhalation: A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH approved respirator with any N, R, P or HE filter.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Opaque yellow liquid
Odor:	Paint
Melting Point:	Not Applicable
Boiling Point:	Not Available
Specific Gravity/Density:	1.04 g/ml @ 68°F (20°C)
pH:	7.7 @ 77°F (25°C)

### Solubility in H<sub>2</sub>O

Azoxystrobin : 6 mg/l in water @ 68°F (20°C)

### Vapor Pressure

Azoxystrobin : 8.25 x 10<sup>(-13)</sup> mmHg @ 68°F (20°C)

## 10. STABILITY AND REACTIVITY

Stability:	Stable under normal use and storage conditions.
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	None known.
Materials to Avoid:	None known.
Hazardous Decomposition Products:	None known.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity/Irritation Studies (Finished Product)

Ingestion:	Oral (LD50 Rabbit) :	> 2000 mg/kg body weight
Dermal:	Dermal (LD50 Rabbit) :	> 2000 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	> 5.98 mg/l air - 4 hours
Eye Contact:	Mildly Irritating (Rabbit)	
Skin Contact:	Practically Non-Irritating (Rabbit)	
Skin Sensitization:	Not a Sensitizer (Guinea Pig)	

### Reproductive/Developmental Effects

Azoxystrobin : Shows weak chromosomal damage in mammalian cells at cytotoxic levels. Negative in whole animal assays for chromosomal and DNA damage at high dosages (> or = 2000 mg/kg). In rabbits, no effect was observed up to the highest dose level (500 mg/kg/day). In rats, developmental effects were seen only at maternally toxic doses (100 mg/kg/day).

### Chronic/Subchronic Toxicity Studies

Azoxystrobin : In a rat 90-day feeding study, liver toxicity was observed at 2000 ppm. This was manifest as gross distension of the bile duct, increased numbers of lining cells and inflammation of the duct. No toxicologically significant effects were seen in repeat dose dog studies.

Data reviews do not indicate any potential for endocrine disruption.  
There is no evidence of neurotoxicity in any of the studies conducted with azoxystrobin.

Carcinogenicity

Azoxystrobin : No carcinogenic effects observed in rats or mice at doses up to the maximum tolerated dose.

Other Toxicity Information

None

Toxicity of Other Components

Propylene Glycol

Test results reported in Section 11 for the final product take into account any acute hazards related to the propylene glycol in the formulation.

Reported to cause central nervous system depression (anesthesia, dizziness, confusion), headache and nausea. Chronic dietary exposure caused kidney and liver injury in experimental animals.

Target Organs

Active Ingredients

Azoxystrobin : Liver

Inert Ingredients

Propylene Glycol: CNS, kidney, liver

## 12. ECOLOGICAL INFORMATION

Ecotoxicity Effects

Azoxystrobin :

Fish (Rainbow Trout) 96-hour LC50 470 ppb

Green Algae 5-day EC50 106 ppb

Invertebrate (Water Flea) 48-hour EC50 259 ppb

Bird (Mallard Duck) 14-day LD50 > 250 mg/kg

Environmental Fate

Azoxystrobin :

The information presented here is for the active ingredient, azoxystrobin.

Low bioaccumulation potential. Not persistent in soil. Stable in water. Moderate mobility in soil. Sinks in water (after 24 h).

## 13. DISPOSAL CONSIDERATIONS

Disposal

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

## 14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA

Not regulated.

Comments

Water Transport - International  
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Azoxystrobin), Marine Pollutant  
Hazard Class or Division: Class 9  
Identification Number: UN 3082  
Packing Group: PG III

Air Transport - International  
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Azoxystrobin)  
Hazard Class or Division: Class 9  
Identification Number: UN 3082  
Packing Group: PG III

Note: This product is currently not regulated for airfreight within the NAFTA region. However, effective 01/01/2011 the above classification must be used.

**15. REGULATORY INFORMATION**

EPCRA SARA Title III Classification

Section 311/312 Hazard Classes: Acute Health Hazard

Section 313 Toxic Chemicals: Not Applicable

California Proposition 65

Not Applicable

CERCLA/SARA 302 Reportable Quantity (RQ)

None

RCRA Hazardous Waste Classification (40 CFR 261)

Not Applicable

TSCA Status

Exempt from TSCA, subject to FIFRA

**16. OTHER INFORMATION**

NFPA Hazard Ratings

Health: 1  
Flammability: 1  
Instability: 0

HMIS Hazard Ratings

Health: 1  
Flammability: 1  
Reactivity: 0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 7/1/2003

Revision Date: 8/23/2010

Replaces: 2/24/2009

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

End of MSDS



## MATERIAL SAFETY DATA SHEET

Syngenta Crop Protection, Inc.  
Post Office Box 18300  
Greensboro, NC 27419

In Case of Emergency, Call  
1-800-888-8372

### 1. PRODUCT IDENTIFICATION

Product Name: **MAXIM 4FS** Product No.: A9459B  
EPA Signal Word: Caution  
Active Ingredient(%): Fludioxonil (40.3%) CAS No.: 131341-86-1  
Chemical Name: 4-(2,2-difluoro-1,3-benzodioxol-4-yl)-1H-pyrrole-3-carbonitrile  
Chemical Class: Substituted Benzodioxalcarbonitrile Fungicide  
EPA Registration Number(s): 100-758 Section(s) Revised: 14

### 2. HAZARDS IDENTIFICATION

#### Health and Environmental

Harmful if inhaled. May be harmful in contact with skin. Causes mild eye irritation.

#### Hazardous Decomposition Products

None known.

#### Physical Properties

Appearance: Colorless liquid  
Odor: Sweet, like latex paint

#### Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen
Ethylene Glycol (< 15%)	Not Established	100 mg/m <sup>3</sup> (ceiling) [aerosol]	Not Established	No
Fludioxonil (40.3%)	Not Established	Not Established	10 mg/m <sup>3</sup> TWA ***	No

\*\*\* Syngenta Occupational Exposure Limit (OEL)

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.  
Syngenta Hazard Category: B

### 4. FIRST AID MEASURES

Have the product container, label or Material Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison control center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Have the person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

- Eye Contact:** If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Skin Contact:** If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Inhalation:** If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Notes to Physician

There is no specific antidote if this product is ingested.

Treat symptomatically.

Medical Condition Likely to be Aggravated by Exposure

None known.

**5. FIRE FIGHTING MEASURES**

Fire and Explosion

Flash Point (Test Method): 209°F

Flammable Limits (% in Air): Lower: Not Applicable Upper: Not Applicable

Autoignition Temperature: Not Available

Flammability: Not Applicable

Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

In Case of Fire

Use dry chemical, foam or CO2 extinguishing media. Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. If water is used to fight fire, dike and collect runoff.

**6. ACCIDENTAL RELEASE MEASURES**

In Case of Spill or Leak

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

**7. HANDLING AND STORAGE**

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.**

**FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.**

**Ingestion:** Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

- Eye Contact: Where eye contact is likely, use chemical splash goggles.
- Skin Contact: Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear.
- Inhalation: A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH approved respirator with any N, R, P or HE filter.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless liquid
Odor:	Sweet, like latex paint
Melting Point:	Not Applicable
Boiling Point:	Not Available
Specific Gravity/Density:	1.222 g/cm <sup>3</sup>
pH:	7 - 8 (1% solution in H <sub>2</sub> O @ 77°F (25°C))

### Solubility in H<sub>2</sub>O

Fludioxonil: 1.8 mg/l @ 77°F (25°C)

### Vapor Pressure

Fludioxonil: 2.9 x 10<sup>(-9)</sup> mmHg @ 77°F (25°C)

## 10. STABILITY AND REACTIVITY

Stability:	Stable under normal use and storage conditions.
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	None known.
Materials to Avoid:	None known.
Hazardous Decomposition Products:	None known.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity/Irritation Studies (Finished Product)

Ingestion:	Oral (LD50 Rabbit) :	> 5050 mg/kg body weight
Dermal:	Dermal (LD50 Rat) :	> 2020 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	> 3.77 mg/l air - 4 hours
Eye Contact:	Minimally Irritating (Rabbit)	
Skin Contact:	Non-Irritating (Rabbit)	
Skin Sensitization:	Not a Sensitizer (Guinea Pig)	

### Reproductive/Developmental Effects

Fludioxonil: Delayed development at doses causing maternal toxicity.

### Chronic/Subchronic Toxicity Studies

Fludioxonil: Liver and kidney toxicity at high dose levels.

### Carcinogenicity

Fludioxonil: Marginal increase (7%) of liver tumors (female, rats; 3,000 ppm); Within historical control range (1 to 10%).

### Other Toxicity Information

None

### Toxicity of Other Components

Ethylene Glycol (< 15%)

Ethylene glycol has been shown to produce dose-related teratogenic effects in rats and mice. Exposure to high concentrations of mists or aerosols may result in effects on the hematopoietic system and central nervous system with headache, dizziness and drowsiness. Severe kidney damage results from swallowing large amounts of ethylene glycol.

### Target Organs

#### Active Ingredients

Fludioxonil: Liver, kidney

#### Inert Ingredients

Ethylene Glycol: Blood, kidney, CNS

## **12. ECOLOGICAL INFORMATION**

### Ecotoxicity Effects

Fludioxonil:

Fish (Rainbow Trout) 96-hour LC50 0.47 ppm

Green Algae 5-day EC50 0.087 ppm

Invertebrate (Water Flea) Daphnia Magna 48-hour EC50 0.9 ppm

Bird (Bobwhite Quail) 14-day LD50 > 2000 mg/kg

### Environmental Fate

Fludioxonil:

The information presented here is for the active ingredient, fludioxonil.

Does not bioaccumulate. Persistent in soil. Stable in water. Low mobility in soil. Sinks in water (after 24 h).

## **13. DISPOSAL CONSIDERATIONS**

### Disposal

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

## **14. TRANSPORT INFORMATION**

### DOT Classification

Ground Transport - NAFTA

Not regulated.

### Comments

Water Transport - International

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Fludioxonil), Marine Pollutant

Hazard Class: Class 9

Identification Number: UN 3082

Packing Group: PG III

Air Transport - International

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Fludioxonil)

Hazard Class: Class 9  
Identification Number: UN 3082  
Packing Group: PG III

Note: This product is currently not regulated for airfreight within the NAFTA region. However, effective 01/01/2011 the above classification must be used.

## 15. REGULATORY INFORMATION

### EPCRA SARA Title III Classification

Section 311/312 Hazard Classes: Acute Health Hazard

Section 313 Toxic Chemicals: Ethylene Glycol (< 15%) (CAS No. 107-21-1)

### California Proposition 65

Not Applicable

### CERCLA/SARA 302 Reportable Quantity (RQ)

Report product spills  $\geq$  4,450 gal. (based on ethylene glycol [RQ = 5,000 lbs.] content in the formulation)

### RCRA Hazardous Waste Classification (40 CFR 261)

Not Applicable

### TSCA Status

Exempt from TSCA, subject to FIFRA

## 16. OTHER INFORMATION

### NFPA Hazard Ratings

Health: 1  
Flammability: 1  
Instability: 0

### HMIS Hazard Ratings

Health: 1  
Flammability: 1  
Reactivity: 0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 4/3/2002

Revision Date: 10/11/2010

Replaces: 12/17/2009

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

End of MSDS

MSGS  
BETA  
W. J. ...

# Pro-Gro®

## Dust Seed Protectant Fungicide

For use by commercial seed treaters only.

Active Ingredients: (% by weight)

carboxin (5,6-dihydro-2-methyl-N-phenyl-1,4-oxathiin-3-carboxamide).....	30%
thiram (tetramethylthiuram disulfide).....	50%
Other Ingredients: .....	20%
Total:.....	100%

### KEEP OUT OF REACH OF CHILDREN

### WARNING • AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.  
(If you do not understand the label, find someone to explain it to you in detail.)

FIRST AID	
<b>IF IN EYES</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF SWALLOWED</b>	<ul style="list-style-type: none"> <li>• Call a poison control center or doctor immediately for treatment advice.</li> <li>• Have person sip a glass of water if able to swallow.</li> <li>• Do not induce vomiting unless told to do so by the poison control center or doctor.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul>
<b>IF ON SKIN OR ON CLOTHING</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15 to 20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF INHALED</b>	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
<b>NOTE TO PHYSICIAN:</b> Probable mucosal damage may contraindicate the use of gastric lavage.	
<b>EMERGENCY ASSISTANCE:</b> Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
<b>EMERGENCY PHONE</b>	<b>800-292-5898</b>
<b>SAFETY DATA/INFORMATION</b>	<b>866-430-2775</b>
<b>TRANSPORTATION EMERGENCY (CHEMTREC)</b>	<b>800-424-9300</b>

See Additional Precautionary Statements

#### Net Contents:

EPA REG. NO. 400-435  
EPA EST. NO.  
006/071309

Manufactured for:  
Chemtura Corporation  
199 Benson Road  
Middlebury, CT 06749



www.chemtura.com



**Material Safety Data Sheet**  
**GAUCHO® 600 FLOWABLE**

MSDS Number: 102000012782  
MSDS Version 2.2

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

- Personal Precautions** Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.
- Methods for Cleaning Up** Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder). Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations.
- Additional Advice** Use personal protective equipment. Do not allow to enter soil, waterways or waste water canal.

**SECTION 7. HANDLING AND STORAGE**

- Handling Procedures** Handle and open container in a manner as to prevent spillage. Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.
- Storing Procedures** Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.
- Work/Hygienic Procedures** Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.
- Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

**SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

- General Protection** Follow all label instructions. Train employees in safe use of the product.
- Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.
- Eye/Face Protection** Tightly fitting safety goggles
- Hand Protection** Chemical resistant nitrile rubber gloves
- Body Protection** Wear long-sleeved shirt and long pants and shoes plus socks.



**Material Safety Data Sheet**

**GAUCHO® 600 FLOWABLE**

MSDS Number: 102000012782  
MSDS Version 2.2

**Potential Environmental Effect**      Highly toxic to birds. Highly toxic to aquatic invertebrates.

**SECTION 4. FIRST AID MEASURES**

<b>General</b>	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
<b>Eye</b>	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.
<b>Skin</b>	Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.
<b>Ingestion</b>	Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.
<b>Inhalation</b>	Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.
<b>Notes to Physician Treatment</b>	There is no specific antidote. Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended.

**SECTION 5. FIRE FIGHTING MEASURES**

<b>Flash point</b>	> 93.4 °C / > 200.1 °F
<b>Fire and Explosion Hazards</b>	Dangerous gases are evolved in the event of a fire.
<b>Suitable Extinguishing Media</b>	Foam, Carbon dioxide (CO2), Dry chemical, Water spray
<b>Fire Fighting Instructions</b>	Keep out of smoke. Fight fire from upwind position. Cool closed containers/ tanks exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.  Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.



**Material Safety Data Sheet**  
**GAUCHO® 600 FLOWABLE**

MSDS Number: 102000012782  
 MSDS Version 2.2  
 Revision Date: 07/14/2008

**SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION**

**Product Name** GAUCHO® 600 FLOWABLE  
**MSDS Number** 102000012782  
**EPA Registration No.** 264-968

Bayer CropScience  
 2 T.W. Alexander Drive  
 Research Triangle PK, NC 27709  
 USA

For MEDICAL, TRANSPORTATION or other EMERGENCY call: 1-800-334-7577 (24 hours/day)  
 For Product Information call: 1-866-99BAYER (1-866-992-2937)

**SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Hazardous Component Name</u>	<u>CAS-No.</u>	<u>Average % by Weight</u>
Imidacloprid	138261-41-3	48.70

**SECTION 3. HAZARDS IDENTIFICATION**

*NOTE: Please refer to Section 11 for detailed toxicological information.*

**Emergency Overview** Caution! Harmful if swallowed, inhaled or absorbed through the skin. Do not breathe vapours or spray mist. Avoid contact with skin, eyes and clothing.

<b>Physical State</b>	liquid suspension
<b>Appearance</b>	white to off-white
<b>Routes of Exposure</b>	Inhalation, Ingestion, Skin Absorption, Eye contact
<b>Immediate Effects</b>	
<b>Eye</b>	May cause mild irritation to eyes. Avoid contact with eyes.
<b>Skin</b>	Harmful if absorbed through skin. May cause mild irritation to the skin. Avoid contact with skin and clothing.
<b>Ingestion</b>	Harmful if swallowed. Do not take internally.
<b>Inhalation</b>	Harmful if inhaled. Inhalation may cause irritation of nasal passages. Do not breathe vapours or spray mist.
<b>Chronic or Delayed Long-Term</b>	This product or its components may have target organ effects.

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

End of MSDS

Disposal

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

**14. TRANSPORT INFORMATION**

DOT Classification

Ground Transport - NAFTA  
Not regulated.

Comments

Water Transport - International  
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Thiamethoxam), Marine Pollutant  
Hazard Class: Class 9  
Identification Number: UN 3082  
Packing Group: PG III

Air Transport  
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Thiamethoxam)  
Hazard Class: Class 9  
Identification Number: UN 3082  
Packing Group: PG III

**15. REGULATORY INFORMATION**

EPCRA SARA Title III Classification

Section 311/312 Hazard Classes: Acute Health Hazard

Section 313 Toxic Chemicals: Not Applicable

California Proposition 65

Not Applicable

CERCLA/SARA 302 Reportable Quantity (RQ)

None

RCRA Hazardous Waste Classification (40 CFR 261)

Not Applicable

TSCA Status

Exempt from TSCA, subject to FIFRA

**16. OTHER INFORMATION**

NFPA Hazard Ratings

Health: 1  
Flammability: 1  
Instability: 0

HMIS Hazard Ratings

Health: 1  
Flammability: 1  
Reactivity: 0

0 Minimal  
1 Slight  
2 Moderate  
3 Serious  
4 Extreme

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 12/7/2005

Revision Date: 5/11/2011

Replaces: 7/23/2010

Reproductive: No effects on reproduction. Minor increase in a common testis effect in rats at high doses, which did not affect reproduction. When used in accordance with label directions and recommendations in this MSDS, no effects would be expected in humans.

#### Chronic/Subchronic Toxicity Studies

Thiamethoxam: Subchronic: Liver effects occurred in rodents only at high dose levels. Not neurotoxic after high acute and subchronic exposure in rats.

#### Carcinogenicity

Thiamethoxam: Classified as "not likely to be carcinogenic in humans" based on lifetime studies in mice and rats.

#### Other Toxicity Information

None

#### Toxicity of Other Components

##### Glycerin

Test results reported in Section 11 for the final product take into account any acute hazards related to the glycerin in the formulation.

##### Propylene Glycol

Test results reported in Section 11 for the final product take into account any acute hazards related to the propylene glycol in the formulation.

Reported to cause central nervous system depression (anesthesia, dizziness, confusion), headache and nausea. Chronic dietary exposure caused kidney and liver injury in experimental animals.

##### Titanium Dioxide

Titanium dioxide is listed as an IARC Group 2B (Possibly Carcinogenic to Humans). Prolonged exposure causes respiratory irritation and may lead to pulmonary fibrosis.

#### Target Organs

##### Active Ingredients

Thiamethoxam: Liver

##### Inert Ingredients

Glycerin: Not Applicable

Propylene Glycol: CNS, kidney, liver

Titanium Dioxide: Lung

## 12. ECOLOGICAL INFORMATION

#### Ecotoxicity Effects

##### Thiamethoxam:

Fish (Rainbow Trout) 96-hour LC50 > 100 ppm

Bird (Mallard Duck) LD50 Oral 576 mg/kg

Invertebrate (Daphnia Magna) 48-hour EC50 > 106 ppm

Green Algae 4-day EC50 > 97 ppm

#### Environmental Fate

##### Thiamethoxam:

The information presented here is for the active ingredient, thiamethoxam.

Not persistent in soil. Stable in water. Moderate mobility in soil. Floats in water (after 24 h).

## 13. DISPOSAL CONSIDERATIONS

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

- Ingestion: Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.
- Eye Contact: Where eye contact is likely, use chemical splash goggles.
- Skin Contact: Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear.
- Inhalation: A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH approved respirator with any N, R, P or HE filter.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance: Beige liquid
- Odor: Aromatic
- Melting Point: Not Applicable
- Boiling Point: Not Available
- Specific Gravity/Density: 1.26 g/ml
- pH: 7.2 (1% dispersion in H<sub>2</sub>O @ 77°F [25°C])

### Solubility in H<sub>2</sub>O

- Thiamethoxam: 4.1 g/l @ 77°F (25°C)

### Vapor Pressure

- Thiamethoxam: 2 x 10<sup>-11</sup> mmHg @ 68°F (20°C)

## 10. STABILITY AND REACTIVITY

- Stability: Stable under normal use and storage conditions.
- Hazardous Polymerization: Will not occur.
- Conditions to Avoid: None known.
- Materials to Avoid: None known.
- Hazardous Decomposition Products: None known.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity/Irritation Studies (Finished Product)

- Ingestion: Oral (LD50 Female Rat) : > 5000 mg/kg body weight
- Dermal: Dermal (LD50 Rabbit) : > 5050 mg/kg body weight
- Inhalation: Inhalation (LC50 Rat) : Not Available
- Eye Contact: Non-Irritating (Rabbit)
- Skin Contact: Non-Irritating (Rabbit)
- Skin Sensitization: Not a Sensitizer (Guinea Pig)

### Reproductive/Developmental Effects

- Thiamethoxam: Developmental: Not teratogenic in rats or rabbits.

#### 4. FIRST AID MEASURES

Have the product container, label or Material Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison control center or doctor, or going for treatment.

- Ingestion:** If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Have the person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
- Eye Contact:** If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Skin Contact:** If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Inhalation:** If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

##### Notes to Physician

There is no specific antidote if this product is ingested.

Treat symptomatically.

##### Medical Condition Likely to be Aggravated by Exposure

None known.

#### 5. FIRE FIGHTING MEASURES

##### Fire and Explosion

Flash Point (Test Method):	> 203°F	
Flammable Limits (% in Air):	Lower: Not Applicable	Upper: Not Applicable
Autoignition Temperature:	824°F	
Flammability:	Not Applicable	

##### Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

##### In Case of Fire

Use dry chemical, foam or CO<sub>2</sub> extinguishing media. Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. If water is used to fight fire, dike and collect runoff.

#### 6. ACCIDENTAL RELEASE MEASURES

##### In Case of Spill or Leak

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

#### 7. HANDLING AND STORAGE

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.



## MATERIAL SAFETY DATA SHEET

Syngenta Crop Protection, LLC  
Post Office Box 18300  
Greensboro, NC 27419

In Case of Emergency, Call  
1-800-888-8372

### 1. PRODUCT IDENTIFICATION

Product Name: **CRUISER 5FS** Product No.: A9765N  
EPA Signal Word: Caution  
Active Ingredient(%): Thiamethoxam (47.6%) CAS No.: 153719-23-4  
Chemical Name: 3-(2-chloro-1,3-thiazol-5-ylmethyl)-5-methyl-1,3,5-oxadiazinan-4-ylidene(nitro)amine  
Chemical Class: Neonicotinoid Insecticide  
EPA Registration Number(s): 100-941 Section(s) Revised: 3

### 2. HAZARDS IDENTIFICATION

#### Health and Environmental

Presents a low hazard during normal handling.

#### Hazardous Decomposition Products

None known.

#### Physical Properties

Appearance: Beige liquid

Odor: Aromatic

#### Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen
Titanium Dioxide	15 mg/m <sup>3</sup> TWA (total)	10 mg/m <sup>3</sup> TWA	2.4 mg/m <sup>3</sup> 10-hr TWA (fine dust); 0.3 mg/m <sup>3</sup> (ultrafine dust) **	IARC Group 2B
Propylene Glycol	Not Established	Not Established	10 mg/m <sup>3</sup> TWA ****	No
Glycerin	15 mg/m <sup>3</sup> TWA (total); 5 mg/m <sup>3</sup> TWA (respirable)	10 mg/m <sup>3</sup> TWA (total)	Not Established	No
Thiamethoxam (47.6%)	Not Established	Not Established	3 mg/m <sup>3</sup> TWA ***	No

\*\* recommended by NIOSH

\*\*\* Syngenta Occupational Exposure Limit (OEL)

\*\*\*\* Recommended by AIHA (American Industrial Hygiene Association)

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.  
Syngenta Hazard Category: B

Product Name: **CRUISER 5FS**

Page: 1

Bayer CropScience



**Material Safety Data Sheet**  
**42-S THIRAM FUNGICIDE**

MSDS Number: 102000012786  
MSDS Version 2.1

**CERCLA**  
Thiram 137-26-8 10 lbs  
**Clean Water Section 307 Priority Pollutants**  
None.  
**Safe Drinking Water Act Maximum Contaminant Levels**  
None.

**International Regulations**

**European Inventory of Existing Commercial Substances (EINECS)**  
Thiram 137-26-8  
1,2-Propanediol 57-55-6

**SECTION 16. OTHER INFORMATION**

**NFPA 704 (National Fire Protection Association):**

Health - 2      Flammability - 1      Reactivity - 1      Others - none  
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason to Revise: Updated Section 11: Toxicological Information.

Revision Date: 06/18/2007

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.



**Material Safety Data Sheet**  
**42-S THIRAM FUNGICIDE**

MSDS Number: 102000012786  
MSDS Version 2.1

US. EPA Resource Conservation and Recovery Act (RCRA) U List of Hazardous Wastes (40 CFR 261.33(f) and 40 CFR 302 [CERCLA]): U244

**SECTION 14. TRANSPORT INFORMATION**

**TRANSPORTATION CLASSIFICATION:**

RQ, Environmentally Hazardous Substances, Liquid, N.O.S.( Thiram) // 9 // UN3082 // PG III

**IMDG CLASSIFICATION:**

RQ, Environmentally Hazardous Substances, Liquid, N.O.S.( Thiram) // 9 // UN3082 // PG III // Marine Pollutant

**FREIGHT CLASSIFICATION:**

Insecticides or Fungicides, N.O.I.; other than poison

**SECTION 15. REGULATORY INFORMATION**

**EPA Registration No.** 264-929

**US Federal Regulations**

**TSCA list**

Thiram 137-26-8  
1,2-Propanediol 57-55-6

**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**

None.

**SARA Title III - Section 302 - Notification and Information**

None.

**SARA Title III - Section 313 - Toxic Chemical Release Reporting**

Thiram 137-26-8 1.0%

**US States Regulatory Reporting**

**CA Prop65**

This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

**US State Right-To-Know Ingredients**

Thiram 137-26-8 CA, CT, IL, MN, NJ, PA, RI  
1,2-Propanediol 57-55-6 MN, RI

**Canadian Regulations**

**Canadian Domestic Substance List**

Thiram 137-26-8  
1,2-Propanediol 57-55-6

**Environmental**



**Material Safety Data Sheet**

**42-S THIRAM FUNGICIDE**

MSDS Number: 102000012786  
MSDS Version 2.1

NTP		
None.		
IARC		
Thiram	137-26-8	Overall evaluation: 3
Thiram	137-26-8	Overall evaluation: 3
OSHA		
None.		

**Reproductive & Developmental Toxicity**      REPRODUCTION: Thiram was not a reproductive toxicant in multi-generation reproduction studies in rats.

DEVELOPMENTAL TOXICITY: Thiram is a developmental toxicant.

**Neurotoxicity**      Thiram caused neurotoxic effects (e.g. lethargy, reduced activity) in laboratory animals.

**Mutagenicity**      Thiram was not mutagenic or genotoxic based on the overall weight of evidence in a battery of in vitro and in vivo tests.

**SECTION 12. ECOLOGICAL INFORMATION**

**Environmental Precautions**      Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent sites. Apply this product as specified on the label.

**SECTION 13. DISPOSAL CONSIDERATIONS**

**General Disposal Guidance**      Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. Open dumping is prohibited.

**Container Disposal**      Do not re-use empty containers. Triple rinse containers. Puncture container to avoid re-use. Dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State/Provincial and local authorities, by burning. If burned, stay out of smoke.

**RCRA Classification**      The RCRA Classifications may be on the individual component(s) and not necessarily on the product as a whole.

137-26-8      Thiram  
US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261): U244

137-26-8      Thiram



**Material Safety Data Sheet**  
**42-S THIRAM FUNGICIDE**

MSDS Number: 102000012786  
 MSDS Version 2.1

<b>Conditions to Avoid</b>	Heat, flames and sparks. Freezing
<b>Incompatibility</b>	Copper Oxidizing agents Strong acids
<b>Hazardous Decomposition Products</b>	Thermal decomposition can lead to release of: Sulphur oxides carbon disulphide hydrogen sulfide nitrogen oxides (NOx)
<b>Hazardous Reactions</b>	Stable under recommended storage conditions.

**SECTION 11. TOXICOLOGICAL INFORMATION**

Only acute toxicity studies have been performed on the formulated product. The non-acute information pertains to the technical-grade active ingredient, thiram.

<b>Acute Oral Toxicity</b>	male/female combined rat: LD50: 3,580 mg/kg
<b>Acute Dermal Toxicity</b>	rat: LD50: > 4,000 mg/kg
<b>Acute Inhalation Toxicity</b>	male/female combined rat: LC50: > 2.6 mg/l Exposure time: 4 h Determined in the form of liquid aerosol.
	male/female combined rat: LC50: > 10.4 mg/l Exposure time: 1 h Determined in the form of liquid aerosol. Extrapolated from the 4 hr LC50.
<b>Skin Irritation</b>	rabbit: Slight irritation.
<b>Eye Irritation</b>	rabbit: Slight irritation.
<b>Sensitization</b>	May cause sensitization by skin contact.
<b>Chronic Toxicity</b>	Thiram targeted the liver, blood and urinary system in chronic toxicity studies in laboratory animals.

**Assessment Carcinogenicity**

Thiram did not demonstrate any biologically significant evidence of carcinogenic potential in rats and mice. EPA has classified thiram as "not likely to be carcinogenic to humans."

**ACGIH**  
Thiram

137-26-8

Group A4



**Material Safety Data Sheet**  
**42-S THIRAM FUNGICIDE**

MSDS Number: 102000012786  
 MSDS Version 2.1

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.

<b>Eye/Face Protection</b>	Tightly fitting safety goggles
<b>Hand Protection</b>	Chemical resistant nitrile rubber gloves
<b>Body Protection</b>	Wear long-sleeved shirt and long pants and shoes plus socks.
<b>Respiratory Protection</b>	When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.

**Exposure Limits**

Thiram	137-26-8	ACGIH	TWA	1 mg/m3
		NIOSH	REL	5 mg/m3
		OSHA Z1	PEL	5 mg/m3
		OSHA Z1A	TWA	5 mg/m3
		US CA OEL	TWA PEL	5 mg/m3
		ACGIH NIC	TWA	0.05 mg/m3
		Form of exposure	Inhalable fraction and vapor	
1,2-Propanediol	57-55-6	WEEL	TWA	10 mg/m3
			Form of exposure	Aerosol.
Urea	57-13-6	WEEL	TWA	10 mg/m3

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	light cream
<b>Physical State</b>	liquid
<b>pH</b>	6.5 - 7.5 (undiluted)
<b>Density</b>	approx. 1.14 g/cm <sup>3</sup> at 20 °C
<b>Bulk Density</b>	9-10 lb./gal.
<b>Melting / Freezing Point</b>	-9.4 - -6.7 °C / 15.1 - 19.9 °F
<b>Water solubility</b>	miscible
<b>Viscosity</b>	600 - 1,000 mPa.s

**SECTION 10. STABILITY AND REACTIVITY**



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**Suitable Extinguishing Media** Foam, Carbon dioxide (CO<sub>2</sub>), Dry chemical, Water spray

**Fire Fighting Instructions** Keep out of smoke. Fight fire from upwind position. Cool closed containers/ tanks exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.

Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions** Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.

**Methods for Cleaning Up** Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder). Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations.

**Additional Advice** Use personal protective equipment.

**SECTION 7. HANDLING AND STORAGE**

**Handling Procedures** Handle and open container in a manner as to prevent spillage. Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.

**Storing Procedures** Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.

**Work/Hygienic Procedures** Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.

Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

**Min/Max Storage Temperatures** Do not transport or store below 0 °C / 32 °F  
Do not transport or store above 49 °C / 120 °F

**SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**General Protection** Follow all label instructions. Train employees in safe use of the product.



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<b>Chronic or Delayed Long-Term</b>	This product or its components may have target organ effects. This product or its components may have long term (chronic) health effects.
<b>Medical Conditions Aggravated by Exposure</b>	Individuals with allergic history or pre-existing dermatitis should use extra care in handling this product.
<b>Potential Environmental Effect</b>	Toxic to fish.

**SECTION 4. FIRST AID MEASURES**

<b>General</b>	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
<b>Eye</b>	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.
<b>Skin</b>	Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.
<b>Ingestion</b>	Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.
<b>Inhalation</b>	Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.
<b>Notes to Physician Signs and Symptoms</b>	Ingestion may provoke the following symptoms: Nausea Vomiting breathing difficulties More severe effects if alcohol is consumed.
<b>Treatment</b>	There is no specific antidote. Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended.

**SECTION 5. FIRE FIGHTING MEASURES**

<b>Flash point</b>	> 93.4 °C / > 200.1 °F
<b>Fire and Explosion Hazards</b>	Dangerous gases are evolved in the event of a fire.



**Material Safety Data Sheet**  
**42-S THIRAM FUNGICIDE**

MSDS Number: 102000012786  
 MSDS Version 2.1  
 Revision Date: 06/18/2007

**SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION**

**Product Name** 42-S THIRAM FUNGICIDE  
**MSDS Number** 102000012786  
**EPA Registration No.** 264-929

Bayer CropScience  
 2 T.W. Alexander Drive  
 Research Triangle PK, NC 27709  
 USA

For MEDICAL, TRANSPORTATION or other EMERGENCY call: 1-800-334-7577 (24 hours/day)  
 For Product Information call: 1-866-99BAYER (1-866-992-2937)

**SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Hazardous Component Name</u>	<u>CAS-No.</u>	<u>Average % by Weight</u>
Thiram	137-26-8	42.00
1,2-Propanediol	57-55-6	

**SECTION 3. HAZARDS IDENTIFICATION**

*NOTE: Please refer to Section 11 for detailed toxicological information.*

**Emergency Overview** Caution! Causes eye irritation. Causes skin irritation. Harmful if swallowed, inhaled or absorbed through the skin. Do not get in eyes, on skin, or on clothing. Avoid breathing spray mist.

<b>Physical State</b>	liquid
<b>Appearance</b>	light cream
<b>Routes of Exposure</b>	Inhalation, Ingestion, Skin Absorption, Eye contact
<b>Immediate Effects</b>	
<b>Eye</b>	Causes eye irritation. Do not get in eyes.
<b>Skin</b>	Causes skin irritation. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Harmful if absorbed through skin. Do not get in eyes, on skin, or on clothing.
<b>Ingestion</b>	Use of alcoholic beverages may enhance toxic effects. Harmful if swallowed. Do not take internally.
<b>Inhalation</b>	May cause irritation of the mucous membranes. May cause respiratory tract irritation. Avoid breathing spray mist.

Bayer CropScience



**Material Safety Data Sheet**  
**ROVRAL® BRAND 4 FLOWABLE FUNGICIDE**

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**SECTION 16. OTHER INFORMATION**

NFPA 704 (National Fire Protection Association):

Health - 1      Flammability - 2      Reactivity - 0      Others - none  
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason to Revise: New Material Safety Data Sheet.

Revision Date: 06/11/2007

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.



**Material Safety Data Sheet**

**ROVRAL® BRAND 4 FLOWABLE FUNGICIDE**

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**US Federal Regulations**

**TSCA list**

Dodecylbenzene sulphonate, isopropylamine salt	26264-05-1
Polyoxyethylene-nonylphenyl-ether-phosphate	68412-53-3
Isodecyl poly(ethyleneoxy)ethanol	78330-20-8
1,2-Propanediol	57-55-6

**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**  
None.

**SARA Title III - Section 302 - Notification and Information**

None.

**SARA Title III - Section 313 - Toxic Chemical Release Reporting**

None.

**US States Regulatory Reporting**

**CA Prop65**

This product contains a chemical known to the State of California to cause cancer.  
Iprodione 36734-19-7

This product does not contain any substances known to the State of California to cause reproductive harm.

**US State Right-To-Know Ingredients**

1,2-Propanediol	57-55-6	MN, RI
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**Canadian Regulations**

**Canadian Domestic Substance List**

Dodecylbenzene sulphonate, isopropylamine salt	26264-05-1
Polyoxyethylene-nonylphenyl-ether-phosphate	68412-53-3
Isodecyl poly(ethyleneoxy)ethanol	78330-20-8
1,2-Propanediol	57-55-6

**Environmental**

**CERCLA**

None.

**Clean Water Section 307 Priority Pollutants**

None.

**Safe Drinking Water Act Maximum Contaminant Levels**

None.

**International Regulations**

**European Inventory of Existing Commercial Substances (EINECS)**

Iprodione	36734-19-7
Dodecylbenzene sulphonate, isopropylamine salt	26264-05-1
1,2-Propanediol	57-55-6



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<b>Toxicity to Fish</b>	Rainbow trout ( <i>Oncorhynchus mykiss</i> ) LC50: 4.1 mg/l Exposure time: 96 h The value mentioned relates to the active ingredient.
<b>Toxicity to Aquatic Plants</b>	Algae IC50: 1.8 mg/l Exposure time: 72 h The value mentioned relates to the active ingredient.
<b>Acute Toxicity to Aquatic Invertebrates</b>	Daphnia EC50: 0.25 mg/l Exposure time: 48 h The value mentioned relates to the active ingredient.
<b>Environmental Precautions</b>	Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent sites. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Apply this product as specified on the label.

**SECTION 13. DISPOSAL CONSIDERATIONS**

<b>General Disposal Guidance</b>	Pesticide, spray mixture or rinse water that cannot be used according to label instructions may be disposed of on site or at an approved waste disposal facility.
<b>Container Disposal</b>	Triple rinse containers. Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke. Follow advice on product label and/or leaflet.

**SECTION 14. TRANSPORT INFORMATION**

**DOT TRANSPORT CLASSIFICATION:**  
Not Regulated for Domestic Surface Shipment

**FREIGHT CLASSIFICATION:**  
Insecticide or Fungicide, N.O.I.; other than poison

**SECTION 15. REGULATORY INFORMATION**

**EPA Registration No.** 264-482



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<b>Acute Oral Toxicity</b>	male/female combined rat: LD50: 1,170 mg/kg
<b>Acute Dermal Toxicity</b>	rabbit: LD50: > 2,000 mg/kg
<b>Acute Inhalation Toxicity</b>	male/female combined rat: LC50: 3.7 mg/l Exposure time: 4 h Determined in the form of liquid aerosol.  male/female combined rat: LC50: 14.8 mg/l Exposure time: 1 h Determined in the form of liquid aerosol. Extrapolated from the 4 hr LC50.
<b>Skin Irritation</b>	rabbit: Slight irritation.
<b>Eye Irritation</b>	rabbit: Mild eye irritation.
<b>Sensitization</b>	guinea pig: Non-sensitizing.
<b>Chronic Toxicity</b>	Iprodione caused effects in the liver, adrenal, ovary and/or testes in chronic feeding studies in rats and dogs.

**Assessment Carcinogenicity**

Iprodione produced benign testicular tumors in rats and benign liver and ovary tumors in mice when tested at a maximum tolerated dose.

**ACGIH**

None.

**NTP**

None.

**IARC**

None.

**OSHA**

None.

**Reproductive & Developmental Toxicity**

**REPRODUCTION:** Iprodione did not cause reproductive toxicity in multi-generation studies in rats.

**DEVELOPMENTAL TOXICITY:** Iprodione was not a primary developmental toxicant as only minor delays or variations in fetal development were observed only at doses that caused maternal toxicity.

**Neurotoxicity**

Iprodione is not considered to be a neurotoxicant.

**Mutagenicity**

Iprodione was not mutagenic or genotoxic based on the overall weight of evidence in a battery of in vitro and in vivo tests.

**SECTION 12. ECOLOGICAL INFORMATION**



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	PPE separately from other laundry.
<b>Eye/Face Protection</b>	Safety glasses with side-shields
<b>Hand Protection</b>	Chemical-resistant gloves (barrier laminate, butyl rubber, nitrile rubber or Viton)
<b>Body Protection</b>	Wear long-sleeved shirt and long pants and shoes plus socks.
<b>Respiratory Protection</b>	When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	white to off-white
<b>Physical State</b>	liquid
<b>pH</b>	4.0 - 6.5 (100 %)
<b>Density</b>	approx. 1.135 g/cm <sup>3</sup> at 20 °C
<b>Viscosity</b>	400 - 2,000 mPa.s

**SECTION 10. STABILITY AND REACTIVITY**

<b>Conditions to Avoid</b>	Freezing
<b>Incompatibility</b>	Strong acids Strong bases Strong oxidizing agents
<b>Hazardous Decomposition Products</b>	Thermal decomposition nitrogen oxides (NO <sub>x</sub> ) hydrogen chloride (HCl) Carbon monoxide
<b>Hazardous Reactions</b>	No hazardous reactions when stored and handled according to prescribed instructions. Stable under normal conditions.

**SECTION 11. TOXICOLOGICAL INFORMATION**

Only acute toxicity studies have been performed on the formulated product. The non-acute information pertains to the technical-grade active ingredient, iprodione.



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**Fire Fighting Instructions**

Extinguishing measures to suit surroundings. Keep out of smoke. Fight fire from upwind position. Cool closed containers/ tanks exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.

Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions**

Isolate hazard area. Keep unauthorized people away. Avoid contact with spilled product or contaminated surfaces.

**Methods for Cleaning Up**

Recover the product by pumping, suction or absorption using a dry and inert absorbent clay. Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations.

**Additional Advice**

Use personal protective equipment. Do not allow to enter soil, waterways or waste water canal. Do not allow product to contact vegetation.

**SECTION 7. HANDLING AND STORAGE**

**Handling Procedures**

Handle and open container in a manner as to prevent spillage. Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.

**Storing Procedures**

Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.

Keep away from food, drink and animal feedingstuffs.

**Work/Hygienic Procedures**

Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.

Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

**SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**General Protection**

Follow all label instructions. Train employees in safe use of the product.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash



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<b>Chronic or Delayed Long-Term</b>	This product does not contain any ingredients designated by IARC, NTP, ACGIH or OSHA as probable or suspected human carcinogens.
<b>Medical Conditions Aggravated by Exposure</b>	Skin contact may aggravate existing skin disease. Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis.
<b>Potential Environmental Effect</b>	Toxic to invertebrates.

**SECTION 4. FIRST AID MEASURES**

<b>General</b>	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
<b>Eye</b>	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.
<b>Skin</b>	Take off contaminated clothing and shoes immediately.
<b>Ingestion</b>	DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person.
<b>Inhalation</b>	If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Move to fresh air.
<b>Notes to Physician Hazards</b>	Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.
<b>Treatment</b>	There is no specific antidote. Treat symptomatically. Medical supervision for minimum 48 hours.

**SECTION 5. FIRE FIGHTING MEASURES**

<b>Flash point</b>	> 65.6 °C / 150.1 °F
<b>Fire and Explosion Hazards</b>	In the event of fire the following can be released: carbon monoxide (CO) hydrogen chloride (HCl) nitrogen oxides (NOx)
<b>Suitable Extinguishing Media</b>	Water spray, Carbon dioxide (CO2), Foam, Dry powder



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MSDS Number: 102000012421  
 MSDS Version 1.0  
 Revision Date: 06/11/2007

**SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION**

**Product Name** ROVRAL® BRAND 4 FLOWABLE FUNGICIDE  
**MSDS Number** 102000012421  
**EPA Registration No.** 264-482

Bayer CropScience  
 2 T.W. Alexander Drive  
 Research Triangle PK, NC 27709  
 USA

For MEDICAL, TRANSPORTATION or other EMERGENCY call: 1-800-334-7577 (24 hours/day)  
 For Product Information call: 1-866-99BAYER (1-866-992-2937)

**SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Hazardous Component Name</u>	<u>CAS-No.</u>	<u>Average % by Weight</u>
Iprodione	36734-19-7	41.60
Dodecylbenzene sulphonate, isopropylamine salt	26264-05-1	4.00
Polyoxyethylene-nonylphenyl-ether-phosphate	68412-53-3	3.00
Isodecyl poly(ethyleneoxy)ethanol	78330-20-8	1.00
1,2-Propanediol	57-55-6	

**SECTION 3. HAZARDS IDENTIFICATION**

*NOTE: Please refer to Section 11 for detailed toxicological information.*

**Emergency Overview** Caution! Harmful if swallowed or absorbed through skin. Moderate eye irritation. Avoid contact with skin, eyes and clothing.

**Physical State** liquid

**Appearance** white to off-white

**Routes of Exposure** Eye contact, Skin Absorption, Inhalation, Ingestion

**Immediate Effects**

**Eye** Moderate eye irritation. Causes irritation, redness. Avoid contact with eyes.

**Skin** Slight irritation. Harmful if absorbed through skin. Avoid contact with skin and clothing.

**Ingestion** May cause nausea, vomiting, abdominal pain, loss of coordination. Harmful if swallowed. Do not take internally.

**Inhalation** Harmful if inhaled. May cause upper respiratory tract irritation. Avoid breathing spray mist.

### **IMPORTANT NOTICE**

Treatment of highly mechanically damaged seed or seed of known low vigor and poor quality, except for the purposes of curative control of existing disease of insect pests, may result in reduced germination and/or reduction of seed and seedling vigor. Treat and conduct germination tests on a small portion of seed before committing the total seed lot to a selected chemical treatment. Due to seed quality conditions beyond the control of Chemtura, no claims are made to guarantee germination of carry-over seed.

Chemtura warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label only when used in accordance with directions and instructions specified on the label. Chemtura neither makes, nor authorizes any agent or representative to make any other warranty of FITNESS or MERCHANTABILITY, guarantee or representation, expressed or implied, concerning this material. To the extent consistent with applicable law, in the event of any breach of this limited warranty, Chemtura shall not be liable for consequential damages.

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### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), notification to workers, and restricted-entry intervals. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow workers to enter treated areas during the **restricted entry interval (REI) of 24 hours**.

**Exception:** Once the seeds are planted in soil or other planting media, the Worker Protection Standard allows workers to enter the treated area without restriction if there will be no worker contact with the soil/media subsurface.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated or treated seed is:

- coveralls
- shoes plus socks
- chemical-resistant gloves, made of any waterproof material
- protective eyewear.

### GENERAL

For treatment of onion seed for the control of onion smut (*Urocystis* spp).

### APPLICATION INSTRUCTIONS

Apply PRO-GRO® Dust Seed Protectant at the rate of 2.5 lbs. product per 100 lbs. of onion seed.

PRO-GRO Dust Seed Protectant is for use by commercial seed treaters only.

PRO-GRO Dust Seed Protectant should be film coated or pelleted.

### USE PRECAUTION

When using formulations that do not contain dye, to comply with 21CFR Section 2.25, treated seed must be colored with an approved dye (40CFR Section 153.155) to distinguish and prevent subsequent and inadvertent use as a food for man or feed for animals.

### TREATED SEED LABELING

Seed that has been treated with this product that is then packaged or bagged for future use by growers or researchers must contain the following labeling on the outside of the seed package or bag:

This bag contains seed treated with carboxin and thiram. Do not use for food, feed or oil purposes.

When opening this bag or loading/pouring the treated seeds, wear long-sleeved shirt, long pants, shoes, socks and chemical resistant gloves.

This product may have effects on federally listed threatened or endangered species or their critical habitat in some counties. It is a violation of federal law to kill, harm or harass listed animal species without authorization. To limit the potential for such impacts when using this product, consult and follow the instructions provided in the EPA Endangered Species Bulletin for the County or Parish in which you are planting the seed. To determine whether your County or Parish has a Bulletin, consult <http://www.epa.gov/espp> before each season's use of this product.

Treated seed exposed on soil surface may be hazardous to birds. Cover or collect spilled seeds. Do not plant treated seeds by broadcasting to the soil surface. Ensure that all planted seeds are thoroughly covered with soil, especially in turn areas. If seeds are not thoroughly incorporated by the planter during planting, additional incorporation may be required to thoroughly cover exposed seeds. Do not apply to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate or by disposal of wastes.

After the seeds have been planted, do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 24 hours. Exception: Once the seeds are planted in soil or other planting media, the Worker Protection Standard allows workers to enter the treated area without restriction if there will be no worker contact with the seeds or soil/media subsurface.

### STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

**PESTICIDE STORAGE:** Store in original container only. Keep container tightly closed. Store in a secure location that is cool and dry. Do not store in direct sunlight. Protect from extreme temperatures.

**PESTICIDE DISPOSAL:** Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

### CONTAINER DISPOSAL: Nonrefillable Container

**Paper or plastic bag:** Do not reuse or refill this container. Completely empty bag into application equipment by shaking and tapping sides and bottom to loosen clinging particles. When completely empty, offer for recycling if available, or dispose of bag in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**Plastic Container:** Do not reuse or refill this container. Completely empty container into application equipment by shaking and tapping sides and bottom to loosen clinging particles. When completely empty, offer for recycling if available, or dispose of empty container in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**Recycling:** Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact the Ag Container Recycling Council (ACRC) at 1-877-952-2272 (toll free) or [www.acrecycle.org](http://www.acrecycle.org).

#### NOTE TO PHYSICIAN

No specific antidote is available. Treat symptomatically. In the presence of consumed alcohol, thiram responds similarly to Disulfiram.

**SYMPTOMS OF POISONING:** No specific symptoms. Acute poisoning is accompanied by general depression and illness. Consumption of alcoholic beverages with exposure to Thiram may cause flushing, breathing difficulty, nausea, vomiting and low blood pressure. In case of poisoning, call a physician immediately. Have patient lie down and keep quiet.

#### PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS WARNING

Causes substantial but temporary eye injury. Harmful if swallowed, inhaled or absorbed through skin. Do not get in eyes or on skin. Avoid breathing dust. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

#### PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are made of any waterproof material. If you want more options, follow the instructions for category A on an EPA chemical-resistance category selection chart.

#### All Mixers, Loaders, Applicators and Other Handlers Must Wear:

- long-sleeved shirt and long pants,
- socks plus shoes,
- chemical-resistant gloves,
- goggles or face shield,
- apron when loading, cleaning up spills or cleaning equipment.

NOTE: Persons involved in bagging treated seed, sewing or moving bags of treated seed, or cleaning up bagging areas or seed treatment equipment are pesticide handlers and must wear the PPE required on this label for pesticide handlers. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

#### USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

#### ENVIRONMENTAL HAZARDS

This chemical is **toxic to fish, aquatic invertebrates, oysters and shrimp**. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

#### PHYSICAL or CHEMICAL HAZARDS

Do not use or store near heat or open flame.

#### DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons. Only protected handlers may be in the area during application.

Not for use on agricultural establishments in hopper-box, planter-box, slurry-box, or other seed treatment applications at or immediately before planting.



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**Respiratory Protection** When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.

**Exposure Limits**

Imidacloprid Glycerine	138261-41-3 56-81-5	OES BCS*		0.7 mg/m3
		ACGIH	TWA	10 mg/m3
		OSHA Z1	PEL	5 mg/m3
		OSHA Z1	PEL	15 mg/m3
		OSHA Z1A	TWA	5 mg/m3
		OSHA Z1A	TWA	10 mg/m3
		TX ESL	ST ESL	50 ug/m3
		TX ESL	AN ESL	5 ug/m3

\*OES BCS: Internal Bayer CropScience "Occupational Exposure Standard"

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	white to off-white
<b>Physical State</b>	liquid suspension
<b>pH</b>	6.5 - 7.5 (undiluted)
<b>Density</b>	1.23 g/cm <sup>3</sup> at 20 °C
<b>Boiling Point</b>	> 100 °C / > 212 °F
<b>Melting / Freezing Point</b>	-10 °C / 14 °F
<b>Water solubility</b>	miscible
<b>Viscosity</b>	500 - 700 mPa.s

**SECTION 10. STABILITY AND REACTIVITY**

<b>Hazardous Decomposition Products</b>	Thermal decomposition Hydrogen chloride (HCl) Nitrogen oxides (NOx)
<b>Hazardous Reactions</b>	Stable under recommended storage conditions.

**SECTION 11. TOXICOLOGICAL INFORMATION**

Only acute toxicity studies have been performed on this product as formulated. The non-acute information



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pertains to the technical-grade active ingredient.

<b>Acute Oral Toxicity</b>	male rat: LD50: > 500 - < 825 mg/kg female rat: LD50: 643 mg/kg
<b>Acute Dermal Toxicity</b>	male/female combined rat: LD50: > 2,000 mg/kg
<b>Acute Inhalation Toxicity</b>	male rat: LC50: 2.5 mg/l Exposure time: 4 h Determined in the form of liquid aerosol.  female rat: LC50: > 1.02 - < 2.02 mg/l Exposure time: 4 h Determined in the form of liquid aerosol.  male rat: LC50: 10.0 mg/l Exposure time: 1 h Determined in the form of liquid aerosol. Extrapolated from the 4 hr LC50.  female rat: LC50: > 4.1 - < 8.1 mg/l Exposure time: 1 h Determined in the form of liquid aerosol. Extrapolated from the 4 hr LC50.
<b>Skin Irritation</b>	rabbit: Slight irritation.
<b>Eye Irritation</b>	rabbit: Minimally irritating.
<b>Sensitization</b>	guinea pig: Non-sensitizing.
<b>Chronic Toxicity</b>	Imidacloprid caused thyroid and/or liver effects in chronic dietary studies in rats and dogs.
<b>Assessment Carcinogenicity</b>	Imidacloprid was not carcinogenic in studies in rats and mice.
<b>ACGIH</b>	None.
<b>NTP</b>	None.
<b>IARC</b>	None.
<b>OSHA</b>	None.
<b>Reproductive &amp; Developmental Toxicity</b>	REPRODUCTION: Imidacloprid was not a reproductive toxicant in a multi-generation study in rats.



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**DEVELOPMENTAL TOXICITY:** Imidacloprid is not considered a primary developmental toxicant in rats and rabbits. Developmental effects were observed at doses that caused maternal toxicity.

**Neurotoxicity** Imidacloprid showed slight behavioral and activity changes only at the highest dose tested in neurotoxicity studies in rats. There were no correlating morphological changes observed in the neural tissues.

**Mutagenicity** Imidacloprid was not mutagenic or genotoxic based on the overall weight of evidence in a battery of in vitro and in vivo tests.

**SECTION 12. ECOLOGICAL INFORMATION**

**Environmental Precautions** Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Apply this product as specified on the label. Do not allow to get into surface water, drains and ground water. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark.

**SECTION 13. DISPOSAL CONSIDERATIONS**

**General Disposal Guidance** Open dumping is prohibited. Pesticide, spray mixture or rinse water that cannot be used according to label instructions may be disposed of on site or at an approved waste disposal facility.

**Container Disposal** Do not re-use empty containers. Triple rinse containers. Puncture container to avoid re-use. Dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State/Provincial and local authorities, by burning. If burned, stay out of smoke. Follow advice on product label and/or leaflet.

**SECTION 14. TRANSPORT INFORMATION**

**TRANSPORTATION CLASSIFICATION:**  
Not regulated for Domestic Surface Shipment

**FREIGHT CLASSIFICATION:**  
Insecticides or Fungicides, N.O.I.; other than poison

**SECTION 15. REGULATORY INFORMATION**

**EPA Registration No.** 264-968

**US Federal Regulations**  
**TSCA list**  
None.



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**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**  
None.

**SARA Title III - Section 302 - Notification and Information**  
None.

**SARA Title III - Section 313 - Toxic Chemical Release Reporting**  
None.

**US States Regulatory Reporting**

**CA Prop65**

This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

**US State Right-To-Know Ingredients**

None.

**Canadian Regulations**

**Canadian Domestic Substance List**

None.

**Environmental**

**CERCLA**

None.

**Clean Water Section 307 Priority Pollutants**

None.

**Safe Drinking Water Act Maximum Contaminant Levels**

None.

**SECTION 16. OTHER INFORMATION**

NFPA 704 (National Fire Protection Association):

Health - 1      Flammability - 1      Reactivity - 0      Others - none

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason to Revise: Section 8: Exposure Limits

Revision Date: 07/14/2008

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.



**Material Safety Data Sheet**

**LORSBAN® 30 FLOWABLE**

MSDS Number: 102000012822  
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 Revision Date: 05/09/2006

**SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION**

**Product Name**                   LORSBAN® 30 FLOWABLE  
**MSDS Number**                102000012822  
**EPA Registration No.**       264-932

Bayer CropScience  
 2 T.W. Alexander Drive  
 Research Triangle PK, NC 27709  
 USA

For MEDICAL, TRANSPORTATION or other EMERGENCY call: 1-800-334-7577 (24 hours/day)  
 For Product Information call: 1-866-99BAYER (1-866-992-2937)

**SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Hazardous Component Name</u>	<u>CAS-No.</u>	<u>Average % by Weight</u>
Chlorpyrifos	2921-88-2	30.00
1,2,4-Trimethylbenzene	95-63-6	4.10
Xylene	1330-20-7	3.00
Ethylbenzene	100-41-4	0.60

**SECTION 3. HAZARDS IDENTIFICATION**

*NOTE: Please refer to Section 11 for detailed toxicological information.*

**Emergency Overview**           Caution! Harmful if swallowed, inhaled or absorbed through the skin. Moderate eye irritation. Do not get in eyes, on skin, or on clothing. Do not breathe vapours or spray mist. Extremely toxic to fish and aquatic organisms.

**Physical State**                   liquid

**Odor**                               of mercaptans

**Appearance**                   light cream

**Routes of Exposure**           Inhalation, Skin Absorption, Ingestion, Eye contact

**Immediate Effects**

**Eye**                             Moderate eye irritation. Do not get in eyes.

**Skin**                            May cause skin irritation. Harmful if absorbed through skin. Do not get in eyes, on skin, or on clothing.



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**Ingestion** Harmful if swallowed. Do not take internally.  
**Inhalation** Harmful if inhaled. Do not breathe vapours or spray mist.

**SECTION 4. FIRST AID MEASURES**

**General** When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

**Eye** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.

**Skin** Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Call a physician or poison control center immediately.

**Ingestion** Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

**Inhalation** Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

**Notes to Physician**  
**Hazards** May pose an aspiration pneumonia hazard.

**Treatment** There is no specific antidote. Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended.

**SECTION 5. FIRE FIGHTING MEASURES**

**Flash Point** 61 °C / 142 °F

**Fire and Explosion Hazards** Under fire conditions, toxic, corrosive fumes are emitted. Keep away from open flames, hot surfaces and sources of ignition.

**Suitable Extinguishing Media** foam, carbon dioxide (CO<sub>2</sub>), water spray, dry chemical



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**Fire Fighting Instructions**

Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Dike area to prevent runoff and contamination of water sources. Equipment or materials involved in pesticide fires may become contaminated.

Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions**

Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.

**Methods for Cleaning Up**

Take up with absorbent material (e.g. sand, diatomaceous earth or a proprietary absorbent material). Keep in suitable, closed containers for disposal. Clean contaminated floors and objects thoroughly, observing environmental regulations.

**Additional Advice**

Use personal protective equipment. Do not allow product to enter streams, sewers or other waterways.

**SECTION 7. HANDLING AND STORAGE**

**Handling Procedures**

Handle and open container in a manner as to prevent spillage.

**Storing Procedures**

Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area. Keep away from direct sunlight.

**Work/Hygienic Procedures**

Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.

Take off contaminated clothing and shoes immediately. Then wash thoroughly and put on clean clothing.

Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. As soon as practical, wash thoroughly and change into clean clothing.

**Min/Max Storage Temperatures**

Do not transport or store below -1 °C / 30 °F  
Do not transport or store above 52 °C / 126 °F

**SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**General Protection**

Follow all label instructions. Train employees in safe use of the product.



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Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.

- Engineering Controls**      Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.
- Eye/Face Protection**    tightly fitting safety goggles
- Hand Protection**        Chemical resistant nitrile rubber gloves
- Body Protection**         Wear long-sleeved shirt and long pants and shoes plus socks.
- Respiratory Protection**    When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or Industry recommendations.

Exposure Limits					
Chlorpyrifos	2921-88-2	ACGIH	TWA		0.1 mg/m3
		Form of Exposure		Inhalable fraction and vapor	
		NIOSH	REL		0.2 mg/m3
		NIOSH	STEL		0.6 mg/m3
		OSHA Z1A	TWA		0.2 mg/m3
		US CA OEL	TWA PEL		0.2 mg/m3
1,2,4-Trimethylbenzene	95-63-6	NIOSH	REL	25 ppm	125 mg/m3
		ACGIH	TWA		25 ppm
		OSHA Z1A	TWA	25 ppm	125 mg/m3
		US CA OEL	TWA PEL	25 ppm	125 mg/m3
Xylene	1330-20-7	ACGIH	TWA		100 ppm
		ACGIH	STEL		150 ppm
		OSHA Z1	PEL	100 ppm	435 mg/m3
		OSHA Z1A	TWA	100 ppm	435 mg/m3
		OSHA Z1A	STEL	150 ppm	655 mg/m3
		US CA OEL	TWA PEL	100 ppm	435 mg/m3
		US CA OEL	Ceiling		300 ppm
		US CA OEL	STEL	150 ppm	655 mg/m3
		NIOSH	REL	100 ppm	435 mg/m3
		NIOSH	STEL	150 ppm	655 mg/m3
		NIOSH	REL	100 ppm	435 mg/m3
		NIOSH	STEL	150 ppm	655 mg/m3
		NIOSH	REL	100 ppm	435 mg/m3
		NIOSH	STEL	150 ppm	655 mg/m3
Ethylbenzene	100-41-4	ACGIH	TWA		100 ppm
		ACGIH	STEL		125 ppm
		NIOSH	REL	100 ppm	435 mg/m3
		NIOSH	STEL	125 ppm	545 mg/m3
		OSHA Z1	PEL	100 ppm	435 mg/m3
		OSHA Z1A	TWA	100 ppm	435 mg/m3
		OSHA Z1A	STEL	125 ppm	545 mg/m3
		US CA OEL	TWA PEL	100 ppm	435 mg/m3



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Urea	57-13-6	US CA OEL WEEL	STEL TWA	125 ppm	545 mg/m3 10 mg/m3
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**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	light cream
<b>Physical State</b>	liquid
<b>Odor</b>	of mercaptans
<b>pH</b>	3.0 - 4.0 (2 %) (as aqueous solution)
<b>Specific Gravity</b>	1.08
<b>Bulk Density</b>	8.55 - 9.45 lbs/gal
<b>Boiling Point</b>	95.6 °C / 204.1 °F
<b>Melting / Freezing Point</b>	-12 - -9.4 °C / 10 - 15.1 °F
<b>Water Solubility</b>	miscible
<b>Viscosity</b>	140 - 250 mPa.s

**SECTION 10. STABILITY AND REACTIVITY**

<b>Chemical Stability</b>	Stable under normal conditions.
<b>Conditions to Avoid</b>	Exposure to extreme heat. Exposure to extreme cold.
<b>Incompatibility</b>	strong bases oxidizing agents
<b>Hazardous Decomposition Products</b>	Thermal decomposition can lead to release of: hydrogen chloride (HCl) nitrogen oxides (NOx) sulphides

**SECTION 11. TOXICOLOGICAL INFORMATION**

<b>Acute Oral Toxicity</b>	rat: LD50: 550 mg/kg
<b>Acute Dermal Toxicity</b>	rabbit: LD50: > 5,000 mg/kg



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**Acute Inhalation Toxicity** rat: LC50: 2.59 mg/l  
Exposure time: 4 h  
No deaths

**Skin Irritation** Moderate skin irritation.

**Eye Irritation** Moderate eye irritation.

**Sensitization** May cause sensitisation by skin contact.

**Chronic Toxicity** Three generation dietary feeding studies of Chlopyrifos in rats produced no adverse effects with regard to reproduction and fertility. This compound has not been shown to be teratogenic or oncogenic. Chronic exposure in humans would result in symptoms similar to acute exposures with signs of depressed cholinesterase.

**Assessment Carcinogenicity**

**ACGIH**

Chlorpyrifos	2921-88-2	Group A4
Xylene	1330-20-7	Group A4
Ethylbenzene	100-41-4	Group A3

**NTP**

None.

**IARC**

Xylene	1330-20-7	Overall evaluation: 3
Ethylbenzene	100-41-4	Overall evaluation: 2B

**OSHA**

None.

**SECTION 12. ECOLOGICAL INFORMATION**

**Environmental Precautions**

Extremely toxic to fish and aquatic organisms. Toxic to birds. Toxic to wildlife. Exposed treated seed may be hazardous to birds. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to fish/aquatic organisms in adjacent sites. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Apply this product only as specified on the label.



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**SECTION 13. DISPOSAL CONSIDERATIONS**

**General Disposal Guidance** Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. Open dumping is prohibited.

**Container Disposal** Do not re-use empty containers. Triple rinse containers. Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke. Refer to the product label for other disposal instructions.

**RCRA Classification:** The RCRA Classifications may be on the individual component(s) and not necessarily on the product as a whole.

1330-20-7 Xylene  
US. EPA Resource Conservation and Recovery Act (RCRA) U List of Hazardous Wastes (40 CFR 261.33(f) and 40 CFR 302 [CERCLA]): U239

100-41-4 Ethylbenzene  
US. EPA Resource Conservation and Recovery Act: (RCRA) D List of Characteristic Hazardous Wastes (40 CFR 261.21-24): D001

**SECTION 14. TRANSPORT INFORMATION**

**TRANSPORTATION CLASSIFICATION:**  
When package size=0.35 gallons the RQ of Chlorpyrifos is met at 1 Lbs. product is regulated as follows:

RQ, Environmentally Hazardous Substances, Liquid, N.O.S.(Chlorpyrifos) // 9 // UN3082 // PG III

**FREIGHT CLASSIFICATION:**  
Insecticides or Fungicides, N.O.I.; other than poison

**SECTION 15. REGULATORY INFORMATION**

**EPA Registration No.** 264-932

**US Federal Regulations**

**TSCA list**

1,2,4-Trimethylbenzene 95-63-6  
Xylene 1330-20-7  
Ethylbenzene 100-41-4

**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**

Xylene 1330-20-7

**SARA Title III - Section 302 - Notification and Information**



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None.

**SARA Title III - Section 313 - Toxic Chemical Release Reporting**

1,2,4-Trimethylbenzene	95-63-6	1.0%
Xylene	1330-20-7	1.0%
Ethylbenzene	100-41-4	0.1%

**US States Regulatory Reporting**

**CA Prop65**

This product contains a chemical known to the State of California to cause cancer.

Ethylbenzene	100-41-4
--------------	----------

This product does not contain any substances known to the State of California to cause reproductive harm.

**US State Right-To-Know Ingredients**

Chlorpyrifos	2921-88-2	CA, CT, IL, MA, MN, PA, RI
1,2,4-Trimethylbenzene	95-63-6	CA, IL, MN, NJ, PA, RI
Xylene	1330-20-7	CA, CT, IL, MI, MN, NJ, PA, RI
Ethylbenzene	100-41-4	CA, CT, IL, MN, NJ, PA, RI

**Canadian Regulations**

**Canadian Domestic Substance List**

Chlorpyrifos	2921-88-2
1,2,4-Trimethylbenzene	95-63-6
Xylene	1330-20-7
Ethylbenzene	100-41-4

**Environmental**

**CERCLA**

Chlorpyrifos	2921-88-2	1 lbs
Xylene	1330-20-7	100 lbs
Ethylbenzene	100-41-4	1,000 lbs

**Clean Water Section 307 Priority Pollutants**

None.

**Safe Drinking Water Act Maximum Contaminant Levels**

None.

**International Regulations**

**European Inventory of Existing Commercial Substances (EINECS)**

Chlorpyrifos	2921-88-2
1,2,4-Trimethylbenzene	95-63-6
Xylene	1330-20-7
Ethylbenzene	100-41-4

**SECTION 16. OTHER INFORMATION**

**NFPA 704 (National Fire Protection Association):**

Health - 2      Flammability - 2      Reactivity - 1      Others - none

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Bayer CropScience



**Material Safety Data Sheet**  
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Reason to Revise: Update format to new system.

Revision Date: 05/09/2006

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.

Sepresto

**BAYER CROPSCIENCE MATERIAL INFORMATION/SAFETY DATA  
FOR THE HANDLING OF EXPERIMENTAL PRODUCTS**

Page 1 of 2

Date of Issue: January 25, 2007	Supersedes version dated:
Emergency Telephone No: 800-334-7577	Contact: Safety Coordinator: Teresa Richardson
<p><b>"For Research and Development Use Only: To be used by, or under the direct supervision of, a technically qualified individual. This is an experimental sample and its toxicological properties have not yet been fully investigated. It is not on the TSCA Inventory and can only be used under the TSCA exemption for Research &amp; Development. Treat product accordingly."</b></p>	

**1. IDENTIFICATION: Clothianidin+Imidacloprid 75WS (56.25+18.75%)**

Active Ingredient: CAS #: Percent:  
 1) Clothianidin 210880-92-5 56.25  
 2) Imidacloprid 138261-41-3 18.75

Type of Formulation:  
 WDG  EC  GEL  Technical  WS: Wettable powder for seed treatment

Type of Solvent:  
 Water  Petroleum distillate  None  \_\_\_\_\_

**2. PHYSICAL DATA:**

Bulk Density: 0.3 gm/ml  not applicable  no data available  
 pH: 9  not applicable  no data available  
 Water Solubility: Dispersible  not applicable  no data available  
 Physical Appearance: Gray Powder  not applicable  no data available  
 Noticeable odor: Mild  not applicable  no data available

**3. FIRE AND EXPLOSION HAZARD DATA:**

Flashpoint: >95 C (>203 F) (method): -Est.  Not applicable

FLAMMABLE LIQUID KEEP AWAY FROM HEAT, SPARK, FLAME AND  
 COMBUSTIBLE LIQUID OTHER SOURCES OF IGNITION.

Extinguishing media: Use carbon dioxide or dry chemical for small fires. Use alcohol foam, universal foam or water spray for large fires involving this product.

Special Fire Fighting procedures: Wear a NIOSH/MSHA self-contained breathing apparatus and full protective clothing when fighting fires involving this product.

**4. HEALTH HAZARDS / FIRST AID INFORMATION:**

**DANGER! MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH THE SKIN.**

Vapors, dusts or sprays may be irritating to the eyes, skin and respiratory system.

Do not swallow product or inhale its dusts / mists. Do not get in eyes, on skin, or on clothing.

Toxicology Information:  For formulated product  For active ingredient

Oral LD50(rat)	Dermal LD50 (rat)	Inhalation LC50 (rat)	Eye Effects	Skin Effects
<input type="checkbox"/> <50 mg/kg	<input checked="" type="checkbox"/> ≤200 mg/kg	<input type="checkbox"/> ≤0.2 mg/L	<input type="checkbox"/> CORROSIVE	<input type="checkbox"/> CORROSIVE
<input type="checkbox"/> 50 - 500 mg/kg	<input checked="" type="checkbox"/> 200 - 2000 mg/kg	<input type="checkbox"/> 0.2 - 2 mg/L	<input type="checkbox"/> Severe Irritant	<input type="checkbox"/> Severe Irritant
<input checked="" type="checkbox"/> 500- 5000 mg/kg	<input type="checkbox"/> 2000 - 20,000 mg/kg	<input checked="" type="checkbox"/> 2 - 20 mg/L	<input type="checkbox"/> Moderate Irritant	<input type="checkbox"/> Moderate Irritant
<input type="checkbox"/> >5000 mg/kg	<input type="checkbox"/> >20,000 mg/kg	<input type="checkbox"/> >20 mg/L	<input checked="" type="checkbox"/> Mild Irritant	<input checked="" type="checkbox"/> Mild Irritant
<input type="checkbox"/> No data available	<input type="checkbox"/> No Data available	<input type="checkbox"/> No data available	<input type="checkbox"/> No data available	<input type="checkbox"/> No data available

Effects of Overexposure: The toxic effects of this product are unknown and it should be handled in a way to prevent overexposure.

Carcinogenicity: This product does not contain any ingredient designated by IARC, NTP, ACGIH or OSHA as a probable human carcinogen.

BayerCropscience, P.O. Box 12014, RTP, NC USA 27709  
 Telephone: (919) 549-2221 FAX: (919) 549-2730

**BAYER CROPSCIENCE MATERIAL INFORMATION/SAFETY DATA  
FOR THE HANDLING OF EXPERIMENTAL PRODUCTS**

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Date of Issue: January 25, 2007

Supersedes version dated:

**5. EMERGENCY AND FIRST AID PROCEDURES**

Remove patient from contaminated area, and keep warm and resting. Seek immediate medical attention in all cases of serious personal contamination. Do not induce vomiting in, or give anything by mouth to an unconscious person.

**INGESTION:** Drink 1-2 glasses of water. Contact Poison Control Center. Get immediate medical attention.

**(If checked):** [ ] **CONTAINS PETROLEUM DISTILLATES. DO NOT INDUCE VOMITING.**

**INHALATION:** If breathing has stopped, administer artificial respiration. Get medical attention.

**EYE CONTACT:** Flush eyes with water for at least 15 minutes while holding eyelids open. Get medical attention.

**SKIN CONTACT:** Remove contaminated clothing and wash contaminated skin with soap and plenty of water for at least 15 minutes. Get medical attention.

**6. PRECAUTIONS FOR SAFE HANDLING AND USE**

**Steps to be taken if material is released or spilled:**

Put on appropriate protective clothing. Ventilate area of spill. Absorb liquid spills onto vermiculite or other absorbent. Sweep up or vacuum spill into a steel container for proper disposal. Avoid creating a dusting condition. Wash spill area after material pickup is complete. If spilled on the ground, scrape up spill area with 1 - 2 inches of soil and put in appropriate container for disposal.

**Waste Disposal:**

Dispose of in accordance with local, state and federal regulations.

Do not contaminate water sources by disposing of unused material into streams, sewers, or other sources of water contamination. If material cannot be fully used for the intended purpose, contact Bayer CropScience at 816-242-2562

**Handling and Storage:**

Wear approved protective gear when handling. Store in a cool, dry place in tightly closed containers. Do not swallow product. Do not breathe dusts or mists. Avoid direct or prolonged contact with skin and eyes. Wash hands thoroughly after handling. Do not rub eyes with soiled hands. Do not eat, drink or smoke in the work area.

**7. SPECIAL PROTECTION INFORMATION**

**Protective Equipment:**

**Protective Clothing:** Full-body protective work clothing, chemical resistant gloves and boots.

**Respiratory Protection:** Use NIOSH/MSHA approved respirator with appropriate filter for pesticide dusts/mists.

**Eye Protection:** Chemical worker goggles.

**Other protective equipment:** Maintain a sink, safety shower and eyewash fountain in work area. Have oxygen available.

**The information herein is given in good faith  
but no warranty, expressed or implied, is made.**

**BayerCropscience, P.O. Box 12014, RTP, NC USA 27709  
Telephone: (919) 549-2221 FAX: (919) 549-2730**



Syngenta Crop Protection, Inc.  
Post Office Box 18300  
Greensboro, NC 27419

In Case of Emergency, Call  
1-800-888-8372

**1. PRODUCT IDENTIFICATION**

Product Name: **TRIGARD INSECTICIDE** Product No.: A6808B  
EPA Signal Word: Caution  
Active Ingredient(%): Cyromazine (75.0%) CAS No.: 66215-27-8  
Chemical Name: N-cyclopropyl-1,3,5-triazine-2,4,6-triamine  
Chemical Class: Substituted Melamine (Triazine) Insecticide  
EPA Registration Number(s): 100-654 Section(s) Revised: 2, 5, 7

**2. HAZARDS IDENTIFICATION**

Health and Environmental

Harmful if inhaled. May be harmful in contact with skin. Causes eye and skin irritation. May cause respiratory tract irritation.

Combustible powder.

Hazardous Decomposition Products

None known.

Physical Properties

Appearance: Gray-tan powder

Odor: Sweet, musty

Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

See also Sec. 7.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen
Kaolin Clay	15 mg/m <sup>3</sup> TWA (total); 5 mg/m <sup>3</sup> TWA (respirable)	2 mg/m <sup>3</sup> TWA (respirable)	10 mg/m <sup>3</sup> TWA (total); 5 mg/m <sup>3</sup> TWA (respirable) **	No
Amorphous Silica	80 mg/m <sup>3</sup> /%SiO <sub>2</sub> TWA (total dust)	Not Established	Not Established	IARC Group 3
Cyromazine (75.0%)	Not Established	Not Established	3 mg/m <sup>3</sup> TWA ***	No

\*\* recommended by NIOSH

\*\*\* Syngenta Occupational Exposure Limit (OEL)

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.  
Syngenta Hazard Category: B, S

#### 4. FIRST AID MEASURES

Have the product container, label or Material Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison control center or doctor, or going for treatment.

- Ingestion:** If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Have the person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
- Eye Contact:** If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Skin Contact:** If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Inhalation:** If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

##### Notes to Physician

There is no specific antidote if this product is ingested.

Treat symptomatically.

Medical Condition Likely to be Aggravated by Exposure  
None known.

#### 5. FIRE FIGHTING MEASURES

##### Fire and Explosion

Flash Point (Test Method):	Not Applicable	
Flammable Limits (% in Air):	Lower: Not Applicable	Upper: Not Applicable
Autoignition Temperature:	Not Available	
Flammability:	Combustible powder	

##### Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

See also Sec. 7.

##### In Case of Fire

Use appropriate extinguishing media for combustibles in the area. Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. If water is used to fight fire, dike and collect runoff.

#### 6. ACCIDENTAL RELEASE MEASURES

##### In Case of Spill or Leak

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Sweep up material and place in a compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

#### 7. HANDLING AND STORAGE

This material is capable of forming flammable dust clouds in air, which, if ignited, can produce a dust cloud explosion. Flames, hot surfaces, mechanical sparks and electrostatic discharges can serve as ignition sources for this material. Electrical equipment should be compatible with the flammability characteristics of this material. The flammability characteristics will be made worse

if the material contains traces of flammable solvents or is handled in the presence of flammable solvents.

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

- Ingestion: Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.
- Eye Contact: Where eye contact is likely, use dust-proof chemical goggles.
- Skin Contact: Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear.
- Inhalation: A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH certified respirator with any N, R, P or HE filter.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Gray-tan powder
Odor:	Sweet, musty
Melting Point:	435 °F (Technical)
Boiling Point:	Not Applicable
Specific Gravity/Density:	20.17 lbs/ft <sup>3</sup>
pH:	8 - 10 (1% suspension in water)
Solubility in H <sub>2</sub> O	
Cyromazine:	8 g/l @ 77°F (25°C)
Vapor Pressure	
Cyromazine:	1.3 x 10 <sup>-9</sup> mmHg @ 68°F (20°C)

## 10. STABILITY AND REACTIVITY

Stability:	Stable under normal use and storage conditions.
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	See Sec. 7.
Materials to Avoid:	None known.
Hazardous Decomposition Products:	None known.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity/Irritation Studies (Finished Product)

Ingestion:	Oral (LD50 Rabbit) :	4460 mg/kg body weight
Dermal:	Dermal (LD50 Rat) :	> 2010 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	> 2.5 mg/l air - 4 hours
Eye Contact:	Mildly Irritating (Rabbit)	

Skin Contact: Moderately Irritating (Rabbit)  
Skin Sensitization: Not a Sensitizer (Guinea Pig)

Reproductive/Developmental Effects

Cyromazine: None observed.

Chronic/Subchronic Toxicity Studies

Cyromazine: None observed.

Carcinogenicity

Cyromazine: None observed.

Other Toxicity Information

None

Toxicity of Other Components

Amorphous Silica

Amorphous Silica is listed as an IARC (Group 3) carcinogen not classifiable as a human carcinogen (No Data Available) with limited animal evidence. Prolonged exposure to amorphous silica may cause damage to respiratory system and irritation to skin and eyes.

Kaolin Clay

May cause eye and respiratory tract irritation.

Long-term exposure to high concentrations of this dust may produce x-ray evidence of dust in the lungs. Continued long-term exposure may affect respiratory function in some individuals.

Target Organs

Active Ingredients

Cyromazine: None known

Inert Ingredients

Amorphous Silica: Respiratory tract, skin, eye

Kaolin Clay: Eye, respiratory tract, lung

## 12. ECOLOGICAL INFORMATION

Ecotoxicity Effects

Cyromazine:

Fish (Rainbow Trout) 96-hour LC50 > 87.9 ppm

Invertebrate (Water Flea) Daphnia Magna 48-hour EC50 > 97.8 ppm

Bird (Bobwhite Quail) 14-day LD50 1785 mg/kg

Environmental Fate

Cyromazine:

The information presented here is for the active ingredient, cyromazine.

Low bioaccumulation potential. Not persistent in soil. Stable in water. Low to moderate mobility in soil. Sinks in water (after 24 h).

## 13. DISPOSAL CONSIDERATIONS

Disposal

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable  
Listed Waste: Not Applicable

#### 14. TRANSPORT INFORMATION

**DOT Classification**

Ground Transport - NAFTA  
Not regulated.

Air Transport - NAFTA  
Not regulated.

**Comments**

Water Transport - International  
Not regulated.

Air Transport - International  
Not regulated.

#### 15. REGULATORY INFORMATION

**EPCRA SARA Title III Classification**

Section 311/312 Hazard Classes: Acute Health Hazard  
Fire Hazard

Section 313 Toxic Chemicals: Not Applicable

California Proposition 65  
Not Applicable

CERCLA/SARA 302 Reportable Quantity (RQ)  
Not Applicable

RCRA Hazardous Waste Classification (40 CFR 261)  
Not Applicable

TSCA Status  
Exempt from TSCA, subject to FIFRA

#### 16. OTHER INFORMATION

**NFPA Hazard Ratings**

Health: 2  
Flammability: 2  
Instability: 0

**HMIS Hazard Ratings**

Health: 1  
Flammability: 2  
Reactivity: 0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 4/7/1988

Revision Date: 7/19/2010

Replaces: 8/21/2009

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

End of MSDS

**RESTRICTED USE PESTICIDE  
DUE TO ACUTE INHALATION TOXICITY OF HIGHLY  
TOXIC HYDROGEN PHOSPHIDE (PHOSPHINE, PH<sub>3</sub> GAS)**

For retail sale to and use only by Certified Applicators for those uses covered by the applicators certification or persons trained in accordance with the attached product manual working under the direct supervision and in the physical presence of the Certified Applicator. Physical presence means onsite or on the premises. Refer to Pestcon Systems, Inc. Applicator's Manual for complete instructions for the safe use of this product.

***Fumitoxin***<sup>®</sup>

**REGISTRANT**

D&D HOLDINGS, INC. P.O. BOX 116, WEYERS CAVE, VA 24486

**EPA REG. NO. 72959-1 – TABLETS**

**EPA REG. NO. 72959-2 – PELLETS**

**EPA REG. NO. 72959-3 – BAGS**

**FOR USE AGAINST LISTED INSECTS WHICH INFEST STORED  
COMMODITIES, SPECIFIED PROCESSED FOODS, AND ANIMAL FEEDS.**

<b>ACTIVE INGREDIENT – Aluminum Phosphide</b> .....	55%
<b>Inert Ingredients</b> .....	45%
	100%



**KEEP OUT OF REACH OF CHILDREN  
DANGER/PELIGRO – POISON**



MANUFACTURED FOR  
**PESTCON**  
SYSTEMS, INC.  
U.S.A.

**1808 FIRESTONE PARKWAY  
WILSON, NC 27893  
TELEPHONE: 252-237-7923  
FAX: 252-243-1832**

**EPA EST. NO. 5857-NC-001**



MATERIAL SAFETY DATA SHEET: ALUMINUM PHOSPHIDE, FUMITOXIN®

	<u>US EPA REG. NO.</u>	<u>DISTRIBUTOR NO.</u>	<u>CANADA REG. NO.</u>
FUMITOXIN® TABLETS	72959-1	72959-1-5857	19227
FUMITOXIN® PELLETS	72959-2	72959-2-5857	19226
FUMITOXIN® BAGS	72959-3	—	—

**SECTION I – PRODUCT INFORMATION**

**Distributor:**

Pestcon Systems, Inc.  
1808 Firestone Parkway  
Wilson, NC 27893  
Phone: 252-237-7923 (800-548-2778)  
Fax: 252-243-1832 or 252-237-3259  
E-mail: info@pestcon.com  
Internet address: www.pestcon.com

**Manufacturer:**

People's Republic of China

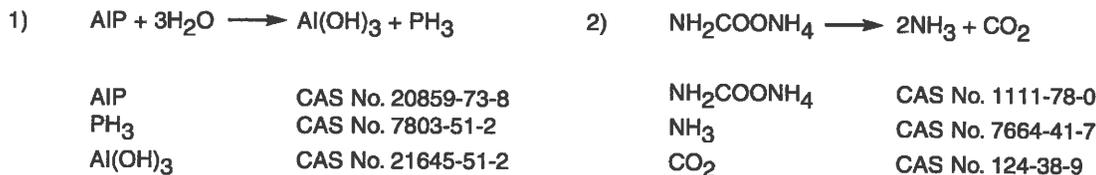
**EMERGENCY TELEPHONE NOS.:**

Emergency: - Chemtrec (800) 424-9300 – International: 202-483-7616  
Emergency and Information: Pestcon Systems, Inc. 252-237-7923 / 800-548-2778  
Date of Revision: April 2004 — Form msds/phosphine

**SECTION II – HAZARDOUS INGREDIENTS INFORMATION**

**Identity:**

Fumitoxin and Aluminum Phosphide (AIP) – react with water to produce phosphine, hydrogen phosphide. PH<sub>3</sub> as shown in Equation 1. is formulated with 55% aluminum phosphide and also contains ammonium carbamate (AC) and inert ingredients. Ammonium carbamate releases ammonia and carbon dioxide as shown in Equation 2.



**NFPA Chemical Hazard Ratings:**

Flammability Hazard 4  
Health Hazard 4  
Reactivity Hazard 2  
Special Hazard W

**SARA Physical and Health Hazards:**

Fire  
Reactivity  
Immediate (Acute)

**Inhalation Exposure Limits:**

<u>Component</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>		<u>NIOSH</u>
	<u>TWA</u> (ppm)	<u>TWA</u> (ppm)	<u>STEL</u> (ppm)	<u>IDLH</u> (ppm)
Hydrogen Phosphide*	0.3	0.3	1.0	50
Ammonia	50	25	35	300
Carbon Dioxide	5,000	5,000	30,000	40,000

**SECTION III – PHYSICAL CHARACTERISTICS**

**Boiling Point:**

AIP > 1000°C  
PH<sub>3</sub> -87.7°C

**Vapor Pressure:**

AIP 0mm Hg  
PH<sub>3</sub> 40mm Hg @ -129.4°C  
AC 100mm Hg @ 26.7°C

**Specific Gravity of Vapors (Air=1):**

AIP N/A  
PH<sub>3</sub> 1.17

**Solubility In Water:**

AIP Insoluble, reacts  
PH<sub>3</sub> 26cc in 100 ml water at 17°C  
AC Very soluble, reacts

**Appearance and Odor:**

Fumitoxin and aluminum phosphide have a greenish-gray color and the hydrogen phosphide (phosphine, PH<sub>3</sub>) gas produced by these chemicals has an odor described as similar to garlic, carbide or decaying fish.

**Specific Gravity:**

AIP 2.85

**Melting Point:**

AIP > 1000°C  
PH<sub>3</sub> -133.5°C

**SECTION IV – FIRE AND EXPLOSION HAZARD DATA****Flash Point:**

Aluminum phosphide, and Fumitoxin are not themselves flammable. However, they react readily with water to produce hydrogen phosphide (phosphine, PH<sub>3</sub>) gas which may ignite spontaneously in air at concentrations above its LEL of 1.8% v/v. UEL of hydrogen phosphide is not known.

**Extinguishing Media:**

Suffocate flames with sand, carbon dioxide or dry extinguishing chemicals.

**Special Fire Fighting Procedures:**

Do not use water on metal phosphide fires.

**Respiratory Protection:**

Wear NIOSH/MSHA approved SCBA or equivalent respiratory protection.

**Protective Clothing:**

Wear gloves when handling Fumitoxin tablets, pellets or dust.

**Unusual Fire and Explosion Hazards:**

Hydrogen phosphide-air mixtures at concentrations above the lower flammable limit of 1.8% v/v, PH<sub>3</sub> may ignite spontaneously. Ignition of high concentrations of hydrogen phosphide can produce a very energetic reaction. Explosions can occur under these conditions and may cause severe personal injury. **Never allow the buildup of hydrogen phosphide to exceed explosive concentrations.** Open containers of metal phosphides in open air only and never in a flammable atmosphere. Do not confine spent or partially spent dust from metal phosphide fumigants as the slow release of hydrogen phosphide from these materials may result in the formation of an explosive atmosphere. Spontaneous ignition may occur if large quantities of aluminum phosphide are piled in contact with liquid water. This is particularly true if quantities of these materials are placed in moist or spoiled grain which can provide partial confinement of the hydrogen phosphide gas liberated by hydrolysis.

Fires containing hydrogen phosphide or metal phosphides will produce phosphoric acid by the following reaction:

**SECTION V – REACTIVITY DATA****Stability:**

Fumitoxin and aluminum phosphide are stable to most chemical reactions, except for hydrolysis. They will react with moist air, liquid water, acids and some other liquids to produce toxic and flammable hydrogen phosphide gas. Hydrogen phosphide may react vigorously with oxygen and other oxidizing agents.

**Incompatibility:**

Avoid contact with water and oxidizing agents.

**Corrosion:**

Hydrogen phosphide gas may react with certain metals and cause corrosion, especially at higher temperatures and relative humidities. Metals such as copper, brass and other copper alloys, and precious metals such as gold and silver are susceptible to corrosion by phosphine. Small electric motors, smoke detectors, brass sprinkler heads, batteries and battery chargers, fork lifts, temperature monitoring systems, switching gears, communication devices, computers, calculators and other electrical equipment may be damaged by this gas. Hydrogen phosphide will also react with certain metallic salts and, therefore, sensitive items such as photographic film, some inorganic pigments, etc., should not be exposed.

**Hazardous Polymerization:**

Will not occur.

**SECTION VI – HEALTH HAZARD INFORMATION****Routes of Entry:**

The dermal toxicity of aluminum phosphide is very low. The LD<sub>50</sub> via the dermal route is greater than 5,000 mg per kilogram for a 1-hour exposure. Primary routes of exposure are inhalation and ingestion.

**Acute and Chronic Health Hazards:**

Fumitoxin and aluminum phosphide are highly acute toxic substances. The LC<sub>50</sub> for hydrogen phosphide gas is about 180 ppm for a 1-hour inhalation exposure. The acute oral toxicity of the Fumitoxin formulations was found to be 11.5 mg/kg of body weight. Aluminum phosphide and phosphine are not known to cause chronic poisoning.

**Carcinogenicity:**

Aluminum phosphide and phosphine are not carcinogenic and are not listed as such by NTP, IARC or OSHA.

**Signs and Symptoms of Exposure:**

Aluminum phosphide tablets, pellets and dust react with moisture from the air, acids and many other liquids to release hydrogen phosphide (phosphine, PH<sub>3</sub>) gas. Mild exposure by inhalation causes malaise (indefinite feeling of sickness), ringing in the ears, fatigue, nausea and pressure in the chest which is relieved by removal to fresh air. Moderate poisoning causes weakness, vomiting, pain just above the stomach, chest pain, diarrhea and dyspnea (difficulty in breathing). Symptoms of severe poisoning may occur within a few hours to several days resulting in pulmonary edema (fluid in lungs) and may lead to dizziness, cyanosis (blue or purple skin color), unconsciousness, and death.

**Emergency and First Aid Procedures:**

Symptoms of exposure to this product are headaches, dizziness, nausea, difficult breathing, vomiting, and diarrhea. In all cases of overexposure get medical attention immediately. Take victim to a doctor or emergency treatment facility.

**If inhaled:** - Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth if possible. Keep warm and make sure person can breathe freely. Call a poison control center or doctor for further treatment advice.

**If swallowed:** - Call a poison control center or doctor immediately for treatment advice. Have person drink one or two glasses of water and induce vomiting by touching back of throat with finger, or if available administer syrup of ipecac. Do not give anything by mouth to an unconscious person.

**If on skin or clothing:** - Brush or shake material off clothes and shoes in a well-ventilated area. Allow clothes to aerate in a ventilated area prior to laundering. Do not leave contaminated clothing in occupied and/or confined areas such as automobiles, vans, motel rooms, etc. Wash contaminated skin thoroughly with soap and water.

**If in eyes:** - Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for further treatment advice.

<b>SECTION VII – PRECAUTIONS FOR SAFE HANDLING</b>
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**Spill Cleanup Procedures:**

If possible, dispose of spilled Fumitoxin by use according to label instructions. Freshly spilled material which has not been contaminated by water or foreign matter may be replaced into original containers. Punctured flasks or containers may be temporarily repaired using aluminum tape. If the age of the spill is unknown or if the product has been contaminated with soil, debris, water, etc. gather up the spillage in small open buckets having a capacity no larger than about 1 gallon. Do not add more than about 1 to 1.5 kg (2 to 3 lbs.) to a bucket. If on-site wet deactivation is not feasible, transport the uncovered buckets in open vehicles to a suitable area. Wear gloves when handling Fumitoxin tablets and pellets.

Respiratory protection may be required during cleanup of spilled material. If the concentration of hydrogen phosphide is unknown, NIOSH/MSHA approved SCBA or its equivalent must be worn.

Small amounts of spillage, from about 4 to 8 kg (9 to 18 lbs.) may be spread out over the ground in an open area to be deactivated by atmospheric moisture. Alternatively, spilled Fumitoxin may be deactivated by the wet method as described in the following:

**Wet Deactivation of Spilled Fumitoxin:**

1. Deactivating solution is prepared by adding the appropriate amount of low sudsing detergent to water in a drum or other suitable container. A 2% solution or 4 cups of detergent in 30 gallons is suggested. The container should be filled with deactivating solution to within a few inches of the top.
2. The material is added slowly to the deactivating solution and stirred so as to thoroughly wet all of the product. This should be carried out in open air and respiratory protection may be required. At no time should the deactivation drum be covered.
3. No more than about 45 to 50 lbs. of Fumitoxin should be added to 15 gallons of water-detergent mixture.
4. Allow the mixture to stand, with occasional stirring, for about 36 hours. The resultant slurry of dust will then be safe for disposal.
5. Dispose of the slurry of deactivated material, with or without preliminary decanting, at a sanitary landfill or other suitable site approved by local authorities. Where permissible, this slurry may be poured into a storm sewer or out onto the ground.

**For Assistance:**

Contact – PESTCON SYSTEMS, INC.  
Telephone: 252-237-7923 / 800-548-2778  
Fax: 252-243-1832 / 252-237-3259  
Internet Address: [www.pestcon.com](http://www.pestcon.com)  
E-mail: [info@pestcon.com](mailto:info@pestcon.com)  
or  
Chemtrec: 800-424-9300

**Disposal of Spent Fumitoxin:**

When being disposed of, spilled or partially reacted Fumitoxin is considered hazardous wastes under existing Federal Regulations. If properly exposed, the grayish-white residual dust after a fumigation will not be a hazardous waste and normally contains only a very small amount of unreacted aluminum phosphide. This waste will be safe for disposal. However, the spent residual dust from incompletely exposed Fumitoxin may require special care.

Triple rinse tablet and pellet flasks and stoppers with water. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. Rinsate may be disposed of in a storm sewer, sanitary landfill or by other approved procedures. Or, it is permissible to remove lids and expose empty flasks to atmospheric conditions until the residue in the flasks is reacted. Then puncture and dispose of in a sanitary landfill or other approved site, or by other procedures approved by state and local authorities.

Some local and state waste disposal regulations may vary from the following recommendations. Disposal procedures should be reviewed with appropriate authorities to ensure compliance with local regulations. Contact your State Pesticide or Environmental Control Agency or Hazardous Waste Specialist at the nearest EPA Regional Office for guidance.

1. Confinement of partially spent residual materials, as in a closed container, or collection and storage of large quantities of dust may result in a fire or explosion hazard. Small amounts of hydrogen phosphide may be given off from unreacted aluminum phosphide, and confinement of the gas may result in a flash.
2. In open areas, small amounts of spent residual dust may be disposed of on site by burial or by spreading over the land surface away from inhabited buildings.
3. Residual dust from Fumitoxin may also be collected and disposed of at a sanitary landfill, or other approved sites or by other procedures approved by Federal, State or Local authorities.
4. From 3 to 5 kg (7 to 10 lbs.) of spent dust from 2 to 3 flasks of Fumitoxin may be collected for disposal in a 1-gallon bucket. Larger amounts, up to about one-half case, may be collected in burlap, cotton or other types of porous cloth bags for transportation in an open vehicle to the disposal site. Do not collect dust from more than 7 flasks of tablets, 10 flasks of pellets (about 11 kg or 25 lbs.) in a single bag. Do not pile cloth bags together. Do not use this method for partially spent or "green" dust. **Caution:** Do not collect dust in large drums, dumpsters, plastic bags or other containers where confinement may occur.

**Precautions to be taken In Handling and Storage:**

Store Fumitoxin products in a locked, well-ventilated area away from heat. Post as a pesticide storage area. Do not store in buildings inhabited by humans or domestic animals.

**Other Precautions:**

1. Do not allow water or other liquids to contact Fumitoxin tablets, pellets or their dust.
2. Do not pile up large quantities of Fumitoxin during fumigation or disposal.
3. Once exposed, do not confine Fumitoxin or allow hydrogen phosphide concentrations to exceed the LEL.
4. Open containers of Fumitoxin only in open air. Do not open in a flammable atmosphere. Hydrogen phosphide in the head space of containers may flash upon exposure to atmospheric oxygen.
5. Fumitoxin Tablets and Pellets are restricted use pesticides due to acute inhalation toxicity or highly toxic phosphine gas. For retail sale and use only by certified applicators or persons under their direct supervision and only for those uses covered by the certified applicator's certification.
6. See EPA accepted labeling for additional precautions and directions for use.

<b>SECTION VIII – CONTROL MEASURES</b>
--

**Respiratory Protection:**

NIOSH/MSHA approved full-mask with approved canister for phosphine (hydrogen phosphide,  $\text{PH}_3$ ) may be worn at concentrations up to 15 ppm. At levels above this or when the hydrogen phosphide concentration is unknown, NIOSH/MSHA approved SCBA or equivalent must be worn.

**Protective Clothing:**

Wear gloves when handling aluminum phosphide tablets, pellets or dust.

**Eye Protection:**

None required.

**Ventilation:**

Local ventilation is generally adequate to reduce hydrogen phosphide levels in fumigated areas to below the TLV/TWA. Exhaust fans may be used to speed the aeration of silos, warehouses, shipholds, containers, etc.

*We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind, expressed or implied, and we assume no responsibility for any loss, damage, or expense, direct or consequential, arising out of their use.*



## Standard Operating Procedure Processing Nunhems

SOP : Fumigation  
Status : Commercial Use  
Valid for : US  
Department : Processing  
Sub-Department : Warehousing



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## 1. Purpose

To establish a uniform procedure for tracking all lots of seed into and out of fumigation.

## 2. Definitions

Fumigation: For use against listed insects which infest stored commodities.

## 3. Responsibilities

Table 1: Responsibility cross-table for priming responsibility.

No.	Process Steps	Position						Time Scheme
		TCDT	PRD	LCS	MWRH	TWRH	EWRH	
1.	Information from Prod.	○	●	○	○	○	○	At Time of Shipment
2.	Receive Seed	○	○	○	○	○	●	Same day as received
3.	Determine next process for lot	●			x	x	○	1 day
4.	Put in and take out of fumigation	○			x	x	●	Min of 72 hrs
5.	Locate Seed						●	1 day

*Note:*

- = process responsible - this person takes the lead in this process step
- = process related - person must be informed by responsible
- x = process related - person can be informed by responsible

## 4. Procedure

1. PRD - At the time of shipment Production will inform all responsible parties.
2. EWRH - Receives seed lot depending on size within one day of arrival.
3. TCDT - Evaluates lot and determines next process.
4. EWRH performs fumigation process within the guidelines of SOP\_FUM\_WI\_1.
5. EWRH ocates seed for next process.



## 5. QOL related documents

- SOP\_FUM\_WI\_1
- SOP\_FUM\_ANN\_1.02.01.US\_Manual Fumitoxin
- SOP\_FUM\_ANN\_1.02.02.US\_MSDS Fumitoxin
- SOP\_FUM\_ANN\_1.02.03.US\_Fumigation Application Record
- SOP\_FUM\_ANN\_1.02.04.US\_Fumigation Identification Card
- SOP\_FUM\_ANN\_1.02.05.US\_Fumigation Log

## 6. References

Not applicable

**Basiscoat® Suspension**

Reviewed on 06.02.2008

Printing date 10.12.2008

**1 Identification of the Substance / Preparation and of the Company / Undertaking**

**Product Information**

**Trade Name :** Basiscoat® Suspension – Types 40070-72

**Use :** Seed Treatment - "FilmCoating" - of Nunhems Netherlands / Nunhems USA

**Company :** SUET Saat- und Erntetechnik GmbH, Sudetenlandstr. 26, D-37269 Eschwege

**Information :** Tel. +49 (0) 5651 / 927-5, Fax +49 (0) 5651 / 927-324, Email info@suet.de

---

**2 Hazards Identification \***

No special hazards known

**Information on Hazards for Human and Environment :** Hazardous to waters when spoiled.

**Classification System :** acc. to the latest editions of EU-lists, extended by literature/company data

---

**3 Composition / Information on Ingredients \***

**Chemical Characterization**

Aqueous suspension with Mica, ChinaClay, Titane-Dioxide, Arylamid-Pigment and Polymer

**Hazardous Components :** None

---

**4 First-Aid Measures**

**General Advice :** Have the container, label or MSDS ready when treating or consulting a doctor;  
Immediately remove any clothes soiled by the product.

**Skin Contact :** Immediately wash with water and mild soap and rinse thoroughly;  
if skin irritation continues, consult a doctor.

**Eye Contact :** Rinse opened eye for min. 10 minutes under running water, then contact a doctor.

**Ingestion :** Avoid vomiting, give plenty of water for drinking, call a doctor immediately.

---

**5 Fire-Fighting Measures**

**Suitable Extinguishing Media :** All extinguishing agents applicable, retain soiled run-off water.

**Special Protective Equipment :** Not required

---

**Basiscoat® Suspension**

Reviewed on 06.02.2008

Printing date 10.12.2008

**6 Accidental Release Measures**

**Personal Safety Precautions :** Not required  
**Environmental Precautions :** Do not allow to enter sewers / surface or ground water.  
**Measures for Cleaning / Collecting :** Take up with liquid-binding materials (sawdust).  
Dispose contaminated material as waste acc. to item 13.

---

**7 Handling and Storage**

**Handling :**

**Advice on Safe Handling :** Handle and open bins with caution. Avoid eyes and skin contact.  
Ensure good ventilation/exhaust.

**Advice on Fire – and**

**Explosion Protection :** No special measures required.

**Storage :**

**Requirements for Store Areas and Receptacles :** Store safely against frost conditions.

**Advice on Storage in one Common Facility :** Not required.

**Further Advice on Storage Conditions :** Keep containers tightly sealed.

**Storage Class : - - (VCI)**

---

**8 Exposure Controls and Personal Protection**

**Additional Information about the Design of Technical Facilities :**

**For the Use, Dosing or Blending of Suspension with Plant Protective Chemicals,**

**Special Precautionary Regulations for Handling of Dangerous Materials are required, f.e. :**

- Taking out of containers, measuring, stirring, dosing and cleaning procedures of machinery only when wearing prescribed protective clothing and local ventilation / dust exhaust in action.
- Washing and rinsing of tools and bins resp. handling and cleaning of the suspension casks only under conditional minimum usage of fresh water and brushing or sponge-down,
- Possibly, complete recycling of rinsing / washing water (filtered) into new suspensions,
- Disposal of soiled protective clothing, tools, spills and inevitable residues (as dust, crust or mud) after the local official and legal Regulations.

**Components with Workplace Limited Values and Control Parameters : None**

**Additional Information :** The lists valid during the making were used as basis (TRGS-GefStoffV)

**Basiscoat® Suspension**

Reviewed on 06.02.2008

Printing date 10.12.2008

**Personal Protective Equipment :**

**Protective and Hygienic Measures :**

Keep away from foodstuffs, beverages and feedstuffs  
Immediately remove all soiled and contaminated clothing.  
Wash hands before breaks and the end of work.  
Avoid contact with eyes and skin.

**Respiratory Protection :** Not required

**Hand Protection :** Protective gloves. The glove material must be impermeable and resistant to the product / substance / preparation. Material selection on consideration of the penetration times, the rates of the diffusion and the degradation.

**Eye Protection :** Tightly sealed goggles.

**Skin & Body Protection:** Protective work clothing, material specifications see Hand Protection.

---

**9 Physical and Chemical Properties**

**Form :** liquid (aqueous suspension)  
**Colour :** (light-) red  
**Odour :** weakly sour

**Change in Condition**

**Melting point/ range** n.a. (not applicable)  
**Boiling point / range** abt. 100 °C

**Flash point** n.a.  
**Self-igniting** n.a.  
**Danger of Explosion** n.a.  
**Density** 1,22 g/Ltr  
**pH range** 6 – 8  
**Solubility / Miscibility** in water dispersible and dilutable

---

**10 Stability and Reactivity**

**Hazardous Decomposition / Conditions :** None known

**Hazardous Reactions :** None known

**Hazardous Decomposition Products :** None known

**Basiscoat® Suspension**

Reviewed on 06.02.2008

Printing date 10.12.2008

**11 Toxicological Information**

**Acute Toxicity :** Toxicological data are not available.

**Acute Dermal Toxicity :**

**Skin Irritation :** Non irritant to skin or mucous membranes.

**Eye Irritation :** Non irritant.

**Sensitization :** Non sensitizing through skin contact.

**Additional Toxicological Information :**

---

**12 Ecological Information**

**Ecotoxicological Effects :** Ecological data are not available.

**General Notes :** Do not allow product to reach ground water, water course or sewage system.

---

**13 Disposal Consideration**

**Product :**

Must be disposed adhering to official regulations, if necessary transported to an incineration or disposal area after contacting the agent resp. office of disposing.

**Uncleaned Packaging :** Empty and rinse containers completely for recycling to the supplier.

---

**14 Transport Information**

**Land Transport :**

**ADR/RID/ADNR :** No dangerous good

**UN-Number :**

**Description of Goods :**

**Sea / Air Transport :**

**IMDG/IATA :** No dangerous good

**UN-Number :**

**Proper Shipping Name :**

---

**Basiscoat® Suspension**

Reviewed on 06.02.2008

Printing date 10.12.2008

**15 Regulatory Information**

**Labelling according to EU Directives :**

The product is not classified/marked in accordance to EU Directive/Ordinance on Hazardous Material.

**Code Letter and Hazard Designation of Product : None**

**Hazard-determining Components of Labelling : None**

**Symbol(s) : - -**

**R (Risk) Phrases : - -**

**S (Safety) Phrases :**

- 2 Keep out of reach of children.
- 13 Keep away from foodstuffs, beverages and animal feedstuffs.
- 20/21 When using do not eat, drink or smoke.
- 24/25 Avoid contact with skin / with eye.
- 35 This material and its container must be disposed of in a safe way.
- 36/37 When using wear suitable protective clothing and gloves.
- 57 Use appropriate container to avoid environmental contamination.

**National Regulations :**

**Waterhazard class :**

It must be excluded that suspensions containing plant protection products reach ground water, water course or sewage system. Therefore, they have to be stored like substances which are classified as Water Hazard Class (WGK) 3. (Consequently, it is not necessary to classify suspensions with/without plant protection products into WGK and to mark them in this case.)

**Other Regulations, Limitations and Prohibitive Regulations :**

Avoid any unnecessary contact with the product.. Any mis-use may cause health problems. In order to avoid risks for man and environment keep strictly to the user's instructions.

---

**16 Other Information**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

**Department issuing MSDS :** Dept. Technik-Umwelt-Sicherheit

**Contact :** SUET Saat- und Erntetechnik GmbH, Sudetenlandstr.26, D-34269 Eschwege

Tel.: +49 (0) 5651 / 927-5, Fax +49 (0) 5651 / 927-324, Email [info@suet.de](mailto:info@suet.de)

\* Data changed vs. the previous version



**CERTOP CT28008 ORANGE 1X1000L IBC NL**

Version 1 / EU  
102000021809

1/4  
Revision Date: 10.10.2008  
Print Date: 26.11.2008

**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING**

**Product information**

Trade name	CERTOP CT28008 ORANGE 1X1000L IBC NL
Product code (UVP)	79456638
Usage	Additive for seed film coating
Company	Bayer CropScience AG Alfred-Nobel-Straße 50 40789 Monheim Germany
Telephone	+49(0)2173-38-3373
Telefax	+49(0)2173-38-7394
Responsible Department	Material and Transport Safety Management +49(0)2173-38-3409/4566 Email: INFO.EHS@bayercropscience.com

Emergency telephone number +49(0)2133-51-4233 (Sicherheitszentrale Dormagen, Bayer AG)

**2. HAZARDS IDENTIFICATION**

**Risk advice to man and the environment**

No particular hazards known.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

**Chemical nature**

Flowable concentrate for seed treatment (FS)

**4. FIRST AID MEASURES**

**General advice**

When symptoms develop and persist, seek medical advice.

**Skin contact**

After contact with skin, wash immediately with plenty of water.

**Eye contact**

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

**Ingestion**

Rinse out mouth and give water in small sips to drink. Do NOT induce vomiting. Obtain medical attention.

**5. FIRE-FIGHTING MEASURES**

**Suitable Extinguishing Media**

Water spray  
Carbon dioxide (CO<sub>2</sub>)  
Foam



**CERTOP CT28008 ORANGE 1X1000L IBC NL**

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Dry powder

**Specific hazards during fire fighting**

In the event of fire the following can be released:  
Carbon monoxide (CO)  
Nitrogen oxides (NO<sub>x</sub>)

**Special protective equipment for fire-fighters**

In the event of fire, wear self-contained breathing apparatus.

**Further information**

Contain the spread of the fire-fighting media.

---

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions**

Avoid contact with spilled product or contaminated surfaces.  
When dealing with a spillage do not eat, drink or smoke.

**Environmental Precautions**

Do not allow to get into surface water, drains and ground water.

**Methods for Cleaning Up**

Recover the product by pumping, suction or absorption using a dry and inert absorbent clay.  
Collect and transfer the product into a properly labelled and tightly closed container.  
Clean contaminated surface thoroughly.

**Additional Advice**

Information regarding safe handling, see section 7.  
Information regarding personal protective equipment, see section 8.  
Information regarding waste disposal, see section 13.

---

**7. HANDLING AND STORAGE**

**Handling**

**Advice on safe handling**

No specific precautions required when handling unopened packs/containers; follow relevant manual handling advice.  
Ensure adequate ventilation.

**Advice on protection against fire and explosion**

No special precautions required.

**Storage**

**Requirements for storage areas and containers**

Keep containers tightly closed in a dry, cool and well-ventilated place.  
Keep away from direct sunlight.

**Advice on common storage**

Keep away from food, drink and animal feedingstuffs.

---

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Personal protective equipment**

In normal use and handling conditions please refer to the label and/or leaflet. In all other cases

**CERTOP CT28008 ORANGE 1X1000L IBC NL**Version 1 / EU  
1020000218093/4  
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the following recommendations would apply.

Respiratory Protection	No personal respiratory protective equipment normally required.
Hand Protection	Wear CE Marked (or equivalent) nitrile rubber gloves (minimum thickness 0,40 mm). Wash when contaminated. Dispose of when contaminated inside, when perforated or when contamination outside cannot be removed. Wash hands always before eating, drinking, smoking or using the toilet.
Eye protection	Wear goggles conforming to EN166 (Field of Use 5 or equivalent).
Skin and body protection	Wear standard coverall and type 6 suit. Wear two layers of clothing wherever possible. Polyester/cotton or cotton overalls should be worn under chemical protection suit and should be professionally laundered frequently.

**Hygiene measures**

When using, do not eat, drink or smoke.

Wash hands before breaks and immediately after handling the product.

Remove soiled clothing immediately and clean thoroughly before using again.

---

**9. PHYSICAL AND CHEMICAL PROPERTIES****Appearance**

Form	liquid
Colour	orange

**Safety data**

pH	approx. 8,0 at 100 % (23 °C)
Density	approx. 1,19 g/cm <sup>3</sup> at 20 °C

---

**10. STABILITY AND REACTIVITY**

Conditions to Avoid	Extremes of temperature and direct sunlight.
Hazardous Reactions	No dangerous reaction known under conditions of normal use. Stable under normal conditions.

---

**11. TOXICOLOGICAL INFORMATION**

Acute Oral Toxicity	LD50 (rat) > 5.000 mg/kg
Acute Dermal Toxicity	LD50 (rat) > 2.000 mg/kg
Skin Irritation	No skin irritation. (rabbit)
Eye Irritation	No eye irritation. (rabbit)



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Sensitization Non-sensitizing. (guinea pig)

Further information  
The toxicological data refer to the polymer.

---

**12. ECOLOGICAL INFORMATION**

**Further information on ecology**  
Additional ecological information  
Ecological data are not available.

---

**13. DISPOSAL CONSIDERATIONS**

**Product**  
In accordance with current regulations and, if necessary, after consultation with the site operator and/or with the responsible authority, the product may be taken to a waste disposal site or incineration plant.

**Contaminated packaging**  
Not completely emptied packagings should be disposed of as hazardous waste. Rinsed packaging may be acceptable for landfill, otherwise incineration will be required in accordance with local regulations.

---

**14. TRANSPORT INFORMATION**

According to national and international transport regulations not classified as dangerous goods.

---

**15. REGULATORY INFORMATION**

**Classification and labelling in accordance with the EC Directive on dangerous preparations 1999/45/EC as amended.**

Classification:  
Hazard warning labelling not compulsory

---

**16. OTHER INFORMATION**

**Further information**

The information given in this Data Sheet has been included in accordance with the guidelines established by Regulation (EC) 1907/2006. This data sheet complements the user's instructions, but does not replace them. The information it contains is based on the knowledge available about the product concerned at the time it was compiled. Users are further reminded of the possible risks of using a product for purposes other than those for which it was intended. The required information complies with current EEC legislation. Addressees are requested to observe any additional national requirements.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

# Material Safety Data Sheet



## Section 1. Product and Company Identification

**Product Name:** Sepiret 9256 EKWX Orange  
**Product Code:** SEP/9256EKWX  
**Effective Date:** February 26, 2009

### Hazardous Material Information System III:

Health	2*
Fire Hazard	1
Physical Hazard	0
Personal Protection	X

**Manufacturer Information:** Becker Underwood, Inc.  
801 Dayton Avenue  
Ames, Iowa 50010  
Information Phone: (515) 232-5907  
Emergency Phone: Chemtrec (800) 424-9300

## Section 2. Ingredients and Hazards Identification

Hazardous Components		Occupational Exposure Limits		
Component	CAS Number	OSHA PEL	ACGIH TLV	Weight Percent
Filler pigments**	Prop.	20mppcf	3 mg/m <sup>3</sup>	5-20%
Filler pigments**	Prop.	15 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	5-20%
Formaldehyde	50-00-0	0.75 ppm TWA 8 hour	0.3 ppm 0.37 mg/m <sup>3</sup>	~39ppm

\*\*Dust limits for filler pigments are applicable for dried product only.  
\*\*\*No reportable quantities of toxic chemical(s) subject to the reporting requirements of Section 313 of SARA Title III and of 40 CFR 372 are present de minimis concentrations\*\*\*

**Emergency Overview:** May cause respiratory tract, eye, and skin irritation.

### Potential Acute Health Effects:

- Eyes:** Short term harmful effects are not expected. However, irritation may develop causing itching and redness.
- Skin:** Short term harmful effects are not expected. However, mild skin irritation may develop causing itching and redness.
- Inhalation:** Short term harmful effects are not expected. However, exposure to vapors or mist may cause coughing or wheezing when inhaled. This product contains a very small amount of residual formaldehyde. Exposure to formaldehyde at or above the occupational exposure limit is very unlikely if this product is used in a well ventilated area. Excessive inhalation of formaldehyde may cause respiratory tract irritation and allergic reaction (sensitization). Formaldehyde is classified as a potential carcinogen.
- Ingestion:** Not an intended route of exposure. Short term harmful effects are not expected. However, may upset the gastrointestinal tract and cause diarrhea.

## Section 3. Composition/Information on Ingredients

The composition of this material is a trade secret. Contains no other components or impurities which will influence the classification with regard to human and environmental risk assessment.

## Section 4. First Aid Measures

- Eye Contact:** Immediately flush eyes with water for at least 15 minutes. Prolonged or repeated contact may result in mechanical irritation.
- Skin Contact:** Wash with soap and water.
- Inhalation:** Move to fresh air. Seek medical attention if irritation develops.
- Ingestion:** Seek medical attention. Unless advised otherwise, dilute with water.

## Section 5. Fire Fighting Measures

- Flammability of Product:** Not a fire or explosion hazard when stored under normal conditions.
- Fire Fighting Media:** Foam, alcohol foam, CO<sub>2</sub>, dry chemical, water fog.
- Protective Clothing:** This product is an aqueous mixture which will not burn. If evaporated to dryness, the solid residue may pose a moderate fire hazard. No special procedures required besides standard fire fighting procedures.

## Section 6. Accidental Release Measures

- Clean-Up Procedures:** Ventilate the area. Collect spilled material with an inert absorbent such as sand or vermiculite. Place in properly labeled and closed container. Dispose of collected material according to federal, state/provincial and local environmental regulations.
- Spills and Leaks:** Contain the spill or leak to prevent discharges to surface streams or storm sewers. This material is a concentrated dye/pigment. Small quantities in contaminated water solutions will color large volumes.

## Section 7. Handling and Storage

- Handling:** Avoid breathing fumes. General mechanical ventilation can be expected to effectively remove and prevent build up of any vapor or mist generated from handling this product in a closed environment. Protect eyes to prevent contact. Avoid prolonged or repeated exposure to skin. This material contains a very small amount of formaldehyde. The product will generate additional formaldehyde upon curing. Lack of adequate ventilation may result in airborne levels of formaldehyde above the occupational exposure limit. See OSHA 1910.1048 for additional information.
- Storage:** Keep container in a dry place inaccessible to children and pets at temperatures above freezing. Keep containers sealed until ready for use.

## Section 8. Exposure Control/Personal Protection

- Engineering controls:** General mechanical ventilation can be expected to effectively remove and prevent build up of any vapor or mist generated from handling this product in a closed environment.
- Personal Protection:**
- Eyes:* Wear safety glasses with side shields. Wear additional eye protection such as chemical goggles or face shield if splashing or spraying hazard exists. Have an eye wash station available.
  - Body:* To prevent skin contact wear coveralls, apron, boots, or lab coat.
  - Hands:* Avoid skin contact by using chemically resistant gloves.
  - Respiratory:* No respiratory protection required under normal conditions of use. Use local exhaust to control excessive vapors/mists. If excessive vapors or mists persist use appropriate NIOSH/MSHA approved organic vapor/mist respirator. For respiratory protection for formaldehyde exposure, refer to OSHA 1910.1048.
- Other:** Open wounds or skin surface disruptions should be covered with a chemical resistant patch to minimize absorption risks. Clean clothing should be worn daily to avoid possible long-term build up of the product leading to chronic overexposure.

## Section 9. Physical and Chemical Properties

<b>Odor</b>	Slight odor	<b>Vapor Density</b>	Heavier than air
<b>Color</b>	Orange Pearlescent	<b>Evaporation Rate</b>	Slower than ether
<b>Physical state</b>	Liquid	<b>Specific Gravity (H<sub>2</sub>O = 1)</b>	~1.3 g/mL
<b>pH</b>	7-9	<b>Solubility</b>	Dispersible
<b>Melting/Freezing Point</b>	NA		

## Section 10. Stability and Reactivity

**Chemical Stability:** This material is chemically stable under normal storage and handling conditions.

**Hazardous Decomposition:** When involved in a fire, burning may evolve noxious fumes which may include carbon monoxide, carbon dioxide, nitrous oxides, acetic acid, or other toxic compounds depending on the chemical composition and combustion conditions. However, all of the water must be driven off first for this to occur.

**Hazardous Polymerization:** Is not known to occur.

**Incompatibility (Materials to Avoid):** Long term storage in direct contact with reactive metals such as aluminum, zinc, copper, nickel, magnesium, etc. Other materials to avoid include strong oxidizing agents.

## Section 11. Toxicological Information

**Chronic Toxicity:** Not known

**Mutagenic Effects:** Not known

**Teratogenic Effects:** Not known

**Developmental Toxicity:** Not known

**Acute Effects on Humans:** May cause skin, eye, and respiratory irritation.

**Sensitization:** Repeated or prolonged exposure to formaldehyde at concentration above the exposure limits may cause respiratory tract and lung sensitization.

**Carcinogenic Effects:** No components > 0.1% are listed as carcinogens or suspected carcinogens. This product contains a very small amount of residual formaldehyde. Formaldehyde is classified by IARC as a known human carcinogen (Group 1), by NTP as reasonable anticipated to be a carcinogen, by ACGIH as a suspected carcinogen (A2) and by OSHA as an occupational carcinogen.

**Existing Medical Conditions Aggravated By Exposure:** May provoke asthmatic response in persons with asthma who are sensitive to airway irritants.

## Section 12. Ecological Information

**Ecotoxicity:** No data available, however the material is not expected to have any deleterious toxic effect.

**Environmental Fate:** No data available regarding the environmental fate or biodegradation.

### Section 13. Disposal Considerations

**EPA Waste Number:** Non-hazardous waste

**Treatment:** Dispose of according to all federal, state/provincial and local environmental regulations.

### Section 14. Transport Information

**D.O.T. Classification:** Not regulated

**IMO/IMDG** Not regulated

**Classification:**

**IATA Classification:** Not regulated

### Section 15. Regulatory Information

**US Federal Regulations:**

**Product Information:** This product is considered hazardous.

**SARA 311/312:**

*Acute:* No  
*Chronic:* Yes  
*Fire:* No  
*Pressure:* No  
*Reactive:* No

**SARA 313:** No reportable quantities of toxic chemical(s) subject to the reporting requirements of Section 313 of SARA Title III and of 40 CFR 372 are present.

**Regulatory Listings**

United States (TSCA): Listed

### Section 16. Other Information

The information is furnished without warranty, representation, inducement or license of any kind, except that it is accurate to the best of Becker Underwood's knowledge. Because use conditions and applicable laws may differ from one location to another and may change with time, recipient is responsible for determining whether the information is appropriate for recipient's use. Since Becker Underwood has no control over how this information may be ultimately used, all liability is expressly disclaimed and Becker Underwood assumes no liability.

# Material Safety Data Sheet

**Product Name:** SEPRIET PF 10 ORANGE POWDER  
**Product Code:** SEP/PF10B

**HMIS Codes:** H F R P  
1 1 0 X

## Section I – Manufacturer Identification

**Manufacturer's Name:** Becker Underwood, Inc. **Address:** P.O. Box 667, 801 Dayton Ave., Ames, IA 50010  
**Emergency Phone:** Chemtrec (800) 424-9300 **Information Phone:** (515) 232-5907  
**Prepared By:** MSDS Coordinator **Date Revised:** May 14, 2003

## Section II – Hazardous Ingredients/SARA III Information

### Hazardous Components Occupational Exposure Limits

Component	CAS Number	OSHA PEL	ACGIH TLV	Weight Percent
Filler pigments	Prop.	20mppcf	3 mg/m <sup>3</sup>	< 75%
Filler pigments	Prop.	15 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	< 15%
Filler pigments	Prop.	15 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	< 25%

\*\*\*No reportable quantities of toxic chemical(s) subject to the reporting requirements of Section 313 of SARA Title III and of 40 CFR 372 are present\*\*\*

## Section III - Physical/Chemical Characteristics

**Melting Point:** NE **Specific Gravity: (H<sub>2</sub>O = 1):** NA  
**Vapor Density:** NA **Evaporation Rate:** NA  
**Solubility in Water:** Soluble **Appearance and Odor:** Light orange powder, no odor.

## Section IV - Fire and Explosion Hazard Data:

**Flash Point:** NA **Method Used:** NA  
**Flammable Limits in Air by Volume:** NA **Lower:** NA **Upper:** NA  
**Extinguishing Media:** Foam, alcohol foam, CO<sub>2</sub>, dry chemical, water fog  
**Fire Fighting Precautions & Hazards:** Fire fighters should wear butyl rubber boots, gloves, and body suit and a NIOSH/MSHA self-contained breathing apparatus.  
**Unusual Fire and Explosion Hazards:** Not a fire or explosion hazard when stored under normal conditions.

## Section V – Reactivity Data

**Stability:** Stable  
**Conditions to Avoid:** Extremes in temperature. High humidity.  
**Incompatibility (Materials to Avoid):** Long term storage in direct contact with reactive metals such as aluminum, zinc, copper, nickel, magnesium, etc. Other materials to avoid include strong oxidizing agents.  
**Hazardous Decomposition Products:** When involved in a fire, burning may evolve noxious fumes which may include carbon monoxide, carbon dioxide, nitrous oxides, acetic acid, or other toxic compounds depending on the chemical composition and combustion conditions.  
**Hazardous Polymerization:** Will not occur.

## Section VI - Health Hazard Data

**Inhalation Health Risks and Symptoms of Exposure:** Prolonged inhalation may lead to respiratory tract irritation.  
**Skin and Eye Contact Health Risks and Symptoms of Exposure:** Prolonged or repeated contact may result in irritation.  
**Skin Absorption Health risks and Symptoms of Exposure:** None expected.  
**Ingestion Health Risks and Symptoms of Exposure:** Ingestion of large quantities may be harmful.  
**Health Hazards (acute and chronic):** None known.

**Section VI - Health Hazard Data (Continued)****Carcinogenicity** NTP? No IARC Monographs? No**Existing Medical Conditions Generally Aggravated By Exposure:** May provoke asthmatic response in persons with asthma who are sensitive to airway irritants.**Emergency and First Aid Procedures:****Eyes:** Flush with flowing water for at least 15 minutes. Call a physician.**Skin:** Wash affected area with soap and water. If irritation develops consult a physician. Remove and launder contaminated clothing before reuse.**Inhalation:** If difficulty in breathing occurs, move to fresh air. Get immediate medical attention.**Ingestion:** Get immediate medical attention. Unless advised otherwise, dilute with water or milk.**Section VII – Precautions for Safe Handling and Use****Steps to be Taken in Case Material is Released or Spilled:** Contain the spill to prevent a large discharge to surface streams or storm sewers. Vacuum or use wet clean-up techniques and place recovered product in a closable container.**Waste Disposal Method:** The environmental concern is discoloration of land or water. Disposal must be made in accordance with federal, state, and local regulation.**Precautions to be Taken in Handling and Storing:** Local exhaust. Do not freeze. Avoid unnecessary skin contact. Do not breathe fumes.**Other Precautions:** Eye wash fountains should be easily accessible. As with all chemicals, keep out of the reach of children.**Section VIII - Control Measures****Respiratory:** If excessive dust is present, wear NIOSH/MSHA approved respirator.**Ventilation:** Local exhaust or containment.**Clothing:** Gloves, coveralls, apron, boots as necessary to prevent skin contact as needed.**Eye:** Safety glasses are recommended.**Other:** Open wounds or skin surface disruptions should be covered with a chemical resistant patch to minimize absorption risks. Clean clothing should be worn daily to avoid possible long-term build up of the product leading to chronic overexposure.**Section IX - Shipping and Labeling Information****D.O.T. Shipping Data:** Not regulated.**D.O.T. Hazard Classification** NA**D.O.T. Labels Required:** NA**D.O.T. Identification** NA**Section X - Disclaimer**

The opinions expressed herein are those of qualified persons within Becker Underwood, Inc. We believe the information contained here is current as of this Material Safety Data Sheet. Since the use of this product is not within the control of Becker Underwood, Inc., it is the user's obligation to determine a safe end use of this product.

**MSDS**  
acc. to ISO/DIS 11014



Printing date 09/02/2011

Version 1

Reviewed on 09/02/2011

**1 Identification of the substance/mixture and of the company/undertaking**

**Product identifier**

**Trade name:** SOL017  
**Article number:** SOL017  
**Application of the substance / the preparation:** Seed coating material

**Details of the supplier of the safety data sheet**

**Manufacturer/Supplier:** Integrated Coating and Seed Technology, Inc.  
 1293 Harkins Road  
 Salinas, CA 93901  
 USA  
 Phone: 001-831-784-1564  
 Fax: 001-831-757-9404

**Further information available from:** msds@incotec.com  
**Emergency telephone number:** IPR Department  
 Telephone: 001-831-784-6685  
 Or consult the Poison Control Center, tel. 800-222-1222 (US) or 800-268-9017 (Toronto, Canada)

**2 Composition/information on ingredients**

**Chemical characterization: Mixtures**

**Description:** Water reducible binder mixture containing at most traces of hazardous substances.

Dangerous components:		
67-56-1	methanol	⚠ H225; ⚠ H301; H311; H331; ⚠ H370 ≤ 1.0%

**3 Hazards identification**

**Classification of the substance or mixture**

The product is not classified according to the Globally Harmonized System (GHS).

**Label elements**

**GHS label elements:** Void  
**Hazard pictograms:** Void  
**Signal word:** Void  
**Hazard statements:** Void  
**Classification system:** Void

**NFPA ratings (scale 0 - 4)**



Health = 0  
 Fire = 0  
 Reactivity = 0

(Contd. on page 2)



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HMIS-ratings (scale 0 - 4)

HEALTH	0	Health = 0
FIRE	0	Fire = 0
REACTIVITY	0	Reactivity = 0

**4 First aid measures**

<b>General information:</b>	No special measures required.
<b>After inhalation:</b>	Supply fresh air; consult doctor in case of complaints.
<b>After skin contact:</b>	Wash with soap and much water.
<b>After eye contact:</b>	Rinse opened eye for ten minutes under running water.
<b>After swallowing:</b>	If symptoms persist consult doctor.

**5 Firefighting measures**

<b>Suitable extinguishing agents:</b>	CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
<b>For safety reasons unsuitable extinguishing agents:</b>	Not applicable
<b>Special hazards arising from the substance or mixture</b>	Not applicable.
<b>Protective equipment:</b>	No special measures required.
<b>Additional information</b>	Collect contaminated fire fighting water separately. It must not enter the sewage system.

**6 Accidental release measures**

<b>Personal precautions, protective equipment and emergency procedures</b>	Not required.
<b>Environmental precautions:</b>	Do not allow to enter sewers/ surface or ground water.
<b>Methods and material for containment and cleaning up:</b>	Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
<b>Reference to other sections</b>	No dangerous substances are released. See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 13 for disposal information.

**7 Handling and storage**

<b>Handling:</b>	
<b>Precautions for safe handling</b>	No special measures required. Take note of emission threshold.
<b>Information about protection against explosions and fires:</b>	No special measures required.
<b>Storage:</b>	
<b>Requirements to be met by storerooms and containers:</b>	No special requirements.

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**Information about storage in one common storage facility:** Not required.  
**Further information about storage conditions:** None.  
**Specific end use(s):** Not applicable.

**8 Exposure controls/personal protection**

**Additional information about design of technical systems:** Provide eye showers.

Components with limit values that require monitoring at the workplace:	
<b>67-56-1 methanol</b>	
PEL	260 mg/m <sup>3</sup> , 200 ppm
REL	Short-term value: 325 mg/m <sup>3</sup> , 250 ppm Long-term value: 260 mg/m <sup>3</sup> , 200 ppm Skin
TLV	Short-term value: 328 mg/m <sup>3</sup> , 250 ppm Long-term value: 262 mg/m <sup>3</sup> , 200 ppm Skin; BEI

**Additional information:** The lists that were valid during the creation were used as basis.  
**Personal protective equipment:**  
**General protective and hygienic measures:** The usual precautionary measures for handling chemicals should be followed.  
**Breathing equipment:** Not required.  
**Protection of hands:** Synthetic gloves  
**Material of gloves:** Nitrile rubber, NBR  
**Eye protection:** Safety glasses  
**Body protection:** Light weight protective clothing

**9 Physical and chemical properties**

**General Information**

**Appearance:**

**Form:** Liquid  
**Color:** Transparent  
**Odor:** Mild  
**Odour threshold:** Not determined.

**pH-value at 20°C (68 °F):** 6.7

**Change in condition**

**Melting point/Melting range:** Not determined.  
**Boiling point/Boiling range:** 100°C (212 °F)

**Flash point:** Not applicable.

**Flammability (solid, gaseous):** Not applicable.

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**Ignition temperature:**

**Decomposition temperature:** Not determined.

**Auto igniting:** Product is not selfigniting.

**Danger of explosion:** Product does not present an explosion hazard.

**Explosion limits:**

**Lower:** Not determined.

**Upper:** Not determined.

**Oxidizing properties** Product is not oxidative.

**Vapor pressure at 20°C (68 °F):** 23 hPa (17 mm Hg)

**Density at 20°C (68 °F):** 1.02 g/cm<sup>3</sup> (8.512 lbs/gal)

**Relative density** Not determined.

**Solubility in / Miscibility with Water:**

Not miscible or difficult to mix.

**Viscosity:**

**Dynamic:** No data available.

**Solvent content:**

**Organic solvents:** 0.0 %

**VOC content:** 56.2 g/l / 0.47 lb/gl

**Other information** No further relevant information available.

**10 Stability and reactivity**

**Thermal decomposition / conditions to be avoided:**

No decomposition if used according to specifications.

**Incompatible materials:**

Not applicable.

**Hazardous decomposition products:**

No dangerous decomposition products known.

**11 Toxicological information**

**Acute toxicity:**

No acute toxic effects known.

**LD/LC50 values that are relevant for classification:**

No data available.

**Acute effects:**

**Primary irritant effect:**

**on the skin:**

No irritant effect.

**on the eye:**

No irritant effect.

**Sensitization:**

No sensitizing effects known.

**Subacute to chronic toxicity:**

Not applicable.

**Most likely routes of exposure**

Not applicable.

(Contd on page 5)



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**CMR effects:** No CMR effects known.

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**12 Ecological information**

<b>Aquatic toxicity:</b>	No data available.
<b>Persistence and degradability</b>	No further relevant information available.
<b>Behavior in environmental systems:</b>	
<b>Bioaccumulative potential</b>	No data available.
<b>Ecotoxicological effects:</b>	
<b>Other information:</b>	No data available.
<b>Additional ecological information:</b>	
<b>General notes:</b>	Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

**13 Disposal considerations**

<b>Waste treatment methods</b>	
<b>Recommendation:</b>	Disposal must be done according to official regulations.
<b>Uncleaned packagings:</b>	
<b>Recommendation:</b>	Dispose of packaging according to regulations on the disposal of packagings.

**14 Transport information**

<b>UN-Number</b>	
<b>DOT, ADR, IMDG, IATA</b>	Void
<b>UN proper shipping name</b>	
<b>DOT, ADR, IMDG, IATA</b>	Void
<b>Transport hazard class(es)</b>	
<b>DOT, ADR, IMDG, IATA</b>	
<b>Class</b>	Void
<b>Packing group</b>	
<b>DOT, ADR, IMDG, IATA</b>	Void
<b>Environmental hazards:</b>	
<b>Marine pollutant:</b>	No
<b>Special precautions for user</b>	Not applicable.
<b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
<b>UN "Model Regulation":</b>	-

**15 Regulatory information**

Sara

**Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

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<b>Section 313 (Specific toxic chemical listings):</b>	
67-56-1	methanol
<b>TSCA (Toxic Substances Control Act):</b>	
All ingredients are listed.	
<b>Proposition 65</b>	
<b>Chemicals known to cause cancer:</b>	
None of the ingredients is listed.	
<b>Chemicals known to cause reproductive toxicity for females:</b>	
None of the ingredients is listed.	
<b>Chemicals known to cause reproductive toxicity for males:</b>	
None of the ingredients is listed.	
<b>Chemicals known to cause developmental toxicity:</b>	
None of the ingredients is listed.	
<b>Carcinogenic categories</b>	
<b>EPA (Environmental Protection Agency)</b>	
None of the ingredients is listed.	
<b>IARC (International Agency for Research on Cancer)</b>	
Polyvinyl alcohol	Group 3
<b>NTP (National Toxicology Program)</b>	
None of the ingredients is listed.	
<b>TLV (Threshold Limit Value established by ACGIH)</b>	
None of the ingredients is listed.	
<b>NIOSH-Ca (National Institute for Occupational Safety and Health)</b>	
None of the ingredients is listed.	
<b>OSHA-Ca (Occupational Safety &amp; Health Administration)</b>	
None of the ingredients is listed.	
<b>GHS label elements</b>	Void
<b>Hazard pictograms</b>	Void
<b>Signal word</b>	Void
<b>Hazard statements</b>	Void

**16 Other information**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

<b>Relevant phrases</b>	H225 Highly flammable liquid and vapour. H301 Toxic if swallowed. H311 Toxic in contact with skin. H331 Toxic if inhaled. H370 Causes damage to organs.
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**Department issuing MSDS:**

Incotec Holding BV  
Enkhuizen, The Netherlands  
Department ITR

**Contact for questions about content:**

msds@incotec.com

**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
IMDG: International Maritime Code for Dangerous Goods  
IATA: International Air Transport Association  
ICAO: International Civil Aviation Organization  
ACGIH: American Conference of Governmental Industrial Hygienists  
NFPA: National Fire Protection Association (USA)  
HMIS: Hazardous Materials Identification System (USA)  
VOC: Volatile Organic Compounds (USA, EU)  
GHS: The Globally Harmonized System of Classification and Labelling of Chemicals

\* Data compared to the previous version altered.

First edition.

# Material Safety Data Sheet

## Industrial Adhesives Of Indiana

Telephone 317/271-2100

Fax 317/271-2626

Emergency Number 800-535-5053

Product Name: Seed Coating Emulsion

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### Product Name

Seed Coating Emulsion

Product Code

### Manufacturer

Industrial Adhesives of Indiana  
8202 Indy Ln  
Indianapolis, IN 46214

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## 1. PRODUCT IDENTIFICATION

Produced Identification	SP1090
Produced Name	Seed Coating Emulsion
Synonyms	None
Generic Name	Seed/Packaging Glue
Chemical Name	Vinyl Acetate polymer dispersion in water
Product CAS Number	9003-20-7

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## 2. COMPONENTS

Chemical Name	CAS Number	Weight Percentage
Water	7732-18-5	59-61
Vinyl Acetate Polymer	9003-20-7	39-41
Vinyl Acetate Polymer	108-05-4	<.05
Hydrolyzed Polyvinyl Alcohol	9002-89-5	>1
Biocide, Kathon LX 1.5%		< 1%

---

## 3. EMERGENCY AND FIRST AID PROCEDURES

### EMERGENCY OVERVIEW AND FIRST AID INFORMATION

A white, milky liquid with a slight vinegar odor. May cause skin irritation, may cause eye irritation.

Vinyl acetate monomer can cause eye and respiratory irritation at high air concentrations.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician

Inhalation: If inhaled, remove to fresh air. If not breathing give artificial respiration if breathing

Ingestion: If swallowed, do not induce vomiting. If patient is conscious, give several glasses

## 4. FIREFIGHTING MEASURES

### Hazard Ranking

Hazard	1
Flammability	0
Reactivity	0
Other	0

Flash Point	Aqueous System
Method	Not Determined
Lower Explosion Limit	Not Determined
Minimum Ignition Temp	Not Determined

### Extinguishing Media

Aqueous product, for fires involving dried material, use water, carbon dioxide, dry chemicals or foam.

Unusual Fire and Explosion Hazards

None

Thermal Decomposition

Carbon monoxide, Carbon Dioxide

Fire Fighting Guidance

If product is present in fire and threat of decomposition exists, wear self contained breathing apparatus with full face piece.

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## 5. SPILL OR LEAK PROCEDURES

Build Dike to contain flow. Soak up with sawdust, sand oil dry or other absorbent material. Use appropriate personal equipment during cleanup, treatment, storage, transportation, and disposal must be in accordance with Federal, State, Local Regulations. Soak up with absorbent material and place material in paper carton. Landfill according to regulations.

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## 6. SPECIAL PROTECTION INFORMATION

Emergency Overview:	White colored water-based adhesive. Slippery in the wet state.
Ventilation:	Use with adequate ventilation. For normal use, ordinary air movement is sufficient.
Ingestion:	No hazard expected in normal industrial use. Ingestion is not a likely route of exposure.
Respiratory:	This product can produce a mild respiratory tract irritation in confined areas under EXTREME conditions.
Protective Gloves:	Protective gloves should be worn when repeated or long contact with skin is exposed.
Eye Protection:	Wear Safety Glasses or other eye/face protection. Substance may cause moderate eye irritation.

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## 7. PHYSICAL DATA

<b>Physical State</b>	Liquid	<b>Vapor Pressure</b>	Same as Water
<b>Color</b>	Milky white	<b>Vapor Density</b>	Same as Water
<b>Odor</b>	Slight Vinegar	<b>Water Solubility</b>	Miscible
<b>Boiling Point</b>	100 C.	<b>Bulk Density</b>	Not Determined
<b>Freezing Point</b>	Not Determined	<b>Specific Gravity</b>	1.1
<b>Melting Point</b>	Not Determined	<b>Evaporation Rate</b>	Same as Water
<b>PH</b>	4-7	<b>Hazardous Polymerization</b>	Will not occur
<b>Stability</b>	Stable	<b>Conditions to Avoid</b>	None Known

## 8. STABILITY AND REACTIVITY

<b>Stability:</b>	This product is stable
<b>Hazardous Polymerization:</b>	Hazardous polymerization will not occur
<b>CONDITIONS TO AVOID:</b>	none known
<b>INCOMPATIBILITY:</b>	Strong acids and bases.
<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b>	Oxides of carbon may be released during combustion.

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## 9. TOXICOLOGICAL, ECOLOGICAL, DISPOSAL

Acute and chronic health effects are not expected as long as good industrial hygiene and safety precautions are followed. This product has not been tested for environmental effects.

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### WASTE DISPOSAL:

Disposal of this product must comply with all applicable federal, state and local regulations.

### CONTAINER DISPOSAL:

Disposal of this container should comply with all applicable federal, state and local regulations.

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This information is based on our best knowledge and we believe it to be true and accurate. HOWEVER, NO WARRANTY OR MERCHANTABILITY, FITNESS OR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION. THE INFORMATION. THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on either condition that he assume the risk of his use thereof.

# **APPENDIX E**

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## Emissions Inventory

**Emission Units and Control Devices**

Table 1 EMISSIONS UNIT AND CONTROL DEVICE INFORMATION

	Equipment	Capacity	Manufacturer	Model or Serial No.
<b>Backup Generators</b>	CAT C9-2008 3 Phase Diesel Generator (at pumphouse) / CAT GEN	NA	Caterpillar	Engine: 313 kVA, 250 kW, 60 Hertz; Generator: 480 volts.
	Stamford Cummins 3-Phase Diesel Generator / CUMMINS GEN	NA	Stamford Cummins	Engine: 2015 kVA Base Rate; 1612 kW (BR); 60 Hz; 1800 RPM. Generator: 480 Volts; 2423.7 Amps (BR).
	Generac 2000 Series 3-Phase Diesel Generator (South of Building "C") / GENERAC GEN	NA	Generac	Model #: 1526500100; 100 kVA. Serial #: 2062523 Generator: 120 Volts; 60 Hz; 240.6 Amps; 1800 RPM; 80 kW
<b>Filtration Units</b>	CSL Dust Collector No. 1 (DC-1) for Seed Conditioning	NA	Carothers & Sons, LTD.	Efficiency %: 99.995 Grain Loading gr/dscf: 0.0007 GSCFM Exhaust Volumetric Flow Rate: 34,900 CFM
	CSL Dust Collector No. 2 (DC-2) for Seed Conditioning	NA	Carothers & Sons, LTD.	Efficiency %: 99.995 Grain Loading gr/dscf: 0.0007 GSCFM Exhaust Volumetric Flow Rate: 34,900 CFM
	CSL Dust Collector No. 3 (DC-3) for Seed Conditioning	NA	Carothers & Sons, LTD.	Efficiency %: 99.995 Grain Loading gr/dscf: 0.0007 GSCFM Exhaust Volumetric Flow Rate: 35,000 CFM
	CSL Dust Collector No. 4 (DC-4) for Seed Conditioning	NA	Carothers & Sons, LTD.	Efficiency %: 99.995 Grain Loading gr/dscf: 0.0007 GSCFM Exhaust Volumetric Flow Rate: 12,800 CFM
	CSL Dust Collector No. 5 (DC-5) for Seed Conditioning	NA	Carothers & Sons, LTD.	Efficiency %: 99.995 Grain Loading gr/dscf: 0.0007 GSCFM Exhaust Volumetric Flow Rate: 20,000 CFM
	CSL Dust Collector No. 6 (DC-6) for Seed Conditioning	NA	Carothers & Sons, LTD.	Efficiency %: 99.995 Grain Loading gr/dscf: 0.0007 GSCFM Exhaust Volumetric Flow Rate: 32,500 CFM
	CSL Dust Collector No. 7 (DC-7) for Seed Conditioning	NA	Carothers & Sons, LTD.	Efficiency %: 99.995 Grain Loading gr/dscf: 0.0007 GSCFM Exhaust Volumetric Flow Rate: 6,800 CFM
	CSL Dust Collector No. 8 (DC-8) for Seed Packaging and Shipping	NA	Carothers & Sons, LTD.	Efficiency %: 99.995 Grain Loading gr/dscf: 0.0007 GSCFM Exhaust Volumetric Flow Rate: 25,000 CFM
	FARR Cartridge Collector No. 1 (FARR 1) for Seed Treatment (Film Coating)	NA	Camfil FARR Air Pollution Control	Camfil FARR APC warranties that the emissions from the collectors will not exceed 0.002 gr/dscf in overall particulate emissions, efficiency to be 99.99% on 0.5 micron particles and larger by weight. Serial #: 697544
	FARR Cartridge Collector No. 2 (FARR 2) for Seed Treatment (Film Coating)	NA	Camfil FARR Air Pollution Control	Camfil FARR APC warranties that the emissions from the collectors will not exceed 0.002 gr/dscf in overall particulate emissions, efficiency to be 99.99% on 0.5 micron particles and larger by weight. Serial #: 697544
	FARR Cartridge Collector No. 3 (FARR 3) for Seed Enhancement (Pelleting)	NA	Camfil FARR Air Pollution Control	Camfil FARR APC warranties that the emissions from the collectors will not exceed 0.002 gr/dscf in overall particulate emissions, efficiency to be 99.99% on 0.5 micron particles and larger by weight. Serial #: 660171
	FARR Cartridge Collector No. 4 (FARR 4) for Seed Enhancement (Pelleting)	NA	Camfil FARR Air Pollution Control	Camfil FARR APC warranties that the emissions from the collectors will not exceed 0.002 gr/dscf in overall particulate emissions, efficiency to be 99.99% on 0.5 micron particles and larger by weight. Serial #: 660171
	Murphy-Rodgers Baghouse (MR BH 1) for Seed Enhancement (Priming)	NA	Murphy-Rodgers, Inc	Capacity is 3,900 cfm @ 8" wg, 352 sq/ft of filter area with a realized air to filter ratio of approx. 1.1 to 1 The usual efficiency of dry filter units is 99.9% on particle sizes of 1 micron or larger. The efficiency as stated is after an initial run in period and the filters have had sufficient time to accumulate a dust cake. Model: MRM-12-4D
	Herding Filtration Unit No. 1 (HERD 1) for Seed Enhancement (Powder/Blending)	NA	Herding Filtration, LLC.	4700-7985 CFM - m3/h % Efficiency / Air Quality: <0.1mg/m3 (=0.0004 gr/ft3) or 99.97% @ 0.3micron Model: P-1899 HSL 1500-12/18 SZ
Herding Filtration Unit No. 2 (HERD 2) for Seed Enhancement (Pelleting)	NA	Herding Filtration, LLC.	23200-39417 CFM - m3/h % Efficiency / Air Quality: <0.1mg/m3 (=0.0004 gr/ft3) or 99.97% @ 0.3micron Model: P-2112 Delta Sys 1500-144/9 (3KA) GZ	
FARR Cartridge Collector No. 5 (FARR 5) for Warehousing (Bulk Unloading)	NA	Camfil FARR Air Pollution Control	Camfil FARR APC warranties that the emissions from the collectors will not exceed 0.002 gr/dscf in overall particulate emissions, efficiency to be 99.99% on 0.5 micron particles and larger by weight. Serial # 634948-A	
<b>LPG Combustion</b>	Two propane building heaters ("Q") for temperature and humidity control (to dry scale out of onion umbels) / Heat 1	1,000,000 BTU/hr/unit	NA	NA
	Ten blower fans on south side of building "Q"	NA	NA	NA
	Eight fans off east side of building "G" for temperature and humidity control.	NA	NA	NA
	Twenty-Nine Total fans (Nine off of the east side of each of the "D" buildings) for temperature and humidity control.	NA	NA	NA
	Four building heaters south of building "L" / Heat 2	250,000 BTU/hr/unit	NA	NA
	Two Enclosed Propane Seed Dryers within building "L" for Seed Warehousing (Drying) / Dryer 1	1,000,000 BTU/hr/unit	NA	NA
	Seed Dryer northwest of building "K" for Seed Warehousing (Drying) / Dryer 2	2,500,000 BTU/hr/unit	NA	NA
<b>Fumigation</b>	Box chamber fumigation as part of Warehousing (fumigation) Process / Fume	length: 60' 9" Width: 9' 6" interior height: 13' 1" Interior volume: ~7580 cu. Ft	NA	NA

MM Btu/hr = million British thermal units per hour  
NA = not available

CRITERIA POLLUTANTS PTE

Source Descriptions	Emission Controls	PM-Total		PM-10*		PM-2.5*		NO <sub>x</sub>		CO		CO <sub>2</sub> e		SO <sub>x</sub>		VOC		Lead	
		lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
<b>Backup Diesel Generators</b>																			
(3) Backup Diesel Generators	None	2.705	0.068	2.705	0.068	2.705	0.068	29.85	0.75	15.70	0.39	3,176.7	79.4	5.62	0.01	2.88	0.00	-	-
<b>Filtration Units</b>																			
Seed Conditioning, Lines 3-4	DC-1 CSL Dust Collector	0.209	0.917	0.103	0.449	0.029	0.127	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Seed Conditioning, AIM Blending Line and Lines 5-6	DC-2 CSL Dust Collector	0.209	0.917	0.103	0.449	0.029	0.127	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Seed Conditioning, Line 1-2	DC-3 CSL Dust Collector	0.210	0.920	0.103	0.451	0.029	0.127	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Seed Conditioning, Carrot Seed Brushing Lines 1-3	DC-4 CSL Dust Collector	0.077	0.336	0.038	0.165	0.011	0.046	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Seed Conditioning, Scalping Lines 3-4	DC-5 CSL Dust Collector	0.120	0.526	0.059	0.258	0.017	0.073	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Seed Conditioning, Scalping Lines 1-2	DC-6 CSL Dust Collector	0.195	0.854	0.096	0.419	0.027	0.118	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Seed Conditioning, Scalping and Brush Lines Makeup	DC-7 CSL Dust Collector	0.041	0.179	0.020	0.088	0.006	0.025	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Seed Packaging and Shipping	DC-8 CSL Dust Collector	0.150	0.657	0.074	0.322	0.021	0.091	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Seed Treatment (Film Coating)	(FARR 1) FARR Cartridge Collector No. 1	0.100	0.438	0.049	0.215	0.014	0.060	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.44E-07	1.07E-06	n/a	n/a
Seed Treatment (Film Coating)	(FARR 2) FARR Cartridge Collector No. 2	0.094	0.411	0.046	0.202	0.013	0.057	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.29E-07	1.00E-06	n/a	n/a
Seed Enhancement (Pelleting)	(FARR 3) FARR Cartridge Collector No. 3	0.112	0.491	0.055	0.241	0.015	0.068	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Seed Enhancement (Pelleting)	(FARR 4) FARR Cartridge Collector No. 4	0.134	0.588	0.066	0.288	0.019	0.081	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Seed Enhancement (Priming)	(MR BH 1) Murphy-Rodgers Baghouse	0.011	0.050	0.006	0.024	0.002	0.007	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Seed Enhancement (Powder/Blending)	(HERD 1) Herding Filtration Unit No. 1	0.020	0.089	0.010	0.043	0.003	0.012	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Seed Enhancement (Pelleting)	(HERD 2) Herding Filtration Unit No. 2	0.236	1.032	0.115	0.506	0.033	0.142	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	4.26E-06	1.87E-05	n/a	n/a
Warehousing (Bulk Unloading)	(FARR 5) FARR Cartridge Collector No. 5	0.182	0.798	0.089	0.391	0.025	0.110	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>LPG Combustion</b>																			
Two propane building heaters ("Q") for temperature and humidity control (Heater 1)	None	0.015	0.017	0.015	0.017	0.015	0.017	0.28	0.31	0.16	0.18	273.2	300.5	0.03	0.04	0.02	0.02		
Four building heaters south of building "L" (Heater 2)	None	0.004	0.004	0.004	0.004	0.004	0.004	0.07	0.08	0.04	0.05	68.3	75.1	0.01	0.01	0.01	0.01		
Two Enclosed Propane Seed Dryers within building "L" (Dryer 1)	None	0.015	0.037	0.015	0.037	0.015	0.037	0.28	0.68	0.16	0.39	273.2	655.7	0.03	0.08	0.02	0.05		
Seed Dryer northwest of building "K" (Dryer 2)	None	0.038	0.028	0.038	0.028	0.038	0.028	0.71	0.51	0.41	0.30	683.1	491.8	0.0590	0.0590	0.0546	0.0393		
<b>FACILITY-WIDE TOTAL EMISSIONS</b>		<b>4.88</b>	<b>9.35</b>	<b>3.81</b>	<b>4.66</b>	<b>3.07</b>	<b>1.42</b>	<b>31.20</b>	<b>2.33</b>	<b>16.48</b>	<b>1.31</b>	<b>4474.5</b>	<b>1602.6</b>	<b>5.76</b>	<b>0.20</b>	<b>2.98</b>	<b>0.13</b>	<b>-</b>	<b>-</b>

\*PM-10 = particulate matter less than or equal to 10 um aerodynamic diameter. All particulate is assumed to be < or = 1 um in size.

**TOXIC AIR POLLUTANT EMISSION INVENTORY - NUNHEMS USA, INC. TAPs & HAPs Summary**

**NON-CARCINOGENS**

Pollutant	Hourly Emissions	Screening Level	Modeling?	Emissions
	(lb/hr)	(lb/hr)	(Y/N)	(tons/yr)
Acrolein*	6.15E-06	1.7E-02	N	3.07E-07
Aluminum Oxide; Al2O3	3.96E-06	6.67E-01	N	1.7E-05
Barium	0.00E+00	3.3E-02	N	0.00E+00
Calcium Carbonate	3.29E-03	6.67E-01	N	1.4E-02
Chlorpyrifos	2.44E-06	1.30E-02	N	1.1E-05
Chromium	0.00E+00	3.3E-02	N	0.00E+00
Cobalt	0.00E+00	3.3E-03	N	0.00E+00
Copper	0.00E+00	6.7E-02	N	0.00E+00
Ethylene Glycol*	2.24E-08	8.46E-01	N	9.8E-08
Hexane*	0.00E+00	1.2E+01	N	0.00E+00
Hydrogen Chloride (HCL)	1.32E-05	5.00E-02	N	5.8E-05
Kaolin	3.93E-06	1.33E-01	N	1.7E-05
Magnesium Oxide	3.30E-06	6.67E-01	N	1.4E-05
Manganese	0.00E+00	3.33E-01	N	0.00E+00
Mercury	0.00E+00	3.E-03	N	0.00E+00
Methanol*	4.26E-06	1.73E+01	N	1.9E-05
Mica	3.51E-04	2.00E-01	N	1.5E-03
Molybdenum	0.00E+00	6.67E-01	N	0.00E+00
Naphthalene* <sup>a</sup>	3.38E-05	9.10E-05	N	1.69E-06
Pentane	0.00E+00	1.18E+02	N	0.00E+00
Perlite	7.15E-04	6.67E-01	N	3.1E-03
Phosphine*	3.20E-04	2.70E-02	N	1.4E-03
Phosphorus*	0.00E+00	7.00E-03	N	0.00E+00
Selenium	0.00E+00	1.3E-02	N	0.00E+00
Silica - amorphous- Diatomaceous Earth	1.59E-03	6.67E-01	N	7.0E-03
Silica, crystalline - Cristobalite	3.17E-04	3.30E-03	N	1.4E-03
Silica, crystalline - Quartz	5.51E-04	6.70E-03	N	2.4E-03
Sodium Hydroxide	1.10E-02	1.33E-01	N	4.8E-02
Thiram	1.41E-05	3.33E-01	N	6.2E-05
Toluene*	8.36E-05	2.5E+01	N	4.18E-06
Vanadium	0.00E+00	3.0E-03	N	0.00E+00
Xylene*	5.78E-05	2.90E+01	N	2.5E-04
Zinc	0.00E+00	6.7E-01	N	0.00E+00
<b>TOTAL</b>	<b>1.83E-02</b>			<b>7.98E-02</b>

<sup>a</sup> Although listed as a noncarcinogen in the Rules, DEQ has determined that naphthalene is a possible/probable carcinogen. Compliance for naphthalene emissions should be based on the EL or AACC listed in Section 586 for PAH.

\* Also listed Hazardous Air Pollutants. See HAPs Inventory list below.

**CARCINOGENS**

Pollutant	Hourly Emissions	Screening Level	Modeling?	Emissions
	(lb/hr)	(lb/hr)	(Y/N)	(tons/yr)
Arsenic	0.00E+00	1.5E-06	N	0.00E+00
Benzene*	3.04E-05	8.0E-04	N	1.52E-06
Beryllium	0.00E+00	2.8E-05	N	0.00E+00
Cadmium	0.00E+00	3.7E-06	N	0.00E+00
Formaldehyde*	1.03E-05	5.1E-04	N	6.97E-09
Nickel	0.00E+00	2.7E-05	N	0.00E+00
Thiourea	1.25E-06	1.5E-06	N	1.31E-09
Benzo(a)pyrene	9.28E-09	2.0E-06	N	4.64E-10
Benz(a)anthracene	3.03E-08	NA	N	1.52E-09
Benzo(b)fluoranthene	3.55E-08	NA	N	1.77E-09
Benzo(k)fluoranthene	7.84E-09	NA	N	3.92E-10
Chrysene	5.03E-08	NA	N	2.52E-09
Dibenzo(a,h)anthracene	1.46E-08	NA	N	7.30E-10
Indeno(1,2,3-cd)pyrene	1.54E-08	NA	N	7.70E-10
Total PAHs	1.63E-07	9.1E-05	N	8.16E-09
<b>Total</b>	<b>4.21E-05</b>			<b>1.53E-06</b>

\* Also listed Hazardous Air Pollutants. See HAPs Inventory list below.

**HAPs Inventory**

Pollutant	Emissions
	(tons/yr)
Acrolein	3.07E-07
Benzene	1.52E-06
Ethylene Glycol	9.83E-08
Formaldehyde	6.97E-09
Hexane	0.00E+00
Hydrochloric Acid	5.78E-05
Methanol	1.9E-05
Naphthalene	1.69E-06
Phosphine*	1.40E-03
Phosphorus	0.00E+00
Toluene	4.18E-06
Xylene	2.53E-04
<b>Total</b>	<b>1.74E-03</b>

\*Maximum Individual HAP

Yellow highlighted items have been flagged for modeling requirements.

**TOXIC AND HAZARDOUS AIR POLLUTANT EMISSION INVENTORY - NUNHEMS USA, INC. SEED COATINGS**

<b>NON-CARCINOGENIC TAPs</b>				
<b>Pollutant</b>	<b>Hourly Emissions (lb/hr)</b>	<b>Screening Level (lb/hr)</b>	<b>Modeling? (Y/N)</b>	<b>Emissions (tons/yr)</b>
Aluminum Oxide; Al <sub>2</sub> O <sub>3</sub>	3.96E-06	6.67E-01	N	1.7E-05
Calcium Carbonate	3.29E-03	6.67E-01	N	1.4E-02
Chlorpyrifos	2.44E-06	1.30E-02	N	1.1E-05
Ethylene Glycol*	2.24E-08	6.67E-01	N	9.8E-08
Hydrogen Chloride (HCL)*	1.32E-05	5.00E-02	N	5.8E-05
Kaolin	3.93E-06	1.33E-01	N	1.7E-05
Magnesium Oxide	3.30E-06	6.67E-01	N	1.4E-05
Methanol*	4.26E-06	1.73E+01	N	1.9E-05
Mica	3.51E-04	2.00E-01	N	1.5E-03
Perlite	7.15E-04	6.67E-01	N	3.1E-03
Phosphine*	3.20E-04	2.70E-02	N	1.4E-03
Silica - amorphous- Diatomaceous Earth	1.59E-03	6.67E-01	N	7.0E-03
Silica, crystalline - Cristobalite	3.17E-04	3.30E-03	N	1.4E-03
Silica, crystalline - Quartz	5.51E-04	6.70E-03	N	2.4E-03
Sodium Hydroxide	1.10E-02	1.33E-01	N	4.8E-02
Thiram	1.41E-05	3.33E-01	N	6.2E-05
Xylene*	2.44E-07	2.90E+01	N	1.1E-06

\* Also listed Hazardous Air Pollutants. See HAPs Inventory list below.

<b>CARCINOGENIC TAPs</b>				
<b>Pollutant</b>	<b>Max. Hourly Emissions (lb/hr)</b>	<b>Screening Level (lb/hr)</b>	<b>Modeling? (Y/N)</b>	<b>Emissions (tons/yr)</b>
Thiourea	1.25E-06	1.5E-06	N	1.31E-09
Formaldehyde*	2.29E-07	5.1E-04	N	6.97E-09

\* Also listed Hazardous Air Pollutants. See HAPs Inventory list below.

<b>HAPs Inventory</b>	
<b>Pollutant</b>	<b>Emissions (tons/yr)</b>
Ethylene Glycol	9.83E-08
Formaldehyde	7.0E-09
Hydrochloric Acid	5.78E-05
Methanol	1.9E-05
Phosphine	1.4E-03
Xylene	1.07E-06
<b>Total</b>	<b>7.66E-05</b>

TAP Emission Calculations of Process Byproduct - Nunhems USA, Inc. Seed Coatings

Process	Application	Name of Material/ TAPs	Max Material Process Rate (lb/hr)	Transfer Efficiency (%) <sup>a</sup>	Wt. Fraction TAP	Filtration Unit Collection Efficiency (%) <sup>b</sup>	TAP Emissions (lb/hr)	TAP Emissions (ton/yr)	
Warehousing (Fumigation)	Pesticide	Weevil-cide, Fumitoxin / Phosphine (55%)	0.011648	95%	0.55	0.00%	3.20E-04	1.40E-03	
Seed Enhancement (Treatment)	Fungicide	42S Thiram / Thiram (42%)	4.000000	95%	0.42	99.99%	8.40E-06	3.68E-05	
Seed Enhancement (Pelleting)	Fungicide	42S Thiram / Thiram (42%)	0.350000	95%	0.42	99.99%	7.35E-07	3.22E-06	
Seed Enhancement (Treatment)	Fungicide	Maxim 4FS / Ethylene Glycol (<15%)	0.025000	95%	0.15	99.99%	1.87E-08	8.21E-08	
Seed Enhancement (Pelleting)	Fungicide	Maxim 4FS / Ethylene Glycol (<15%)	0.004930	95%	0.15	99.99%	3.70E-09	1.62E-08	2.24E-08
Seed Enhancement (Pelleting)	Fungicide	ProGro / Thiram (50%)	1.980000	95%	0.50	99.99%	4.95E-06	2.17E-05	1.41E-05
Seed Enhancement (Treatment)	Insecticide	Lorsban 30F / Chlorpyrifos (30%)	1.630000	95%	0.30	99.99%	2.44E-06	1.07E-05	
Seed Enhancement (Treatment)	Insecticide	Lorsban 30F / Xylene (3%)	1.630000	95%	0.03	99.99%	2.44E-07	1.07E-06	
Seed Enhancement (Pelleting)	Insecticide	TriGard OMC / Kaolin Clay (<15%),	5.240000	95%	0.15	99.99%	3.93E-06	1.72E-05	
Seed Enhancement (Pelleting)	Insecticide	TriGard OMC / Amorphous Silica, diatomaceous earth (<15%)	5.240000	95%	0.15	99.99%	3.93E-06	1.72E-05	
Seed Enhancement (Pelleting)	Powder	C31 / Calcium carbonate (50-100%)	635.000000	95%	1.00	99.99%	3.17E-03	1.39E-02	
Seed Enhancement (Pelleting)	Powder	C31 / Diatomaceous earth/silica-amorphous (25-50%)	635.000000	95%	0.50	99.99%	1.59E-03	6.95E-03	1.59E-03
Seed Enhancement (Pelleting)	Powder	C31 / Mica (1-10%)	635.000000	95%	0.10	99.99%	3.17E-04	1.39E-03	
Seed Enhancement (Pelleting)	Powder	C31 / Silica, crystalline - Quartz (1-10%)	635.000000	95%	0.10	99.99%	3.17E-04	1.39E-03	
Seed Enhancement (Pelleting)	Powder	C31 / Silica, crystalline - Cristobalite (1-10%)	635.000000	95%	0.10	99.99%	3.17E-04	1.39E-03	
Seed Enhancement (Pelleting)	Powder	F18 / Mica (50-100%)	6.610000	95%	1.00	99.99%	3.30E-05	1.45E-04	3.51E-04
Seed Enhancement (Pelleting)	Powder	Mikrosohl 40 / Calcium Carbonate (88%)	26.400000	95%	0.88	99.99%	1.16E-04	5.09E-04	3.29E-03
Seed Enhancement (Pelleting)	Powder	Mikrosohl 40 / Hydrochloric acid-insoluble components (10%)	26.400000	95%	0.10	99.99%	1.32E-05	5.78E-05	
Seed Enhancement (Pelleting)	Powder	Wimer 100, 130, 140 / Silica, crystalline - Quartz (53%)	88.000000	95%	0.53	99.99%	2.33E-04	1.02E-03	5.51E-04
Seed Enhancement (Pelleting)	Powder	Navajo Brand Grade FFF Pumice / Aluminum Oxide: Al <sub>2</sub> O <sub>3</sub> (12%)	6.600000	95%	0.12	99.99%	3.96E-06	1.73E-05	
Seed Enhancement (Pelleting)	Powder	Navajo Brand Grade FFF Pumice / Calcium Oxide: CaO (<1%)	6.600000	95%	0.01	99.99%	3.30E-07	1.45E-06	
Seed Enhancement (Pelleting)	Powder	Navajo Brand Grade FFF Pumice / Magnesium Oxide: MgO (<1%)	6.600000	95%	0.01	99.90%	3.30E-06	1.45E-05	
Seed Enhancement (Pelleting)	Powder	Dicalite 476, 478 Perlite Filter Aids / Perlite (assume 100%)	14.300000	95%	1.00	99.90%	7.15E-04	3.13E-03	
Seed Enhancement (Pelleting)	Polymer/Binder	SOL 17 / Methanol (<1%)	85.200000	95%	0.01	99.99%	4.26E-06	1.87E-05	
Seed Enhancement (Treatment)	Polymer/Binder	Sepiret 9256 EKWX / Formaldehyde (~39ppm or 0.0039%)	117.500000	95%	0.000039	99.90%	2.29E-07	1.00E-06	
Seed Enhancement (Priming)	Disinfection	Liquichlor/Sodium Hypochlorite / Sodium hydroxide (0.1-2%)	10.978682	95%	0.02	0.00%	1.10E-02	4.81E-02	
Seed Enhancement (Priming)	Priming Component	Thiourea / Thiourea (>99%)	0.000025	95%	0.99	0.00%	1.25E-06	5.46E-06	

<sup>a</sup>Estimated seed coating transfer efficiency provided by Nunhems USA, Inc.

<sup>b</sup>Collection efficiency only for powder coatings; potential vapors from liquid coatings are not controlled by the baghouse.

**Processed Material Parameters - Nunhems USA, Inc. Seed Coatings**

Application	Product Name; Constituent(s) of Concern in % by weight	Manufacturer	MSDS Sheet Date	TAPs?	HAPs?	Max Application Rate (lb/hr or as indicated)	Source/Calculations
Pesticide	Weevil-cide or Fumitoxin; 55% Aluminum Phosphide (PH <sub>3</sub> , phosphine gas)	Pestcon Systems, Inc.	2004	Yes (585)	Yes	0.011647755	Nunhems USA, Inc. Seed Enhancement Manager 1 pill = 0.634 grams; 200 pills/fume; MAX 91 fumes/year (3 days fume + 1 day of ventilation = 4 days; Emissions assumed to primarily occur on the 4th day of fumigation when doors are opened. 200 pills used per fumigation event; (200 pills/fume) x (0.634 grams/pill) x (1 pound/453.5924 grams) x 24 hours.
Fungicide	42S Thiram; Thiram (42%)	Bayer CropScience	2007	Yes (585)	No	4 lbs. <sup>T</sup> 0.35 lbs. <sup>P</sup>	Nunhems USA, Inc. Seed Enhancement Manager TRT: 5.95 g / Kg x 305 Kg / hr = 1815 g / hr = 4 lbs / hr PLT: 4.46 g / kg x 18 kg x 6 batches = 482 g / 3 hrs = 160g / hr
	Revral 4F; Iprodione (41.6%)	Bayer CropScience	2007	No	No		
	Apron XL LS; Mefenoxam (33.3%)	Syngenta Crop Protection, Inc.	2010	No	No		
	Maxim 4FS; Fludioxonil (40.3%), Ethylene Glycol (<15%)	Syngenta Crop Protection, Inc.	2010	Yes (585); check for "vapor" form	Yes	0.025 lbs. <sup>T</sup> 0.00493 lbs. <sup>P</sup>	Nunhems USA, Inc. Seed Enhancement Manager TRT: 0.0621 g / Kg x 180 kg / hr = 11.2 g / hr PLT: 0.0621 g / kg x 18 kg / batch x 6 batches = 6.71 g / 3 hr = 2.24 g / hr
	Allegiance FL; Metalaxyl (28.35%), Attapulgite Clay (0.40%)	Bayer CropScience	2006	No	No		
	Dynasty; Azoxystrobin (9.6%), Propylene glycol (?%)	Syngenta Crop Protection, Inc.	2010	No	No		
Insecticide	ProGro; Carboxin (30%), Thiram (50%)	Chemtura	2009	Yes (585)	No	1.98 lbs / hr <sup>T</sup>	Nunhems USA, Inc. Seed Enhancement Manager 25 g / kg x 18 kg / batch x 6 batches = 2700 g / 3 hr = 900 g / hr, 454 g / lb.
	Lorsban 30F; Chlorpyrifos (30%), 1,2,4-Trimethylbenzene (4.10 %), Xylene (3%), Ethylbenzene (0.60%)	Bayer CropScience	2006	Yes (Chlorpyrifos, Xylene-585)	Yes (Xylene)	1.63 lbs. <sup>T</sup>	Nunhems USA, Inc. Seed Enhancement Manager TRT: 1.94 g / kg x 380 kg / hr = 737 g / hr
	Cruiser 5FS; Thiamethoxam (47.6%)	Syngenta Crop Protection, Inc.	2011	No	No		
Powder	Sepresto 75 WS; Clothianidin (56.25%), Imidacloprid (18.75%)	Bayer CropScience	2007	No	No		
	C31; Calcium carbonate (50-100%), Diatomaceous earth/silica-amorphous (25-50%), Mica (1-10%), Quartz/SiO <sub>2</sub> (1-10%), Cristobalite (1-10%).	Incotec	2010	Yes (Diat. Earth, calcium carbonate, mica (dust), quartz, Cristobalite-585)	No	635 lbs / hr <sup>P</sup>	Nunhems USA, Inc. Seed Enhancement Manager 6 batches x 18 kg x 8:1 build-up = 864 Kgs / 3 hr / batch = 288 Kg / hr
	F18; Mica (50-100%)	Incotec	2011	Yes (585)	No	6.61 lbs <sup>P</sup>	Nunhems USA, Inc. Seed Enhancement Manager 6 batches x 1.5 kg / batch = 6 Kgs / 3 hr / batch = 3 Kg / hr
	Mikrosohl 40; Calcium Carbonate (88%), Magnesium Carbonate (1%), Fe <sub>2</sub> O <sub>3</sub> : Iron (III) Oxide (5%), Hydrochloric acid-insoluble components (10%)	Dammann	2006	Yes (Calcium carbonate-585)	Yes (Hydrochloric acid)	26.4 lbs. <sup>P</sup>	Nunhems USA, Inc. Seed Enhancement Manager 12 kg / hr
	Wimer 100, 130, 140; Aluminum silicate (?), Silica, crystalline/quartz (53%)	Ankerpoort NV	2004	Yes (Silica, quartz-585)	No	88 lbs. <sup>P</sup>	Nunhems USA, Inc. Seed Enhancement Manager 100 Kg (blend) / 2 hrs x 80% = 40 Kg / hr = 88.1 lbs / hr
	Ligamed MF-2-K Magnesium Stearate, Sulphate (0-5%), Stearic acid (60-70%), Magnesium (2-8%)	Peter Greven Oleochemicals	2009	No	No		
	Navajo Brand Grade FFF Pumice; Silicon dioxide: SiO <sub>2</sub> (75%), Aluminum Oxide: Al <sub>2</sub> O <sub>3</sub> (12%), Potassium Oxide: K <sub>2</sub> O (4%), Sodium Oxide: Na <sub>2</sub> O (4%), Fe <sub>2</sub> O <sub>3</sub> : Iron (III) Oxide (<2%), Calcium Oxide: CaO, Magnesium Oxide: MgO and Titanium Dioxide: TiO <sub>2</sub> (<1%)	CR Minerals Company, LLC	2009	Yes (Al <sub>2</sub> O <sub>3</sub> , CaO, MgO (fume)-585)	No	6.6 lbs. <sup>P</sup>	Nunhems USA, Inc. Seed Enhancement Manager 100 Kg (blend) / 2 hrs x 6% = 3 Kg / hr = 6.6 lbs / hr
	Dicalite 476, 478 Perlite Filter Aids; Perlite: Amorphous Silicate (?)	Dicalite Europe	2009	Yes (perlite-585)	No	14.3 lbs. <sup>P</sup>	Nunhems USA, Inc. Seed Enhancement Manager 100 Kg (blend) / 2 hrs x 13% = 6.5 Kg / hr = 14.3 lbs / hr
Polymer/Binder	SOL 17: Solution 17; Methanol (<1%)	Incotec	2011	Yes(585)	Yes	85.2 lbs/hr <sup>P</sup>	Nunhems USA, Inc. Seed Enhancement Manager 250 gallons used / 3 days SOL017 has a density of 1.02 g/cm <sup>3</sup> or 8.512 lb/gal x 10 gal/hr = 85.2 lb/hr
	SP1090; Vinyl Acetate Polymer (39-41%), Hydrolyzed Polyvinyl Alcohol (>1%), Biocide: Kathion LX (1.5%)	Industrial Adhesives of Indiana	?	No	No	1.0 gallons (PLT)	
	Sepiret 9256 EKWX; Filler pigments: Proprietary (5-20%), Filler pigments: Proprietary (5-20%), Formaldehyde (~39ppm or 0.0039%)	Becker Underwood, Inc.	2009	Yes (586)	Yes	117.5 lbs. <sup>T</sup>	
	Sepiret PF 10 Orange Powder; Filler pigments: Proprietary (10% max)	Becker Underwood, Inc.	2003	No	No		
	Certop CT28008; unknown	Bayer CropScience	2008	No	No	117.7 lbs. (TRT)	
	Basiscoat Suspension; Aqueous suspension with Mica, ChinaClay, Titane-Dioxide, Arylamid-Pigment and Polymer	SUET	2008	No	No	46.9 lbs. (TRT)	
Disinfection-Priming Components	Liquichlor/Sodium Hypochlorite; Sodium hypochlorite (9-16%), Sodium hydroxide (0.1-2%)	Univar USA, Inc.	2007	Yes (585)	No	10.978682 lbs./hr of 12.5% <sup>D</sup>	Nunhems USA, Inc. Seed Enhancement Manager Specific gravity of Liquichlor = 1.196 (1.196)x(8.345 lbs/gal of H <sub>2</sub> O)x(1.1 gal/hr) = 10.978682 lb/hr
	Trisodium Phosphate Anhydrous; Trisodium Phosphate Anhydrous (100%)	Univar USA, Inc.	2003	No	No		
	Polyglykol 8000S; Polyethylene glycol (<=100%)	Clariant Corporation	2009	No	No	2036 lbs. / week (PR)	
Priming Component (Lettuce)	Ethrel Brand Ethephon Plant Regulator; Ethephon (21.7%)	Bayer CropScience	2005	No	No		
	Thiourea; Thiourea (>99%)	Fisher Scientific	2009	Yes (586)	No	2.51666E-05	Nunhems USA, Inc. Seed Enhancement Manager SG=1.405 (1.405)x(8.345 lbs/gal water)x(amount of gallons used) Nunhems uses 5-10 grams of Thiourea per year. (10 grams/year)x(0.00220462262 lbs/gram) = (0.22046 lb/year) or 2.51666E-5 lbs/hr
	Potassium Hydroxide; Potassium Hydroxide (100%)	EMD Chemicals, Inc. (customer service - 800-645-5476)	2007	Yes (585)	No	NA	Nunhems USA, Inc. Seed Enhancement Manager Potassium Hydroxide is Neutralized with HCL to pH of 7 prior to seed contact/introduction, therefore there are no emissions of the chemical to the atmosphere.
	Kinetine; Kinetine (90-100%)	MP Biomedicals, LLC	2006	No	No		

<sup>T</sup>: Maximum amount applied during treatment process

<sup>P</sup>: Maximum amount applied during pelleting process

PRODUCT PARTICULATE EMISSIONS - Nunhems USA, Inc.

Description	Max Amount of Material Received or Otherwise Processed (Koz/Yr)	Maximum Material Process Rate (lb/hr)	Emission Factor	Grain Loading (Upstream) (oz/dscft/min)	Grain Loading (Downstream) (oz/dscft/min)	Volumetric Flow Rate CFM	Filtration Unit Control Efficiency (%)	PTE: Uncontrolled		Control Factor Reference	PTE: Controlled Emissions					
								PM-Total (lb/hr)	PM-Total (T/yr)		PM-Total (lb/hr)	PM-Total (T/yr)	PM-10* (lb/hr)	PM-10* (T/yr)	PM-2.5* (lb/hr)	PM-2.5* (T/yr)
DC-1 CSL Dust Collector; Seed Conditioning, Lines 3-4 <sup>a</sup>	2,000,000.00	503.34		0.0700	0.0007	34,900.00	99.99	20.9400	91.7172	Manf. Guarantee - CSL, 01/19/2012 email	0.2094	0.9172	0.1026	0.45	0.0289	0.13
DC-2 CSL Dust Collector; Seed Conditioning, AIM Blending Line and Lines 5-6 <sup>a</sup>	2,000,000.00	503.34		0.0700	0.0007	34,900.00	99.99	20.9400	91.7172	Manf. Guarantee - CSL, 01/19/2012 email	0.2094	0.9172	0.1026	0.45	0.0289	0.13
DC-3 CSL Dust Collector; Seed Conditioning, Line 1-2 <sup>a</sup>	2,000,000.00	503.34		0.0700	0.0007	35,000.00	99.99	21.0000	91.9800	Manf. Guarantee - CSL, 01/19/2012 email	0.2100	0.9198	0.1029	0.45	0.0290	0.13
DC-4 CSL Dust Collector; Seed Conditioning, Carrot Seed Brushing Lines 1-3 <sup>a</sup>	2,000,000.00	503.34		0.0700	0.0007	12,800.00	99.99	7.6800	33.6384	Manf. Guarantee - CSL, 01/19/2012 email	0.0768	0.3364	0.0376	0.16	0.0106	0.05
DC-5 CSL Dust Collector; Seed Conditioning, Scalping Lines 3-4 <sup>a</sup>	2,000,000.00	503.34		0.0700	0.0007	20,000.00	99.99	12.0000	52.5600	Manf. Guarantee - CSL, 01/19/2012 email	0.1200	0.5256	0.0588	0.26	0.0166	0.07
DC-6 CSL Dust Collector; Seed Conditioning, Scalping Lines 1-2 <sup>a</sup>	2,000,000.00	503.34		0.0700	0.0007	32,500.00	99.99	19.5000	85.4100	Manf. Guarantee - CSL, 01/19/2012 email	0.1950	0.8541	0.0956	0.42	0.0269	0.12
DC-7 CSL Dust Collector; Seed Conditioning, Scalping and Brush Lines Makeup <sup>a</sup>	2,000,000.00	503.34		0.0700	0.0007	6,800.00	99.99	4.0800	17.8704	Manf. Guarantee - CSL, 01/19/2012 email	0.0408	0.1787	0.0200	0.09	0.0056	0.02
DC-8 CSL Dust Collector; Seed Packaging and Shipping <sup>b</sup>	450,000.00	113.25		0.0700	0.0007	25,000.00	99.99	15.0000	65.7000	Manf. Guarantee - CSL, 01/19/2012 email	0.1500	0.6570	0.0735	0.32	0.0207	0.09
(FARR 1) FARR Cartridge Collector No. 1; Seed Treatment (Film Coating) <sup>b</sup>	450,000.00	113.25		0.2000	0.0020	5,831.00	99.99	9.9960	43.7825	Manf. Guarantee - FARR, 01/20/2012 email; flowrate info provided by Nunhems USA, via direct measurement, on 04-16-2012.	0.1000	0.4378	0.0490	0.21	0.0138	0.06
(FARR 2) FARR Cartridge Collector No. 2; Seed Treatment (Film Coating) <sup>b</sup>	450,000.00	113.25		0.2000	0.0020	5,478.00	99.99	9.3909	41.1320	Manf. Guarantee - FARR, 01/20/2012 email; flowrate info provided by Nunhems USA, via direct measurement, on 04-16-2012.	0.0939	0.4113	0.0460	0.20	0.0130	0.06
(FARR 3) FARR Cartridge Collector No. 3; Seed Enhancement (Pelletting) <sup>b</sup>	450,000.00	113.25		0.2000	0.0020	6,538.00	99.99	11.2080	49.0910	Manf. Guarantee - FARR, 01/20/2012 email; flowrate info provided by Nunhems USA, via direct measurement, on 04-16-2012.	0.1121	0.4909	0.0549	0.24	0.0155	0.07
(FARR 4) FARR Cartridge Collector No. 4; Seed Enhancement (Pelletting) <sup>b</sup>	450,000.00	113.25		0.2000	0.0020	7,828.00	99.99	13.4194	58.7771	Manf. Guarantee - FARR, 01/20/2012 email; flowrate info provided by Nunhems USA, via direct measurement, on 04-16-2012.	0.1342	0.5878	0.0658	0.29	0.0185	0.08
(MR BH 1) Murphy-Rodgers Baghouse; Seed Enhancement (Priming) <sup>b</sup>	450,000.00	113.25				3,900.00	99.99	-	-	Manf. Guarantee - N.R. Murphy, Ltd, 01/20/2012 email	0.0113	0.0496	0.0055	0.02	0.0016	0.01
(HERD 1) Herding Filtration Unit No. 1; Seed Enhancement (Powder/Blending) <sup>b</sup>	450,000.00	113.25		0.0133	0.0004	5,910.00	99.97	0.6754	2.9584	Manf. Guarantee - Herding Filtration, Ltd, 01/26/2012 email; flowrate info provided by Nunhems USA, Inc. via direct measurement on 04-16-2012.	0.0203	0.0888	0.0099	0.04	0.0028	0.01
(HERD 2) Herding Filtration Unit No. 2; Seed Enhancement (Pelletting) <sup>b</sup>	450,000.00	113.25		0.0133	0.0004	68,722.00	99.97	7.8539	34.4003	Manf. Guarantee - Herding Filtration, Ltd, 01/26/2012 email; flowrate info provided by Nunhems USA, Inc. via direct measurement on 04-16-2012.	0.2356	1.0320	0.1155	0.51	0.0325	0.14
(FARR 5) FARR Cartridge Collector No. 5; Warehousing (Bulk Unloading) <sup>a</sup>	2,000,000.00	503.34		0.2000	0.0020	10,627.00	99.99	18.2177	79.7936	Manf. Guarantee - FARR, 01/20/2012 email; flowrate info provided by Nunhems USA, via direct measurement, on 04-16-2012.	0.1822	0.7979	0.0893	0.39	0.0251	0.11
<b>TOTAL PTE (Uncontrolled)=</b>								<b>191.9014</b>	<b>840.5280</b>	<b>TOTAL PTE (Controlled)=</b>	<b>2.1009</b>	<b>9.2021</b>	<b>1.0295</b>	<b>4.5090</b>	<b>0.2899</b>	<b>1.2699</b>

\*PM-10 emissions assume 49% of PM is PM-10; PM-2.5 emissions assume 13.8% of PM is PM-2.5 (AP-42, Appendix B.1-9.9.1)

<sup>a</sup>Accounts for total amount of material received, averaged over a 3 year period and increased by greater than 20%, to account for potential growth.

<sup>b</sup>Accounts for total amount of product that is conditioned, averaged over three years and increased by greater than 20%, to account for potential growth. Assumes that the amount of product "conditioned" is the same as the amount of product "enhanced, treated, and/or shipped."

GENERATORS - NON-CARCINOGENIC TAPs						Max generator operations 1 hr/day	
DIESEL FUEL							
Pollutant	EF for >600 hp units <sup>a</sup>	EF for < 600 hp units <sup>b</sup>	Combined Emissions	Combined Emissions	Average lbs/hr	Screening Level	Modeling?
	(lb/MMBtu)	(lb/MMBtu)	(lb/hr)	(tons/yr)	24 hr Avg for 585s	(lb/hr)	(Y/N)
Acrolein	7.88E-06	9.25E-05	1.47E-04	7.37E-06	6.15E-06	1.7E-02	N
Barium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.3E-02	N
Chromium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.3E-02	N
Cobalt	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.3E-03	N
Copper	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.7E-02	N
Hexane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.2E+01	N
Manganese	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.33E-01	N
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.E-03	N
Molybdenum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.67E-01	N
Naphthalene	1.30E-04	8.48E-05	8.11E-04	4.05E-05	3.38E-05	9.10E-05	N
Pentane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E+02	N
Phosphorous	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.00E+00	N
Selenium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.3E-02	N
Toluene	2.81E-04	4.09E-04	2.01E-03	1.00E-04	8.36E-05	2.5E+01	N
o-Xylene	1.93E-04	2.85E-04	1.38E-03	6.91E-05	5.76E-05	2.9E+01	N
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.0E-03	N
Zinc	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.7E-01	N

GENERATORS - CARCINOGENIC TAPs							
DIESEL FUEL							
Pollutant	EF for >600 hp units <sup>a</sup>	EF for < 600 hp units <sup>b</sup>	Emissions	Emissions	Average lbs/hr	Screening Level	Modeling?
	(lb/MMBtu)		(lb/hr)	(tons/yr)	Annual Avg for 586s	(lb/hr)	(Y/N)
Arsenic	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.5E-06	N
Benzene	7.76E-04	9.33E-04	5.32E-03	2.66E-04	3.04E-05	8.0E-04	N
Beryllium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.8E-05	N
Cadmium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.7E-06	N
Formaldehyde	7.89E-05	1.18E-03	1.76E-03	8.81E-05	1.01E-05	5.1E-04	N
Nickel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.7E-05	N
Benzo(a)pyrene	2.57E-07	1.88E-07	1.63E-06	8.13E-08	9.28E-09	2.0E-06	N
Benz(a)anthracene	6.22E-07	1.68E-06	5.31E-06	2.66E-07	3.03E-08	NA	NA
Benzo(b)fluoranthene	1.11E-06	9.91E-08	6.22E-06	3.11E-07	3.55E-08	NA	NA
Benzo(k)fluoranthene	2.18E-07	1.55E-07	1.37E-06	6.87E-08	7.84E-09	NA	NA
Chrysene	1.53E-06	3.53E-07	8.81E-06	4.41E-07	5.03E-08	NA	NA
Dibenzo(a,h)anthracene	3.46E-07	5.83E-07	2.56E-06	1.28E-07	1.46E-08	NA	NA
Indeno(1,2,3-cd)pyrene	4.14E-07	3.75E-07	2.70E-06	1.35E-07	1.54E-08	NA	NA
Total PAHs	4.50E-06	3.43E-06	2.86E-05	1.43E-06	1.63E-07	9.1E-05	N

<sup>a</sup>AP-42, Table 3.4-3

<sup>b</sup>AP-42, Table 3.3-2

Notes: \* Emission factor units in pounds per MMBTU.  
Emission estimates represent maximum emissions based on burning diesel fuel and based on AP-42 Tables 3.4-3 and 3.4-4.  
Emissions based on 100 hours/year of operation.

**CRITERIA EMISSIONS - DIESEL COMBUSTION - Nunhems USA, Inc.**

**Emission Factors: Stationary Internal Combustion Sources (AP-42, Chapter 3)**

Small Engines (<600 hp): From Table 3.3-1						Large Engines (>600 hp): From Table 3.4-1					
	(power output)		(fuel input)		Reference		(power output)		(fuel input)		Reference
NOx	3.10E-02	lb/hp-hr	4.41E+00	lb/MMBtu	AP-42, Table 3.3-1, 1996	NOx	1.05E-02	lb/hp-hr	3.20E+00	lb/MMBtu	AP-42, Table 3.4-1, 1996
CO	6.68E-03	lb/hp-hr	9.50E-01	lb/MMBtu	AP-42, Table 3.3-1, 1997	CO	5.50E-03	lb/hp-hr	8.50E-01	lb/MMBtu	AP-42, Table 3.4-1, 1997
CO <sub>2</sub> e	1.15E+00	lb/hp-hr	1.64E+02	lb/MMBtu	AP-42, Table 3.3-1, 1997	CO <sub>2</sub> e	1.16E+00	lb/hp-hr	1.65E+02	lb/MMBtu	AP-42, Table 3.4-1, 1998
PM-10 <sup>1</sup>	2.20E-03	lb/hp-hr	3.10E-01	lb/MMBtu	AP-42, Table 3.3-1, 1998	PM Total	7.00E-04	lb/hp-hr	1.00E-01	lb/MMBtu	AP-42, Table 3.4-1, 1998
SOx	2.05E-03	lb/hp-hr	2.90E-01	lb/MMBtu	AP-42, Table 3.3-1, 1999	SOx	2.05E-03	lb/hp-hr	1.10E+00	lb/MMBtu	AP-42, Table 3.4-1, 1999
VOC	2.51E-03	lb/hp-hr	3.60E-01	lb/MMBtu	AP-42, Table 3.3-1, 2001	VOC	7.05E-04	lb/hp-hr	9.00E-02	lb/MMBtu	AP-42, Table 3.4-1, 2001
Lead	0.00E+00	lb/hp-hr	0.00E+00	lb/MMBtu	AP-42, Table 3.3-1, 2002	Lead	0.00E+00	lb/hp-hr	0.00E+00	lb/MMBtu	AP-42, Table 3.4-1, 2002

**Manufacturer's specs for specific Cummins generator**

Cummins	5.7	g NOx/hp-hr	0.012566	lb/hp-hr
	0.03	g PM/hp-hr	6.61E-05	lb/hp-hr

**Meets EPA Tier 2 specs below**

	4.77	g NOx/hp-hr	0.010516	lb/hp-hr
	0.15	g PM/hp-hr	0.000331	lb/hp-hr
	2.61	g CO/hp-hr	0.005754	lb/hp-hr

<sup>1</sup>PM-10 = particulate matter less than or equal to 10 um aerodynamic diameter. All particulate is assumed to be < or = 1 um in size.

lb/hr emission rate are maximums

**Calculated Emissions**

Description	kW <sup>a</sup>	MMBtu/hr	hp <sup>b</sup>	Hours of Operation/Year	NOx Emissions		CO Emissions		CO <sub>2</sub> e Emissions		PM Total Emissions <sup>c</sup>		PM-10 Emissions <sup>c</sup>		PM-2.5 Emissions <sup>c</sup>		SOx Emissions		VOC Emissions <sup>**</sup>		Lead Emissions	
					(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)
CAT C9-2008 3 Phase Diesel Generator (at pumphouse)	250	0.853	398	50	2.63	0.07	2.66	0.07	457.7	11.4	0.88	0.02	0.88	0.02	0.88	0.02	0.82	0.0003	1.00	0.0004	0	0
Generac 2000 Series 3-Phase Diesel Generator (South of Building "C")	80	0.27296	125	50	3.88	0.10	0.84	0.02	143.8	3.6	0.28	0.01	0.28	0.01	0.28	0.01	0.26	0.0000	0.31	0.0000	0	0
<b>1.12596</b>																						
Stamford Cummins 3-Phase Diesel Generator <sup>d</sup>	1612	5.500144	2220	50	23.35	0.58	12.21	0.31	2575.2	64.4	1.55	0.04	1.55	0.04	1.55	0.04	4.55	0.0125	1.57	0.0043	0	0
<b>5.500144</b>					<b>29.85</b>	<b>0.75</b>	<b>15.70</b>	<b>0.39</b>	<b>3176.7</b>	<b>79.4</b>	<b>2.70</b>	<b>0.07</b>	<b>2.70</b>	<b>0.07</b>	<b>2.70</b>	<b>0.07</b>	<b>5.623</b>	<b>0.0129</b>	<b>2.880</b>	<b>0.0048</b>	<b>0.000000</b>	<b>0.000000</b>

<sup>a</sup> 1 kW = 0.003412 MMBtu;

<sup>b</sup> Brake hp ratings provided for all generators; based upon manufacturer's specification information provided in Form EU1 for each unit.

<sup>c</sup> >600 hp; uses AP 42, Table 3.4-1 emissions factors

<sup>d</sup>PM-10 = particulate matter less than or equal to 10 um aerodynamic diameter. All particulate is assumed to be < or = 1 um in size.

<sup>\*\*</sup> VOC assumed to be equal to TOC.

**Cat generator Meets EPA Tier 3 specs below**

	3	g NOx/hp-hr	0.006614	lb/hp-hr
	0.15	g PM/hp-hr	0.000331	lb/hp-hr
	2.61	g CO/hp-hr	0.005754	lb/hp-hr

**CRITERIA EMISSIONS - LIQUEFIED PETROLEUM GAS COMBUSTION - Nunhems USA, Inc.**

**Emission Factors**

NOx	13.0 lb/10 <sup>3</sup> gal	AP-42, Table 1.5-1, EMISSION FACTORS FOR LPG COMBUSTION <sup>a</sup> , 1998
CO	7.5 lb/10 <sup>3</sup> gal	AP-42, Table 1.5-1, EMISSION FACTORS FOR LPG COMBUSTION <sup>a</sup> , 1998
CO <sub>2</sub> e	12,500 lb/10 <sup>3</sup> gal	AP-42, Table 1.5-1, EMISSION FACTORS FOR LPG COMBUSTION <sup>a</sup> , 1998
PM-Total	0.7 lb/10 <sup>3</sup> gal	AP-42, Table 1.5-1, EMISSION FACTORS FOR LPG COMBUSTION <sup>a</sup> , 1998
SOx <sup>b</sup>	1.5 lb/10 <sup>3</sup> gal	AP-42, Table 1.5-1, EMISSION FACTORS FOR LPG COMBUSTION <sup>a</sup> , 1998
VOC <sup>c</sup>	1.0 lb/10 <sup>3</sup> gal	AP-42, Table 1.5-1, EMISSION FACTORS FOR LPG COMBUSTION <sup>a</sup> , 1998
Lead		

Conversion Factor
91.5 x 10 <sup>6</sup> Btu/10 <sup>3</sup> gal
10000/915000000

<sup>a</sup> Assumes PM, CO, and TOC emissions are the same, on a heat input basis, as for natural gas combustion. Use heat contents of 91.5 x 10<sup>6</sup> Btu/10<sup>3</sup> gallon for propane, 102 x 106 Btu/103 gallon for butane, 1020 x 106 Btu/106 scf for methane when calculating an equivalent heat input basis. For example, the equation for converting from methane's emissions factors to propane's emissions factors is as follows: lb pollutant/103 gallons of propane = (lb pollutant /106 ft3 methane) \* (91.5 x 106 Btu/103 gallons of propane) / (1020 x 106 Btu/106 scf of methane). The NOx emission factors have been multiplied by a correction factor of 1.5, which is the approximate ratio of propane/butane NOx emissions to natural gas NOx emissions. To convert from lb/103 gal to kg/103 L, multiply by 0.12. SCC = Source Classification Code.

<sup>b</sup> The sulfur emission factor for propane is 0.10S, where S = sulfur fuel content in grains/100 ft<sup>3</sup>, assumed to be 15 (per the Gas Processors Association Engineering Data Book, standard for commercial grade propane).

<sup>c</sup> VOC assumed to be equal to TOC.

all lb/hr emission rates below are maximums

Description	Capacity (BTU/hr)/unit	Throughput (hours of operation/unit)	PM-Total*		PM-10 Emissions*		PM-2.5 Emissions*		NOx Emissions		CO Emissions		CO <sub>2</sub> e Emissions		SOx Emissions		VOC** Emissions	
			lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Two propane building heaters ("Q") for temperature and humidity control.	1,000,000	2,200	0.0153	0.0168	0.0153	0.0168	0.0153	0.0168	0.2842	0.3126	0.1639	0.1803	273.2	300.5	0.0328	0.0361	0.0219	0.0240
Ten blower fans on south side of building "Q"	Ambient Air																	
Eight fans off east side of building "G" for temperature and humidity control.	Ambient Air																	
Twenty-Nine Total fans (Nine off of the east side of each of the "D" buildings) for temperature and humidity control.	Ambient Air																	
Four building heaters south of building "L"	250,000	2,200	0.0038	0.0042	0.0038	0.0042	0.0038	0.0042	0.0710	0.0781	0.0410	0.0451	68.3	75.1	0.0082	0.0090	0.0055	0.0060
Two Enclosed Propane Seed Dryers within building "L."	1,000,000	4,800	0.0153	0.0367	0.0153	0.0367	0.0153	0.0367	0.2842	0.6820	0.1639	0.3934	273.2	655.7	0.0328	0.0787	0.0219	0.0525
Seed Dryer northwest of building "K."	2,500,000	1,440	0.0383	0.0275	0.0383	0.0275	0.0383	0.0275	0.7104	0.5115	0.4098	0.2951	683.1	491.8	0.0820	0.0590	0.0546	0.0393
<b>TOTAL=</b>			<b>0.0727</b>	<b>0.0853</b>	<b>0.0727</b>	<b>0.0853</b>	<b>0.0727</b>	<b>0.0853</b>	<b>1.3497</b>	<b>1.5842</b>	<b>0.7787</b>	<b>0.9139</b>	<b>1297.8</b>	<b>1523.2</b>	<b>0.1557</b>	<b>0.1828</b>	<b>0.1038</b>	<b>0.1219</b>

\*PM Total Emission factor given in AP 42; assume that PM<sub>10</sub> and PM<sub>2.5</sub> are the same as PM Total

\*\*VOC assumed to be equal to TOC.

# **APPENDIX F**

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## Modeling Analysis

Air Quality Modeling Report  
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**AMBIENT AIR QUALITY IMPACT ANALYSIS**

This section describes the modeling conducted to verify compliance with all applicable air quality impact limits to support the facility's air permit application.

**1 Model Description / Justification**

The model chosen is AERMOD, the EPA approved model recommended for this application by IDEQ. Building downwash was included to account for turbulence affecting stack emissions near the few buildings or solid structures at the site. AERMOD was applied consistent with recommendations by IDEQ and in EPA's *Guideline on Air Quality Models*, consistent with guidance in IDEQ's *Modeling Guidelines*, utilizing the recommended regulatory default options and simple and complex terrain calculation options except for the NO<sub>2</sub> impact analysis, where ozone limiting was used consistent with IDEQ's recommendation. The timing of this application, required to be submitted within 11 days of when IDEQ confirmed modeling was required, precluded a formal modeling protocol. Significant interaction with IDEQ modeling staff Cheryl Robinson and Kevin Schilling verified modeling methodology agreements used in this analysis

**2 Criteria Air Pollutants**

The inventory of Potential Emissions (in section 4, and in more detail in Appendix E) shows the only criteria pollutants to be potentially emitted above IDEQ modeling thresholds are PM<sub>10</sub> and NO<sub>x</sub>. Modeling analyses were performed for both those criteria pollutants to estimate maximum ambient air quality impacts during each averaging period for which an applicable ambient air quality impact limit exists. Chemical transformation of emissions was considered only for NO<sub>x</sub>, where the EPA PVMRM routine was used consistent with IDEQ recommendation, and with conservative regional ozone and NO<sub>2</sub> monitored data, to assess potential NO<sub>2</sub> impacts and maximum concentrations during operation. Plume depletion from deposition was not included in the model (though deposition plume depletion would potentially occur).

**3 Hazardous Air Pollutants**

Modeling analyses would have had to be performed for all TAP pollutants emitted above IDEQ emission thresholds. The Potential to Emit calculations in section 4 (and in more detail in Appendix E; All Area TAP Summary worksheet) document that no TAPs are potentially emitted at rates reaching IDEQ 585 or 586 TAP EL thresholds.

**4 Emission and Source Data**

Section 4 and Appendix E of this application document the potential emissions associated with the proposed action. The translation of those emissions into the model source data is described here.

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IDEQ modeling thresholds were exceeded for three criteria air pollutants: PM<sub>10</sub>, PM<sub>2.5</sub>, and NO<sub>2</sub>. Cumulative facility-wide emissions for all criteria and TAP pollutants are less than 5 tons per year. Modeled emissions include all sources in the emission inventory submitted with this application. Those sources were spatially distributed consistent with facility operations. The model emissions data is conservative in that it assumes continuous operations, 24 hours per day, every day of the year at maximum emission rates for all 15 baghouse sources and the smaller seed dryer. The two gas-fired space heaters and the larger seed dryer were modeled using the maximum hours per year in the emission inventory through model factors. The emergency generators were assumed to operate one hour per week for testing purposes, consistent with facility operations and the proposed permit. They are modeled as operating simultaneously to eliminate the need for any permit condition on the timing of their weekly testing. The generator model sources are conservative because they assume the generators to operate steadily at maximum capacity during the entire hour of testing, which is unlikely and inconsistent with facility practice.

Appendix E compares the facility's Potential To Emit (PTE) for all criteria pollutants and emitted hazardous air pollutants (HAPs) against IDEQ Modeling Thresholds. Those emission summaries are documented in more detail in the facility's emission inventory. The only pollutants potentially emitted at rates above IDEQ modeling threshold are PM10 and NOx.

The model source parameters for all emission sources modeled are documented in the tables below. There were a total of 24 model sources, 21 of them point sources, and three volume sources (emissions vented out the side of a building or in a building's immediate vicinity. The flay out of the facility and the model sources can be seen in Figure 1. The model sources were assumed to operate continuously at these emission rates for all modeled averaging periods (with the few exceptions noted above). The model emission sources, individually and cumulatively, match those documented in Appendix E of this application.

**Table 1  
AERMOD Model Source Data**

POINT SOURCES		Easting (X)	Northing (Y)	Base Elev	Stk Ht	Temp	Exit Vel	Stack Diam	NO2	PMTEN	PM2PT 5
Source ID	Source Description	(m)	(m)	(m)	(ft)	(°F)	(m/s)	(ft)	(lb/hr)	(lb/hr)	(lb/hr)
CUMGEN	Cummins generator	504002.5	4857986.4	695.1	15.0	140.0	10.19	1.33	23.35	1.55	1.55
MRBH1	Baghouse 1	504035.5	4857977.9	696.0	30.0	63.2	0.001	1.00		0.0055	0.0016
HERD1		504073.5	4857965.4	696.2	17.7	70.0	0.001	2.09		0.0099	0.0028
HERD2		504074.0	4857941.9	695.8	27.2	70.5	0.001	2.50		0.1155	0.0325
FARR4		504037.5	4857920.0	694.7	29.7	74.5	0.001	1.50		0.0658	0.0185
FARR3		504020.0	4857919.5	694.2	29.7	77.7	0.001	1.50		0.0549	0.0155
FARR2		504013.0	4857920.0	694.0	29.7	65.9	0.001	1.50		0.046	0.013
FARR1		504009.0	4857919.0	693.9	29.9	65.7	0.001	1.50		0.049	0.0138
DC1	Dust Collector 1	504095.0	4857938.9	695.7	28.8	73.1	0.001	4.26		0.1026	0.0289
DC2	Dust Collector 2	504093.5	4857926.0	695.4	29.2	83.9	0.001	4.26		0.1026	0.0289
DC3	Dust Collector 3	504094.5	4857910.5	694.7	29.0	73.2	0.001	4.26		0.1029	0.029
DC4	Dust Collector 4	504103.5	4857883.0	693.6	27.6	80.2	0.001	3.35		0.0376	0.0106

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DC5	Dust Collector 5	504108.9	4857883.0	693.6	27.4	76.5	0.001	3.24		0.0588	0.0166
DC6	Dust Collector 6	504114.4	4857882.5	693.6	31.0	74.3	0.001	4.26		0.0956	0.0269
DC7	Dust Collector 7	504125.4	4857883.5	693.7	27.5	76.7	0.001	1.69		0.02	0.0056
DC8	Dust Collector 8	504133.9	4857881.5	693.8	30.3	78.6	0.001	4.26		0.0735	0.0207
GENGEN	Generac emergency generator	503978.9	4857774.2	690.5	5.0	140.0	538.1	0.25	3.88	0.28	0.28
CATGEN	Emergency caterpillar generator	503754.9	4857790.3	691.9	11.0	140.0	69.9	0.50	2.63	0.88	0.88
FARR5		504083.9	4857841.4	692.4	21.5	75.4	0.001	1.50		0.0893	0.0251
DRYER1		503988.6	4857960.6	694.2	30.0	111.2	7.474	1.50	0.28	0.015	0.015

VOLUME SOURCES		Easting (X)	Northing (Y)	Base Elevation	Release Height	Horiz Dim	Vert Dim	NO2	PMTEN	PM2PT5
Source ID	Source Description	(m)	(m)	(m)	(ft)	(ft)	(ft)	(lb/hr)	(lb/hr)	(lb/hr)
DRYER2		504020.4	4857903.4	693.7	2.7	50.4	13.0	0.71	0.038	0.038
HEAT1	Space Heater(s)	504122.1	4857812.8	692.4	3.3	80.9	15.8	0.28	0.015	0.015
HEAT2	Space heaters	504026.2	4857919.4	694.4	3.0	50.4	12.1	0.07	0.004	0.004

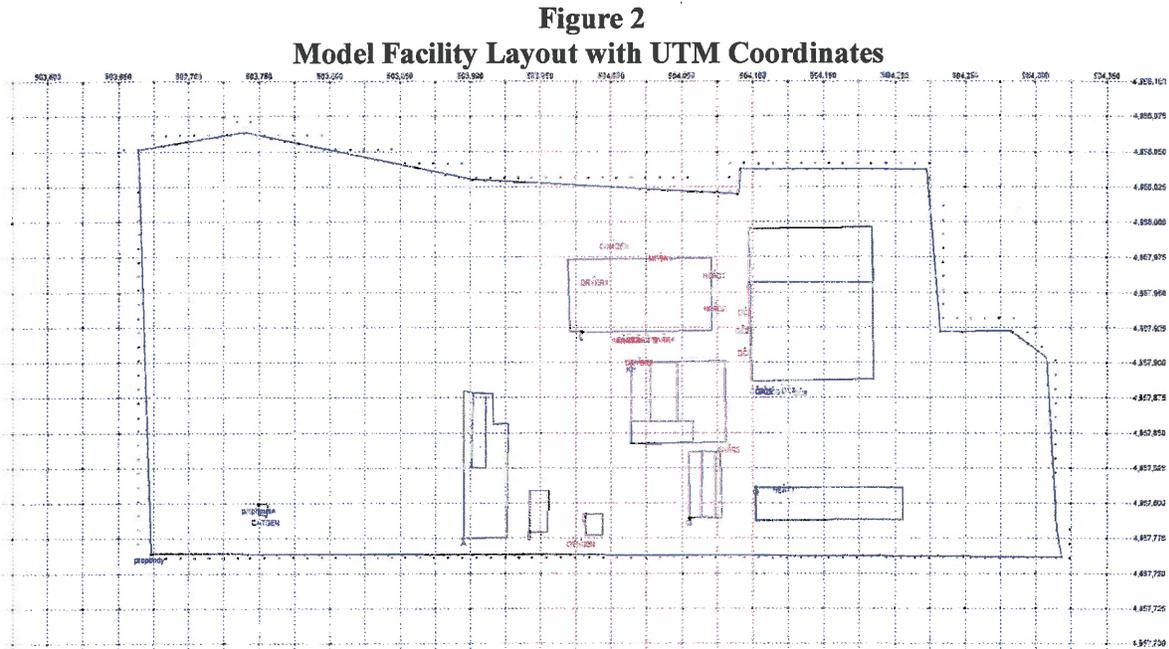
Figure 1 shows the facility layout in the model overlaid on a Google Earth picture to verify model gridding consistent with zone 12 NAD 83 UTM coordinates for the site and surrounding area. Red highlights identify model sources. Most of the baghouses are clustered between buildings L and P (the two large buildings in the north / northeast portion of the facility). Other sources include the three generators across the property (one north of bldg L, one in the far southwest, and one south central), two seed dryers, and two gas space heaters (3 of the 4 near the baghouses, HEAT1 on the inner side of the long skinny building in the southeast).

**Figure 1**  
**Model Facility Layout Overlaid on Google Earth Aerial Photo**



## Air Quality Modeling Report Nunhems Seed

Figure 2 shows the facility source layout without the Google earth figure. The surrounding solid black line shows the facility property/claim and public access boundary. The black dots along and beyond the boundary represent the innermost model receptors used in the analysis, and the dashed lines show the zone 11 NAD 83 UTM coordinates.

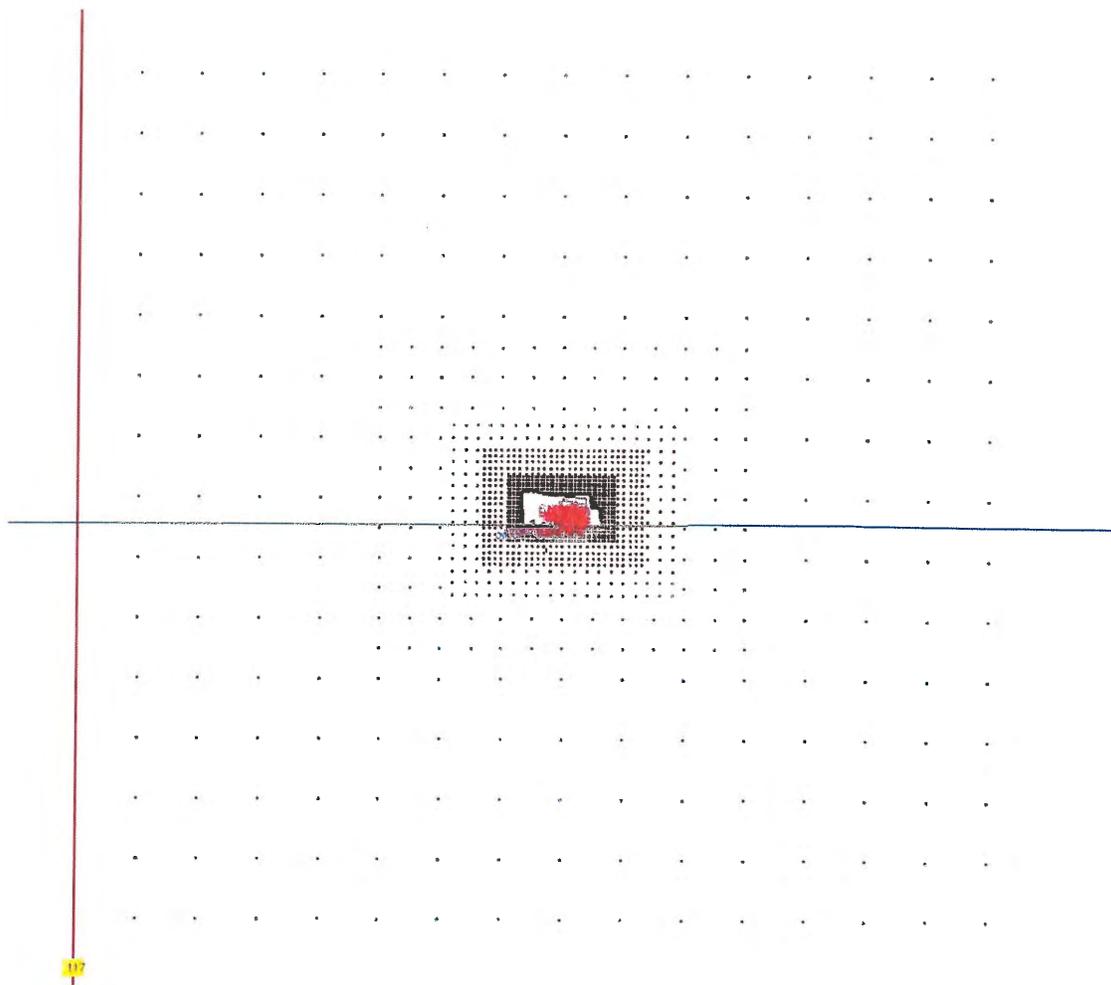


### 5 Receptor Network

The ambient air boundary used in this analysis is the property line, which is nearby and visible from most points on the facility and serves as the public access boundary. Staff is trained to notice and discourage unauthorized access. The facility has security guards onsite when the facility is not operating. The facility security guards and staff have the authority to discourage public access, and do so. The model receptor network included 10 meter receptor grid spacing along the property boundary and out for the first 10 meters. Then, a 25 meter grid density is used out to at least 100 meters, 50 meter grid spacing out to at least 300 meters, 100 meter grid spacing out to at least 500 meters, and 250 meter grid spacing out to at least 1 kilometer, and 500 meter grid spacing out to 3 kilometers. The vast majority of all emissions modeled were affected by building downwash, and/or came from non-vertical stacks without momentum plume rise. All model predicted maximum impacts from facility operations occurred at or very near the facility property boundary in areas of 10 to 25 meter grid spacing. Figure 3 shows all model sources, the entire model receptor network, and the USGS quad maps covering the proposed action and the receptor network (Nyssa to the north, and Parma to the south).

**Figure 3**  
**Outer Receptor Network and Modeled Facilities**

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No refinement of the initial receptor network was necessary for finer resolution analyses because initial modeling runs all showed maximum predicted facility ambient impacts on the property boundary, in 10 to 25 meter grid spacing. That grid resolution exceeds IDEQ requirements for receptor density, and maximum impacts drop off quickly and consistently from the ambient air boundaries consistent with the fugitive nature of emissions.

### **6 Elevation Data**

All building base, source base and receptor elevations used in this modeling analysis are calculated from USGS NAD 83 one arc-second NED data using the Bee-Line BEEST preprocessing system and the AERMAP program. Documentation for the AERMAP run is included with the electronic files accompanying this submittal. The area in and around the site is relatively flat, with gradual elevation changes. Buildings heights and stack parameters were verified onsite by facility staff during preparation of this modeling and air permit analysis.

### **7 Meteorological Data**

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Five years of recent Boise airport meteorological data were recommended by IDEQ as the most representative data available. Annual meteorological data files covering the years from 2005 to 2009 were provided by IDEQ and used for this analysis.

### **8 Land use Classification**

AERMOD includes options to include urban areas in the modeling domain. The proposed action is located in a low lying rural agricultural area with only smaller communities or cities in the vicinity. IDEQ indicated during modeling protocol discussions that "Land use surrounding the facility is predominantly agricultural, and there are no other sources that need to be modeled as co-contributing sources." Few tall buildings or man-made structures exist that would channel winds. Site and map reconnaissance showed that there wasn't any area in the model domain justifying the use of a model urban area. Rural dispersion coefficients were therefore used in the air quality dispersion modeling.

### **9 Background Concentrations**

Background 24 hour average  $PM_{10}$  and  $PM_{2.5}$  background concentrations provided by IDEQ and recommended as the most representative were used. Specifically, IDEQ indicated "The area is in attainment or unclassifiable for all pollutants and averaging times. Recommended background values for full-impact analyses are  $PM_{10}$  24 hour average  $73 \text{ ug/m}^3$  (default rural / agricultural),  $PM_{2.5}$   $19.3 \text{ ug/m}^3$  24 hour average (98<sup>th</sup> percentile from monitoring in Meridian 2008 – 2010) and annual average  $6.3 \text{ ug/m}^3$ , the annual average monitored in Meridian over that same period."

For the NO<sub>2</sub> impact analysis, the AERMOD ozone limiting method PVMRM was used in AERMOD consistent with IDEQ guidance. IDEQ provided hourly data files for ozone (from Parma) and NO<sub>2</sub> (from Meridian) recommended for use in this analysis. Those files were used in the PVMRM analysis.

### **10 Evaluation of Compliance with Standards**

Model predicted maximum annual average  $PM_{2.5}$  impacts reported in Table 2 are the highest annual impact predicted at any site in any year. They are especially conservative because they assume maximum hourly emissions from all baghouses year-round. The compliance demonstration for 24 hour average  $PM_{10}$  impacts uses the sixth highest model predicted impact over five years as the Maximum Modeled Impact, while the  $PM_{2.5}$  24 hour average results reported are the first maximum over five years. For the 1 hour average NO<sub>2</sub> NAAQS compliance demonstration, the Modeled Maximum Impact is the 8<sup>th</sup> highest 1 hour average for the year output by the PVMRM algorithm consistent with the NAAQS NO<sub>2</sub> standard. PVMRM results include background NO<sub>2</sub> concentrations.

Predicted total concentrations presented are model predicted maximum ambient impacts during facility operation plus background concentrations. The impact limit standards applicable to this facility are the National Ambient Air Quality Standards (NAAQS) for criteria pollutants. Maximum predicted impacts occur near or on the property boundary, and drop off promptly beyond.

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**Table 2**  
**Background Concentrations, Ambient Impact Limits,**  
**And Comparison with Ambient Air Quality Standards**

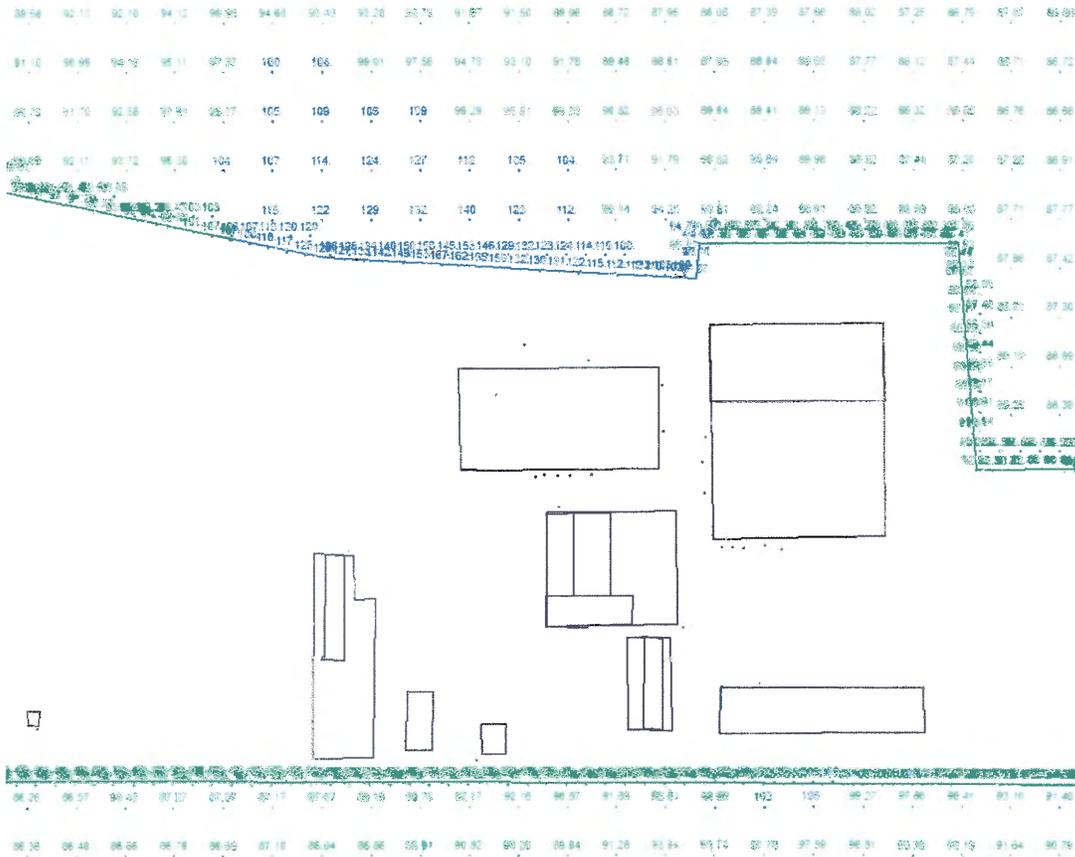
Pollutant	Averaging Period	Background Concentration ( $\mu\text{g}/\text{m}^3$ )	Maximum Modeled Impact ( $\mu\text{g}/\text{m}^3$ )	Model Predicted Maximum Total Concentration ( $\mu\text{g}/\text{m}^3$ )	NAAQS ( $\mu\text{g}/\text{m}^3$ )	Location of Predicted Maximum Impact
PM <sub>2.5</sub>	Annual	6.3	1.75	8.1	15	On N property boundary
	24 hour	19.3	9.3	28.6	35	On N property boundary
PM <sub>10</sub>	24 hour	73	25.1	98.1	150	On N property boundary
NO <sub>2</sub>	1 hour	Included in PVMRM predicted impacts	167.4	167.4	188.7	On N property boundary
	Annual	From IDEQ provided 2 <sup>nd</sup> max hourly	1.12	54.75	100	On N property boundary

Table 2 shows that all particulate impacts modeled represent less than 30% of the applicable NAAQS ambient impact standard, and that predicted total concentrations represent less than 82% of the applicable NAAQS standard. Predicted 1 hour average NO<sub>2</sub> concentrations with maximum facility operation are predicted to be less than 89% of the applicable NAAQS standard.

Figure 4 shows the maximum predicted 1 hour average NO<sub>2</sub> impacts from the five year model PVMRM run. The color coded contours show the maximum predicted impacts in red on the north property boundary, in 10 meter grid spacing. Model predicted maximum impacts drop off quickly moving away from the property boundary. Blue indicates the only receptors predicted to have maximum NO<sub>2</sub> concentrations over 100  $\mu\text{g}/\text{m}^3$ , including background conservatively estimated from 2<sup>nd</sup> maximum readings in Meridian. All receptors in the entire receptor network with predicted maximum concentrations over 100  $\mu\text{g}/\text{m}^3$  are shown.

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**Figure 4 Maximum Predicted Potential 1-hour NO<sub>2</sub> Concentrations**



### 6.11 Electronic Copies of the Modeling Files

Electronic copies of all input, output, and support modeling files necessary to duplicate the model results will be provided. Those files include:

- Spreadsheets documenting the emission profile, the derivation of the road source and pit model source data,
- Figures showing mapping at the facility, its layout and property boundary on a Google Earth pictures, and other facility information
- AERMAP data and model runs
  - AERMOD BEEST, input, and output files sufficient to duplicate the analyses described her, labeled by year (from 2005 to 2009) and PM10 averaging period