Matthews
INDUSTRIES
A Leading Contract Manufacturer
Since 1949
23 2nd Street, S.W. ▪ Decatur, AL 35601
Phone: (256) 353-0271 ▪ Fax: (256) 353-3850

January 14, 2009

Mr. Michael Hom
U.S. Environmental Protection Agency
Clean Water Enforcement Branch
61 Forsyth Street, S.W.
Atlanta, Georgia 30303-8960

RE: Information Request – Section 308 of the Clean Water Act
Discharge of Perfluorinated Compounds

Dear Mr. Hom:

The following numbered comments are being provided in response to the correspondingly numbered information requests set forth in ENCLOSURE A of U.S. EPA's December 16, 2008, letter from Mr. Douglas F. Mundrick. **A copy of that ENCLOSURE A is attached for your reference:**

1. Matthews Industries, Inc. (U.S. EPA ID Number ALD981758188) does contract stamping and manufacturing of parts and assemblies made of sheet metal.

2. NAICS codes are 333415, 332322, 332999, and 333414.

3. None.

4. See attached Material Safety Data Sheets for steel, paint, adhesive, and insulation.

5. No.

6. No.

7. Following are descriptions of processes at this facility which produce regulated wastes:

   A. Almco chemical tumbling/deburring operation of sheet metal parts produces Matthews' hazardous waste profile 44410. See attached sheet which shows profile 44410 labels. See comment 8 for disposal information.

B. A 5 stage pre-paint wash/rinse operation is performed to clean sheet metal parts in preparation for painting. Used wash/rinse water is processed through Matthews' wastewater treatment system before being discharged into city of Decatur, Alabama Publicly-owned treatment works. See comment 9 for wastewater treatment information.

C. Painting operations produces Matthews' hazardous waste profile 1184. See attached sheet which shows profile 1184 labels. See comment 8 for disposal information.

D. Clean-up of spray guns and paint lines produces Matthews' hazardous waste profile 12664. See attached sheet which shows profile 12664 labels. See comment 8 for disposal information.

8. This facility is classified as a small quantity generator by U.S. EPA so wastes identified as profiles 44410, 1184, and 12664 are stored on-site in labeled 55-gallon drums for no more than 180 days before being transported off-site by a U.S. EPA registered transporter for final disposal at a U.S. EPA registered designated facility. To verify proper receipt and disposal of the waste, the designated disposal facility must send Matthews a Certificate of Compliance and Disposal along with a completed copy of the waste manifest which accompanies each shipment of waste. Matthews uses Action resources (U.S. EPA ID Number ALR000007237) to transport waste to Giant Resource Recovery – Attalla, Inc. (U.S. EPA ID Number ALD070513767) located in Attalla, Alabama for disposal.

   Also, used oil from facility equipment is stored on-site until picked up and transported for recycling by Decatur recyclers, Inc. (U.S. EPA ID Number ALR000009134) located in Decatur, Alabama. This used oil contains no hazardous waste nor any detectable levels of PCB's.

9. After use, water from Matthews' 5 stage pre-paint wash/rinse operation is piped to and processed through Matthews' wastewater treatment system before being discharged into city of Decatur, Alabama Publicly-owned treatment works. During October 2007, Matthews switched its pre-paint wash/rinse operation from a 5 stage zinc phosphate pre-treatment coating system to a 5 stage reduced-phosphate pre-treatment coating system.

   Prior to October 2007, the following chemicals were used in the 5 stage zinc prosphate pre-treatment coating system. Material Safety Data Sheets are attached:
   Stage 1 wash with Houghton Houghto-Clean 5621 and city water.
   Stage 2 rinse with city water.
   Stage 3 coat with Houghton Houghto-Phos 5542 and city water.
   Stage 4 rinse with city water.
   Stage 5 rinse & seal with city water and Houghton Houghto-Rinse 5907.

From October 2007 thru September 2008, the following chemicals were used in the 5 stage reduced-phosphate pre-treatment coating system. Material Safety Data Sheets are attached:
State 1 wash with Houghton Houghto-Clean Z and city water.
Stage 2 rinse with city water.
Stage 3 coat with Houghton Houghto-Prep ZP SL and city water.
Stage 4 rinse with city water.
Stage 5 rinse & seal with city water and Houghton Houghto-Seal ZG.

From September 2008 thru present, the following chemicals are being used in the 5 stage reduced-phosphate pre-treatment coating system. Material Safety Data Sheets are attached:
Stage 1 wash with Challenge HW-1219 and city water.
Stage 2 rinse with city water.
Stage 3 coat with Challenge Blackfast 971T & Blackfast 975 and city water.
Stage 4 rinse with city water.
Stage 5 rinse with city water.

Matthews' wastewater treatment process consists of neutralization and precipitation, followed by clarification and flocculation before the treated water (effluent) is discharged through a flume into Decatur, Alabama Publicly-Owned Treatment Works (POTW). Sludge created during the flocculation process is directed to a JWI Filter Press where it is dewatered and packed for transport to landfill. The following chemicals are used by Matthews during the wastewater treatment process. Material Safety Data Sheets are attached:
Soda Ash to regulate pH of water.
Lime Type N to regulate pH of water.
Ferric Chloride to regulate pH of water.
Polymer to create sludge for separation from effluent.

10. None.

11. See attached copy of SID permit IU-08-52-00222. This permit has been in effect pre-1996 through present.

12. No.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Randy McNutt

Randy McNutt
Operations Manager
Matthews Industries, Inc.

RM/ccw
Attachments

ENCLOSURE A

For purposes of this Clean Water Act Section 308 Information Request, the term "perfluorinated compounds (PFCs)" shall mean fluorinated or perfluorinated chemicals including, but not limited to, fluoropolymers or fluoropolymer dispersions and any of the following compounds with perfluorochain lengths between 4 and 16 carbons: carboxylates (such as perfluorooctanic acid (PFOA)), amines, ethers, iodides, phosphonic/phosphinic compounds, alcohols, esters, phosphates, sulfonates (such as perfluorooctyl sulfonate (PFOS)), siloxanes, thioethers, urethanes, and acrylates.

1. Provide a narrative description of the products manufactured or services provided by the Company's primary and secondary business at its Decatur, Alabama location for each calendar year beginning with calendar year 1996 to the present.

2. Provide the Standard Industrial Classification and North American Industry Classification System codes for the Company's business(es) at its Decatur, Alabama location for each calendar year beginning with calendar year 1996 to the present.

3. Provide a list and a general estimate of the amounts of raw and finished materials that may have contained PFCs which were used in the Company's operations to manufacture products or provide services at its Decatur, Alabama location for each calendar year beginning with calendar year 1996 to the present.

4. Provide a copy of the Material Safety Data Sheets for the raw materials used in the Company's operations to manufacture products or provide services at its Decatur, Alabama location for each calendar year beginning with calendar year 1996 to the present.

5. Has the Company ever used PFCs in its operations to manufacture products or provide services at its Decatur, Alabama location? If so, provide the name of the PFC and a general estimate of the amounts used for each calendar year beginning with calendar year 1996 to the present.

6. Has the Company ever used telomers or fluoropolymers in its operations to manufacture products or provide services at its Decatur, Alabama location? If so, provide the name of the telemoer or fluoropolymer and a general estimate of the amounts used for each calendar year beginning with calendar year 1996 to the present.

7. Provide a narrative description of the byproducts, waste streams and emissions from the Company's operations to manufacture products or provide services at its Decatur, Alabama location for each calendar year from calendar year 1996 to the present.

8. Provide a narrative description of the disposal methods and disposal locations of the byproducts, waste streams and emissions from the Company's operations to manufacture products or provide services at its Decatur, Alabama location for each calendar year from calendar year 1996 to the present.

9. Provide a narrative description of any pollution abatement equipment and/or pretreatment process that has been applied to the byproducts and waste streams from the Company's operations to manufacture products or provide services at its Decatur, Alabama location prior to their discharge into the Decatur Utilities sewer system for each calendar year beginning with calendar year 1996 to the present.

10. Provide any analytical data or monitoring results indicating the presence of PFCs or fluoride in the byproducts and waste streams from the Company's operations to manufacture products or provide services at its Decatur, Alabama location that were discharged into the Decatur Utilities sewer system for each calendar year beginning with calendar year 1996 to the present.

11. Provide a copy of any permit, contract or agreement that the Company may have or have had relating to the discharge of byproducts and waste streams into the Decatur Utilities sewer system (include with this information copies of any permit applications) for each calendar year beginning with calendar year 1996 to the present.

12. Has the Company performed any monitoring or sampling of ambient air, surface water, groundwater or soil for PFCs at and around the Company's Decatur, Alabama location? If so, provide the resulting analytical data or monitoring results.

January 1, 2009

RYERSON

2621 West 15th Place
Chicago, Illinois 60608

Types
Cold Rolled
Hot Rolled
Galvanized
Aluminized

Attention: Hazard Communication Coordinator

Ryerson Customer:

Enclosed are the most recent Material Safety Data Sheets (MSDS) for the products we distribute. The information contained in the MSDS and their distribution to you are the principal means of achieving an effective Hazard Communication Program and satisfying the "Right-to-Know" laws.

The enclosed MSDS reflects the result of the hazard evaluation process and should be utilized for health and safety training or compliance with "Right-to-Know" laws, not for specification purposes. You will find wording enclosed for satisfying labeling requirements.

Section 313 of the Emergency Planning and Community Right-to-Know and 40 CFR Part 372 require us to inform you that a product or products you purchase from us may contain one or more regulated chemicals. This information may be important to you if under the Act you are required to estimate emission releases of applicable regulated chemicals. If you are unsure that you must report or require further information, call the U.S. EPA Emergency Planning and Community Right-to-Know hotline at (800) 424-9346 or (703) 412-9810 in Washington D.C.

Please note that this notice must accompany the MSDS and if you repackage or otherwise redistribute this product to other industrial customers, a notice similar to this one must be forwarded to those customers.

Ryerson Safety Committee

Section 3 - Physical Data

Material Is (normal conditions):	Solid	**Appearance and Color:**	Gray-Metallic, Odorless
Melting Point (Base Metal) :	~2800 F	**Vapor Pressure (mm Hg):**	N/A
Boiling Point (Base Metal):	N/A	**Vapor Density (Air =1):**	N/A
Solubility in Water:	N/A	**Evaporation Rate:**	N/A
Specific Gravity (H_2O=1):	~7.6-7.8		

Section 4 - Fire and Explosion Hazard Data

Note: Products in the solid state present no fire or explosion hazard. Small chips, fines and dust may ignite readily.

Flash Point: N/A **Flammable Limits:** N/A **LEL:** N/A **UEL:** N/A

Extinguishing Media:
Dry powdered dolomite, dry sand or dry graphite; DO NOT USE water on molten metal.

Special Fire Fighting Procedures:
Use self-contained NIOSH breathing apparatus in pressure and demand mode.

Unusual Fire and Explosion Hazards:
DO NOT USE water on molten metal. Use coarse water spray on chips, turnings, etc. DO NOT USE halogenated extinguishing agents on small chips or fines.

Additional Information:
Arc or spark generated when welding or burning could be a source of ignition for combustion and flammable materials. Dust clouds may be explosive; prevent formation. Molten aluminum may also react violently with rust and certain metal oxides (i.e. Cu, Fe, Pb).

Section 5 - Reactivity Data

Stability: Stable

Conditions to Avoid: Make certain any material to be re-melted is free of moisture.

Incompatibility (*Materials to Avoid*):
Halogenated acids & solvents, bromates, iodates, aluminum nitrate.

Hazardous Decomposition or Byproducts:
Metallic dust or fumes may be produced during welding, burning, grinding and possibly machining. Refer to ANSI Z49.1.

Hazardous Polymerization:
Will not Occur

Conditions to Avoid:
Aluminum particles coming into contact with copper, lead or iron oxides can react vigorously if source of ignition or intense heat.

Section 6 - Health Hazard Data

Note: Products in their usual physical form do not pose any health hazards. However, operations such as burning, welding, sawing, brazing, or grinding may result in the following effects if exposures exceed permissible limits.

Route(s) of Entry: **Inhalation:** Yes **Skin Contact:** Yes **Eye Contact:** Yes **Ingestion:** No

Health Hazards:

Acute: Excess exposure to all metallic fumes and dusts may result in irritation of eyes nose and throat. Also high concentrations of fumes and dusts of iron oxide, manganese and copper may result in metal fume fever.

Chronic: Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the element:

Aluminum May initiate fibrotic changes to lung tissue, irritation of the eyes, nose and throat. Particles Al deposited in the eye may cause irreversible tissue damage of the cornea. Al salts may cause dermatitis, eczema, conjunctivitis and irritation of the mucus membranes of the upper respiratory tract. Long-term inhalation exposure to **Al dusts or fumes** has been associated with a fibrotic lung condition known as Shaver's disease. **Al dust/fines and fumes** are a low health risk by inhalation. For standard operations (milling, cutting, grinding), aluminum dust should be treated as a nuisance dust as defined by the ACGIH. Welding aluminum, plasma arc cutting, and arc spray metalizing can generate ozone. Excessive exposure to aluminum fume and dust has been associated with lung disease, but this effect is probably due to simultaneous silica exposure.
Carcinogenicity: N/A **NTP? No** **IARC? A4*** **OSHA Regulated? No**
*(for aluminum oxide)

Carbon Elemental carbon, as it exists in this product, is of very low toxicity; no chronic debilitating symptoms indicated. Health hazard data presented here is based on exposures to carbon black, not carbon as it is found in this product. Chronic inhalation exposure to **carbon black** may result in temporary or permanent damage to lungs and heart. Pneumoconiosis has been found in workers engaged in the production of carbon black. Skin conditions such as inflammation of the hair follicles, and oral mucosal lesions have also been reported from skin exposure.
Carcinogenicity: N/A **NTP? No** **IARC? A4*** **OSHA Regulated? No**
*(for carbon black)

Chromium The health hazards associated with exposure to chromium are dependant on its oxidation state. The metal form Chromium is of low toxicity. Hexavalent and some trivalent forms can be toxic. **Cr fumes and dusts** can cause sensitization dermatitis, inflammation and/or ulceration of upper respiratory tract, lesions of the skin and mucus membranes, and possibly cancer of the nasal passages or lungs-bronchogenic carcinoma.
Carcinogenicity: N/A **NTP? No** **IARC? A4** **OSHA Regulated? No**

Hexavalent Chromium Chrome VI can cause asthma, kidney damage, primary irritant dermatitis, sensitization dermatitis, skin ulceration, and pulmonary edema (fluid in the lungs). Chronic inhalation or overexposure has been associated with lung, nasal, and

Nickel Skin contact with nickel and its compounds may cause allergic dermatitis. The resulting skin rash is often referred to as "nickel itch," which usually occurs when the skin is moist. Ni metal is listed as a possibly carcinogenic to humans by IARC. **Ni fumes and dusts** can cause skin sensitization and allergic contact dermatitis. Ni and its compounds may also produce eye irritation, particularly on the inner surfaces of the eyelids (i.e. the conjunctiva).Chronic inhalation of high levels of Ni can cause irritation of airways and lungs, lung fibrosis (scarring of the lungs), nasal septum perforation, nasal sinusitis, respiratory sensitization and asthma. Ni compounds have caused cancer of the lungs, larynx, and paranasal sinuses in lab animals

Carcinogenicity: Yes NTP? 2 IARC? No* OSHA Regulated? No

*(ACGIH has published notice of intended change to A4 for soluble and A1 for insoluble compounds)

Nitrogen Oxides of nitrogen can cause irritation of the eyes, skin (when moist), and upper respiratory tract. Exposure to high levels of nitrogen oxides can cause delayed pulmonary edema (fluid in the lungs) which may be fatal. Nitric oxide can cause formation of methemoglobin which decreases the blood's ability to carry oxygen. Chronic overexposure can cause pulmonary fibrosis (scarring of the lungs).

Carcinogenicity: N/A NTP? No IARC? No OSHA Regulated? No

Oil coating Some products are supplied with an oil coating or have residual oil from the manufacturing process. Prolonged or repeated skin contact with oil may result in skin irritation, dermatitis, or both. Untreated mildly refined mineral oils have produced skin tumors on repeated applications to laboratory animals. They are listed as carcinogenic on the NTP and IARC. If the product is heated well above the ambient temperatures or machined, **oil vapor or mist** may be generated. Overexposure to oil mist or vapor may cause asthma, bronchitis, respiratory tract irritation and neurological effects such as headaches, dizziness, drowsiness and central nervous system depression.

Carcinogenicity: N/A NTP? No IARC? No* OSHA Regulated? No

*(ACGIH has published notice of intended change to A1 for oils containing a total of 15 polynuclear aromatic hydrocarbons (PAH's) listed as carcinogens by the U.S. NTP)

Oxygen Oxygen can cause irritation of the eyes, skin (when moist), and upper respiratory tract. Exposure to high levels of nitrogen oxides can cause delayed pulmonary edema (fluid in the lungs) which may be fatal. Nitric oxide can cause formation of methemoglobin which decreases the blood's ability to carry oxygen. Chronic overexposure can cause pulmonary fibrosis (scarring of the lungs).

Carcinogenicity: N/A NTP? No IARC? No OSHA Regulated? No

Ozone Overexposure to ozone can result in mucus membrane and respiratory tract irritation. Severe overexposures can cause pulmonary edema (fluid in the lungs).

Carcinogenicity: N/A NTP? No IARC? No OSHA Regulated? No

Silicon No chronic debilitating symptoms indicated. Chronic exposure to **inert dusts of silicon** can cause increased airways resistance and contribute to chronic bronchitis. Accumulation in lungs may be responsible for benign pneumoniosis, but is not considered to be responsible for pulmonary functional impairment or respiratory symptoms. Intracheal administration of silicon in rabbits produced significant pulmonary lesions.

Carcinogenicity: N/A NTP? No IARC? No OSHA Regulated? No

Vanadium V compounds (especially vanadium pentoxide) are irritants to the eyes, respiratory tract, and to a less frequent extent, the skin. Eye symptoms may include excessive tearing and a burning sensation. Skin rashes, which may be allergic in nature, resemble eczema and may itch intensely. Excessive inhalation exposures even after brief periods may result in inflammation of the nasal passages, sore throat, cough, tracheitis, bronchitis, wheezing and chest pain. Chronic and prolonged inhalation of high concentrations of **fumes or dust** may lead to emphysema or pneumonia. *(for vandium pentoxide)

Carcinogenicity: N/A NTP? No IARC? A4* OSHA Regulated? No

Welding fumes - Welding fumes cannot be classified simply. The composition and quantity of both are dependent on the alloy being welded and the process and electrodes used. Reliable analysis of fumes cannot be made without considering the nature of the welding process and system being examined; reactive metals and alloys such as aluminum and titanium are arc-welded in a protective, inert atmosphere such as argon. These arcs create relatively little fume, but they do create an intense radiation which can produce ozone. Similar processes are used to arc-weld steels, also creating a relatively low level of fumes. Ferrous alloys also are arc-welded in oxidizing environments that generate considerable fume and can produce carbon monoxide instead of ozone. Such fumes generally are composed of discrete particles of amorphous slags containing iron, manganese, silicon, and other metallic constituents depending on the alloy system involved. Chromium and nickel compounds are found in fumes when stainless steels are arc-welded. Some coated and flux-cored electrodes are formulated with flourides and the fumes associated with them can contain significantly more flourides than oxides. Because of the above factors, arc-welding fumes frequently must be tested for individual constituents that are likely to be present to determine whether specific TLV's are exceeded. Conclusions based on inhalable concentration are generally adequate if no toxic elements are present in welding rod, metal, or metal coating and conditions are not conducive to the formation of toxic gases. Are listed as possibly carcinogenic to humans by IARC.

Carcinogenicity: See above NTP? No IARC? No OSHA Regulated? No

Disclaimer
The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express or implied regarding the accuracy or correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This document has been prepared solely for the intent of compliance with the provisions of Subpart 2 of Part 1910 of title 29 of the Code of Federal Regulations, paragraph 1910.1200.
Footnotes: (1) Common names if applicable, appear in parentheses following the chemical names. (2) Concentrations may vary somewhat between batches or lots. Where possible, a concentration range is indicated. Occasionally, however, levels may even fall outside of the usual concentration ranges. (3) All values, unless otherwise specified, refer to 8-hour time-weighted average concentrations and units are in mg/M3.

January 1, 2009

RYERSON

2621 West 15th Place
Chicago, Illinois 60608

Types
Stainless Steels

Attention: Hazard Communication Coordinator

Ryerson Customer:

Enclosed are the most recent Material Safety Data Sheets (MSDS) for the products we distribute. The information contained in the MSDS and their distribution to you are the principal means of achieving an effective Hazard Communication Program and satisfying the "Right-to-Know" laws.

The enclosed MSDS reflects the result of the hazard evaluation process and should be utilized for health and safety training or compliance with "Right-to-Know" laws, not for specification purposes. You will find wording enclosed for satisfying labeling requirements.

Section 313 of the Emergency Planning and Community Right-to-Know and 40 CFR Part 372 require us to inform you that a product or products you purchase from us may contain one or more regulated chemicals. This information may be important to you if under the Act you are required to estimate emission releases of applicable regulated chemicals. If you are unsure that you must report or require further information, call the U.S. EPA Emergency Planning and Community Right-to-Know hotline at (800) 424-9346 or (703) 412-9810 in Washington D.C.

Please note that this notice must accompany the MSDS and if you repackage or otherwise redistribute this product to other industrial customers, a notice similar to this one must be forwarded to those customers.

Ryerson Safety Committee

Section 3 - Physical Data

Material Is (normal conditions):	Solid	**Appearance and Color:**	Silver-Metallic, Odorless
Melting Point (Base Metal) :	2400-2800 F	**Vapor Pressure (mm Hg):**	N/A
Boiling Point (Base Metal):	N/A	**Vapor Density (Air =1):**	N/A
Solubility in Water:	N/A	**Evaporation Rate:**	N/A
Specific Gravity (H_2O=1):	~8		

Section 4 - Fire and Explosion Hazard Data

Note: Products in the solid state present no fire or explosion hazard. Small chips, fines and dust may ignite readily.

Flash Point: N/A **Flammable Limits:** N/A **LEL:** N/A **UEL:** N/A

Extinguishing Media:
Dry powdered dolomite, dry sand or dry graphite; DO NOT USE water on molten metal.

Special Fire Fighting Procedures:
Use self-contained NIOSH breathing apparatus in pressure and demand mode.

Unusual Fire and Explosion Hazards:
DO NOT USE water on molten metal. Use coarse water spray on chips, turnings, etc. DO NOT USE halogenated extinguishing agents on small chips or fines.

Additional Information:
Arc or spark generated when welding or burning could be a source of ignition for combustion and flammable materials. Dust clouds may be explosive; prevent formation. Molten aluminum may also react violently with rust and certain metal oxides (i.e. Cu, Fe, Pb).

Section 5 - Reactivity Data

Stability: Stable **Conditions to Avoid:** Make certain any material to be re-melted is free of moisture.

Incompatibility (*Materials to Avoid*):
Halogenated acids & solvents, bromates, iodates, aluminum nitrate.

Hazardous Decomposition or Byproducts:
Metallic dust or fumes may be produced during welding, burning, grinding and possibly machining. Refer to ANSI Z49.1.

Hazardous Polymerization:
Will not Occur

Conditions to Avoid:
Aluminum particles coming into contact with copper, lead or iron oxides can react vigorously if source of ignition or intense heat.

Section 6 - Health Hazard Data

Note: Products in their usual physical form do not pose any health hazards. However, operations such as burning, welding, sawing, brazing, or grinding may result in the following effects if exposures exceed permissible limits.

Route(s) of Entry: **Inhalation:** Yes **Skin Contact:** Yes **Eye Contact:** Yes **Ingestion:** No

Health Hazards:

Acute: Excess exposure to all metallic fumes and dusts may result in irritation of eyes nose and throat. Also high concentrations of fumes and dusts of iron-oxide, manganese and copper may result in metal fume fever.

Chronic: Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the element:

Aluminum May initiate fibrotic changes to lung tissue, irritation of the eyes, nose and throat. Particles Al deposited in the eye may cause irreversible tissue damage of the cornea. Al salts may cause dermatitis, eczema, conjunctivitis and irritation of the mucus membranes of the upper respiratory tract. Long-term inhalation exposure to **Al dusts or fumes** has been associated with a fibrotic lung condition known as Shaver's disease. **Al dust/fines and fumes** are a low health risk by inhalation. For standard operations (milling, cutting, grinding), aluminum dust should be treated as a nuisance dust as defined by the ACGIH. Welding aluminum, plasma arc cutting, and arc spray metalizing can generate ozone. Excessive exposure to aluminum fume and dust has been associated with lung disease, but this effect is probably due to simultaneous silica exposure.
Carcinogenicity: N/A **NTP? No** **IARC? A4*** **OSHA Regulated? No**
*(for aluminum oxide)

Carbon Elemental carbon, as it exists in this product, is of very low toxicity; no chronic debilitating symptoms indicated. Health hazard data presented here is based on exposures to carbon black, not carbon as it is found in this product. Chronic inhalation exposure to **carbon black** may result in temporary or permanent damage to lungs and heart. Pneumoconiosis has been found in workers engaged in the production of carbon black. Skin conditions such as inflammation of the hair follicles, and oral mucosal lesions have also been reported from skin exposure.
Carcinogenicity: N/A **NTP? No** **IARC? A4*** **OSHA Regulated? No**
*(for carbon black)

Chromium **Cr fumes and dusts** can cause sensitization dermatitis, inflammation and/or ulceration of upper respiratory tract, lesions of the skin and mucus membranes, and possibly cancer of the nasal passages or lungs-bronchogenic carcinoma.
Carcinogenicity: N/A **NTP? No** **IARC? A4** **OSHA Regulated? No**

Molybdenum **Dust of metallic Mo** has caused difficulty breathing, general weakness, pain in chest, joints, hands and feet, expectoration, fatigue, headache, anorexia, possible liver and kidney damage and bone deformity. Mo has caused anemia and poor growth in experimental animals. Mo may also cause pneumoconiosis and irritation to lungs and eyes. In rats, dusts of metallic Mo have caused growth depression and thickening of intraalveolar septa, which contained connective tissue fibers.
Carcinogenicity: N/A **NTP? No** **IARC? No** **OSHA Regulated? No**

Nickel Skin contact with nickel and its compounds may cause allergic dermatitis. The resulting skin rash is often referred to as "nickel itch," which usually occurs when the skin is moist. Ni metal is listed as a possibly carcinogenic to humans by IARC. **Ni fumes and dusts** can cause skin sensitization and allergic contact dermatitis. Ni and its compounds may also produce eye irritation, particularly on the inner surfaces of the eyelids (i.e. the conjunctiva).Chronic inhalation of high levels of Ni can cause irritation of airways and lungs, lung fibrosis (scarring of the lungs), nasal septum perforation, nasal sinusitis, respiratory sensitization and asthma. Ni compounds have caused cancer of the lungs, larynx, and paranasal sinuses in lab animals
Carcinogenicity: Yes **NTP? 2** **IARC? No*** **OSHA Regulated? No**
*(ACGIH has published notice of intended change to A4 for soluble and A1 for insoluble compounds)

Nitrogen Oxides of nitrogen can cause irritation of the eyes, skin (when moist), and upper respiratory tract. Exposure to high levels of nitrogen oxides can cause delayed pulmonary edema (fluid in the lungs) which may be fatal. Nitric oxide can cause formation of methemoglobin which decreases the blood's ability to carry oxygen. Chronic overexposure can cause pulmonary fibrosis (scarring of the lungs).
Carcinogenicity: N/A **NTP? No** **IARC? No** **OSHA Regulated? No**

Oil coating Some products are supplied with an oil coating or have residual oil from the manufacturing process. Prolonged or repeated skin contact with oil may result in skin irritation, dermatitis, or both. Untreated mildly refined mineral oils have produced skin tumors on repeated applications to laboratory animals. They are listed as carcinogenic on the NTP and IARC. If the product is heated well above the ambient temperatures or machined, **oil vapor or mist** may be generated. Overexposure to oil mist or vapor may cause asthma, bronchitis, respiratory tract irritation and neurological effects such as headaches, dizziness, drowsiness and central nervous system depression.
Carcinogenicity: N/A **NTP? No** **IARC? No*** **OSHA Regulated? No**
*(ACGIH has published notice of intended change to A1 for oils containing a total of 15 polynuclear aromatic hydrocarbons (PAH's) listed as carcinogens by the U.S. NTP)

Oxygen Oxygen can cause irritation of the eyes, skin (when moist), and upper respiratory tract. Exposure to high levels of nitrogen oxides can cause delayed pulmonary edema (fluid in the lungs) which may be fatal. Nitric oxide can cause formation of methemoglobin which decreases the blood's ability to carry oxygen. Chronic overexposure can cause pulmonary fibrosis (scarring of the lungs).
Carcinogenicity: N/A **NTP? No** **IARC? No** **OSHA Regulated? No**

Ozone Overexposure to ozone can result in mucus membrane and respiratory tract irritation. Severe overexposures can cause pulmonary edema (fluid in the lungs).
Carcinogenicity: N/A **NTP? No** **IARC? No** **OSHA Regulated? No**

Phosphorous Chronic and prolonged inhalation of high concentrations of **fumes or dust** may cause necrosis of the mandible.
Carcinogenicity: N/A **NTP? No** **IARC? No** **OSHA Regulated? No**

Selenium Chronic inhalation of high concentrations of **fumes and dust** are associated with accumulation of fluid in the lungs, garlic breath, bronchitis, pneumonitis, bronchial asthma, nausea, chills, fever, headache, sore throat, shortness of breath, conjunctivitis, vomiting, abdominal pain, diarrhea and enlarged liver. Selenium is an eye and upper respiratory irritant and a sensitizer. Overexposure may result in red staining of the nails, teeth and hair. **Selenium dioxide** reacts with moisture to form selenious acid which is corrosive to the skin and eyes.
Carcinogenicity: N/A **NTP? No** **IARC? No** **OSHA Regulated? No**

Silicon No chronic debilitating symptoms indicated. Chronic exposure to **inert dusts of silicon** can cause increased airways resistance and contribute to chronic bronchitis. Accumulation in lungs may be responsible for benign pneumoniosis, but is not considered to be responsible for pulmonary functional impairment or respiratory symptoms. Intracheal administration of silicon in rabbits produced significant pulmonary lesions.
Carcinogenicity: N/A **NTP? No** **IARC? No** **OSHA Regulated? No**

Sulfur Chronic and prolonged inhalation of high concentrations of **fumes or dust, as sulfur dioxide**, may lead to edema of the lungs.
Carcinogenicity: N/A **NTP? No** **IARC? A4*** *(for sulfur dioxide) **OSHA Regulated? No**

Tantalum No chronic debilitating symptoms indicated.
Carcinogenicity: N/A **NTP? No** **IARC? No** **OSHA Regulated? No**

Medical Conditions Generally Aggravated by Exposure:
Individuals with chronic respiratory disorders (i.e. asthma, chronic bronchitis, emphysema, etc.) may be adversely affected by fume or airborne particulate matter exposure.

Emergency and First Aid Procedures:

Inhalation: Remove to fresh air; if condition continues, consult a physician.

Eye Contact: Flush thoroughly with running water for 15 minutes to remove particulate; take care to rinse under eyelids. Obtain medical attention.

Skin Contact: Remove particulate by washing thoroughly with soap and water. Seek medical attention if condition persists. For minor burns, apply cold water. For severe burns, seek immediate medical attention.

Ingestion: Does not represent a hazard, if significant amounts of metal are ingested, consult physician.

Section 7 - Precautions for Safe Handling and Use

Steps to be taken in Case Material Is Released or Spilled:
Fine turnings and small chips should be swept or vacuumed. Scrap metal can be reclaimed for re-use.

Waste Disposal Method:
Used or unused product should be tested to determine hazard status and disposal requirements under federal, state or local laws and regulations.

Precautions to Be Taken in Handling and Storing:
See Section 4.

Other Precautions:
Not requested by USA Department of Transportation.

Section 8 - Control Measures

Respiratory Protection:
Appropriate dust/mist/fume respirator should be used to avoid excessive inhalation of particulates. If exposure limits are reached or exceeded, use NIOSH/MSHA approved equipment.

Ventilation: Use with adequate ventilation to meet exposure limits listed in Section 2.

Eye Protection: Safety glasses/face shields should be worn when grinding, cutting, or welding.

Protective Gloves: Should be worn as required for welding, burning or handing operations.

Other Protective Clothing/Equipment: As required depending on operations and safety codes.

Work / Hygienic Practices: Wash with soap and water.

Disclaimer

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express or implied regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

This document has been prepared solely for the intent of compliance with the provisions of Subpart 2 of Part 1910 of title 29 of the Code of Federal Regulations, paragraph 1910.1200.

Footnotes:

(1) Common names if applicable, appear in parentheses following the chemical names.

(2) Concentrations may vary somewhat between batches or lots. Where possible, a concentration range is indicated. Occasionally, however, levels may even fall outside of the usual concentration ranges.

(3) All values, unless otherwise specified, refer to 8-hour time-weighted average concentrations and units are in mg/M3.

January 1, 2009

RYERSON

2621 West 15th Place
Chicago, Illinois 60608

Types
Aluminum

Attention: Hazard Communication Coordinator

Ryerson Customer:

Enclosed are the most recent Material Safety Data Sheets (MSDS) for the products we distribute. The information contained in the MSDS and their distribution to you are the principal means of achieving an effective Hazard Communication Program and satisfying the "Right-to-Know" laws.

The enclosed MSDS reflects the result of the hazard evaluation process and should be utilized for health and safety training or compliance with "Right-to-Know" laws, not for specification purposes. You will find wording enclosed for satisfying labeling requirements.

Section 313 of the Emergency Planning and Community Right-to-Know and 40 CFR Part 372 require us to inform you that a product or products you purchase from us may contain one or more regulated chemicals. This information may be important to you if under the Act you are required to estimate emission releases of applicable regulated chemicals. If you are unsure that you must report or require further information, call the U.S. EPA Emergency Planning and Community Right-to-Know hotline at (800) 424-9346 or (703) 412-9810 in Washington D.C.

Please note that this notice must accompany the MSDS and if you repackage or otherwise redistribute this product to other industrial customers, a notice similar to this one must be forwarded to those customers.

Ryerson Safety Committee

Section 4 - Fire and Explosion Hazard Data

Note: Products in the solid state present no fire or explosion hazard. Small chips, fines and dust may ignite readily.

Flash Point: N/A **Flammable Limits:** N/A **LEL:** N/A **UEL:** N/A

Extinguishing Media:
Dry powdered dolomite, dry sand or dry graphite; DO NOT USE water on molten metal.

Special Fire Fighting Procedures:
Use self-contained NIOSH breathing apparatus in pressure and demand mode and full protective clothing when appropriate.

Unusual Fire and Explosion Hazards:
DO NOT USE water on molten metal. Use coarse water spray on chips, turnings, etc. DO NOT USE halogenated extinguishing agents on small chips or fines. Dust clouds may be explosive; prevent formation of a dust cloud during processing.

Additional Information:
Arc or spark generated when welding or burning could be a source of ignition for combustion and flammable materials. Dust clouds may be explosive; prevent formation. Molten aluminum may also react violently with rust and certain metal oxides (i.e. Cu, Fe, Pb).

Section 5 - Reactivity Data

Stability: Stable **Conditions to Avoid:** Make certain any material to be re-melted is free of moisture.

Incompatibility (*Materials to Avoid*):
Halogenated acids & solvents, bromates, iodates, aluminum nitrate.

Hazardous Decomposition or Byproducts:
Metallic dust or fumes may be produced during welding, burning, grinding and possibly machining. Refer to ANSI Z49.1.

Hazardous Polymerization: Will not Occur

Conditions to Avoid:
Aluminum particles coming into contact with copper, lead or iron oxides can react vigorously if source of ignition or intense heat.

Section 6 - Health Hazard Data

Note: Products in their usual physical form do not pose any health hazards. However, operations such as burning, welding, sawing, brazing, or grinding may result in the following effects if exposures exceed permissible limits.

Route(s) of Entry: **Inhalation:** Yes **Skin Contact:** Yes **Eye Contact:** Yes **Ingestion:** No

Health Hazards:

Acute: Excess exposure to all metallic fumes and dusts may result in irritation of eyes nose and throat. Also high concentrations of fumes and dusts of iron-oxide, manganese and copper may result in metal fume fever.

Chronic: Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the element:

Aluminum May initiate fibrotic changes to lung tissue, irritation of the eyes, nose and throat. Particles Al deposited in the eye may cause irreversible tissue damage of the cornea. Al salts may cause dermatitis, eczema, conjunctivitis and irritation of the mucus membranes of the upper respiratory tract. Long-term inhalation exposure to **Al dusts or fumes** has been associated with a fibrotic lung condition known as Shaver's disease. **Al dust/fines and fumes** are a low health risk by inhalation. For standard operations (milling, cutting, grinding), aluminum dust should be treated as a nuisance dust as defined by the ACGIH. Welding aluminum, plasma arc cutting, and arc spray metalizing can generate ozone. Excessive exposure to aluminum fume and dust has been associated with lung disease, but this effect is probably due to simultaneous silica exposure.
Carcinogenicity: N/A NTP? No IARC? A4* OSHA Regulated? No
*(for aluminum oxide)

Beryllium Be can cause irritant dermatitis, hypersensitivity dermatitis, skin granulomas and allergic contact dermatitis. Be is also a suspected human carcinogen and has caused cancer in laboratory animals. Inhalation of excessive levels of **Be dust and fumes** can result in acute pneumonitis (inflammation of lung tissues). Chronic inhalation above permissible limits can produce chronic berylliosis (progressive lung disease) and systemic beryllium disease. Granulmatos lesions of the skin, liver, kidneys, spleen, and lymph nodes have been reported. Damage to the lungs can be in both the acute and chronic forms, both of which have similar signs and symptoms. These include a relatively non-productive cough, progressive difficulty in breathing, loss of appetite, and loss of weight. The major difference between the two is the suddenness of onset and the rate of progression. In the acute form, the symptoms appear in several hours to several weeks after exposure and there is usually rapid progression of signs including dyspnea, anorexia, and extreme weight loss. Complete recovery is possible and fatal cases usually result from acute heart disease. In chronic beryllium disease, the symptoms or signs are generally delayed in their onset and are persistent in nature. They may be triggered or aggravated by stresses such as pregnancy, respiratory infection, and thyrotoxicosis. In the progression of the disease, symptoms of heart disease may occur. Inhalation of beryllium has produced multiple site tumors (lung tumors) in animal studies and is a suspected human carcinogen. Beryllium is listed on the NTP and is listed as carcinogenic to humans by IARC.
Carcinogenicity: Yes NTP? 2 IARC? A2* OSHA Regulated? No
*(ACGIH has published notice of intended change to A1)

Chromium **Cr fumes and dusts** can cause sensitization dermatitis, inflammation and/or ulceration of upper respiratory tract, lesions of the skin and mucus membranes, and possibly cancer of the nasal passages or lungs-bronchogenic carcinoma.
Carcinogenicity: N/A NTP? No IARC? A4 OSHA Regulated? No

Hexavalent Chromium (ChromeVI) Chrome VI can cause asthma, kidney damage, primary irritant dermatitis, sensitization dermatitis, skin ulceration, and pulmonary edema (fluid in the lungs). Chronic inhalation or overexposure has been associated with lung, nasal, and gastrointestinal cancer. Hexavalent chromium is listed as carcinogenic to humans by IARC. Chromium and some of its compounds are listed as carcinogenic by the NTP.
Carcinogenicity: Yes NTP? 1 IARC? A1 OSHA Regulated? No

Cobalt Inhalation of **Co dust** may cause an asthma-like disease with cough and dyspenea, respiratory tract irritation and hypersensitization dermititis. Chronic overexposure to Co dust and fume may result in polythemia, hyperplasia of bone marrow and thyroid gland, pericardial effusion and damage to pancreas alpha cells. Animal studies have shown that particulate is an acutely irritating substance and industrial exposures, possibly combined with small amounts of silica, are reported capable of producing serious pneumoconiosis which is initially of an insidious nature.
Carcinogenicity: N/A NTP? No IARC? A3 OSHA Regulated? No

Oxygen Oxygen can cause irritation of the eyes, skin (when moist), and upper respiratory tract. Exposure to high levels of nitrogen oxides can cause delayed pulmonary edema (fluid in the lungs) which may be fatal. Nitric oxide can cause formation of methemoglobin which decreases the blood's ability to carry oxygen. Chronic overexposure can cause pulmonary fibrosis (scarring of the lungs).
Carcinogenicity: N/A NTP? No IARC? No OSHA Regulated? No

Ozone Overexposure to ozone can result in mucus membrane and respiratory tract irritation. Severe overexposures can cause pulmonary edema (fluid in the lungs).
Carcinogenicity: N/A NTP? No IARC? No OSHA Regulated? No

Silicon No chronic debilitating symptoms indicated. Chronic exposure to **inert dusts of silicon** can cause increased airways resistance and contribute to chronic bronchitis. Accumulation in lungs may be responsible for benign pneumoniosis, but is not considered to be responsible for pulmonary functional impairment or respiratory symptoms. Intracheal administration of silicon in rabbits produced significant pulmonary lesions.
Carcinogenicity: N/A NTP? No IARC? No OSHA Regulated? No

Tin The toxicity of inorganic tin compounds is generally low. Chronic high level exposure to the dust or fumes of tin oxides can result in a benign pneumoconiosis called stannosis, which is reported not to be disabling. No tissue reaction or pulmonary dysfunction has been associated with this lung condition.
Carcinogenicity: N/A NTP? No IARC? No OSHA Regulated? No

Welding fumes Welding fumes cannot be classified simply. The composition and quantity of both are dependent on the alloy being welded and the process and electrodes used. Reliable analysis of fumes cannot be made without considering the nature of the welding process and system being examined; reactive metals and alloys such as aluminum and titanium are arc-welded in a protective, inert atmosphere such as argon. These arcs create relatively little fume, but they do create an intense radiation which can produce ozone. Similar processes are used to arc-weld steels, also creating a relatively low level of fumes. Ferrous alloys also are arc-welded in oxidizing environments that generate considerable fume and can produce carbon monoxide instead of ozone. Such fumes generally are composed of discrete particles of amorphous slags containing iron, manganese, silicon, and other metallic constituents depending on the alloy system involved. Chromium and nickel compounds are found in fumes when stainless steels are arc-welded. Some coated and flux-cored electrodes are formulated with flourides and the fumes associated with them can contain significantly more flourides than oxides. Because of the above factors, arc-welding fumes frequently must be tested for individual constituents that are likely to be present to determine whether specific TLV's are exceeded. Conclusions based on inhalable concentration are generally adequate if no toxic elements are present in welding rod, metal, or metal coating and conditions are not conducive to the formation of toxic gases. Are listed as possibly carcinogenic to humans by IARC.
Carcinogenicity: See above NTP? No IARC? No OSHA Regulated? No

Zinc No chronic debilitating symptoms indicated. Exposure to dust or fines presents a low health risk by inhalation. Subjecting zinc or alloys containing zinc to high temperatures (such as occurs during welding) will cause the formation of zinc oxide. Exposure to **zinc oxide fumes** subsequent to burning, welding and molten metal can result in "zinc chills," a flu-like illness (metal fume fever). Onset of symptoms may be delayed 4-12 hours. Early symptoms of metal fume fever include a metallic or sweet taste in the mouth, dryness and irritation of the throat and coughing. These symptoms may progress to shortness of breath, headache, fever, chills, muscle aches, nausea, vomiting, weakness, fatigue and profuse sweating. The attack may last 6-48 hours, leaves no effect, and is more likely to occur after a period away from the job. Gastrointestinal inflammation has been reported in animal studies.
Carcinogenicity: N/A NTP? No IARC? A1* OSHA Regulated? No

Additional Information:

Aluminum dust/fines and **fumes** are low health risk by inhalation. For standard operations (i.e. machining, cutting, grinding), aluminum should be treated as a nuisance dust and is so defined by the American Conference of Government Industrial Hygienists (ACGIH).

Welding and plasma cutting of **alloys high in copper** (2000 and 7000 series) may present an overexposure to copper fumes.

Welding of **aluminum alloys** may generate carbon monoxide, carbon dioxide, ozone nitrogen oxides, infrared radiation and ultraviolet radiation.

Since **lead** is a cumulative toxic metal by inhalation or ingestion, appropriate industrial precautions to guard against these two routes of exposure need to be taken when handling these alloys. Sampling to establish the lead level exposure to airborne particulate or fumes is possible. Consult OSHA Lead standard 29 CFR 1910.1025 for specific health/industrial hygiene precautions and requirements to follow when handling lead compounds.

NTP (National Toxicology Program) Classifications:
Group 1: Known to be carcinogenic; sufficient evidence from human studies.
Group 2: Reasonably anticipated to be a carcinogen; limited evidence from studies in humans or sufficient evidence from studies in experimental animals.

IARC (International Agency for Research on Cancer) Classifications:
Group A1 - *Confirmed Human Carcinogen:* The agent is carcinogenic to humans based on the weight of evidence from epidiologic studies of, or convincing clinical evidence in, exposed humans.
Group A2 - *Suspected Human Carcinogen:* The agent is carcinogenic in experimental animals at dose levels, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) that are considered relevant to worker exposure. Available epidemiologic studies are conflicting or insufficient to confirm an increased risk of cancer in exposed humans.
Group A3 - *Animal Carcinogen:* The agent is carcinogenic in experimental animals at dose levels, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) that are not relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.
Group A4 - *Not Classifiable as a Human Carcinogen:* There are inadequate data on which to classify the agent in terms of its Carcinogenicity in humans and/or animals.
Group A5 - *Not Suspected as a Human Carcinogen:* The agent is not suspected to be a human carcinogen on the basis of properly conducted epidemiologic studies in humans.

January 1, 2009

RYERSON

2621 West 15th Place
Chicago, Illinois 60608

Types
Copper Alloys

Attention: Hazard Communication Coordinator

Ryerson Customer:

Enclosed are the most recent Material Safety Data Sheets (MSDS) for the products we distribute. The information contained in the MSDS and their distribution to you are the principal means of achieving an effective Hazard Communication Program and satisfying the "Right-to-Know" laws.

The enclosed MSDS reflects the result of the hazard evaluation process and should be utilized for health and safety training or compliance with "Right-to-Know" laws, not for specification purposes. You will find wording enclosed for satisfying labeling requirements.

Section 313 of the Emergency Planning and Community Right-to-Know and 40 CFR Part 372 require us to inform you that a product or products you purchase from us may contain one or more regulated chemicals. This information may be important to you if under the Act you are required to estimate emission releases of applicable regulated chemicals. If you are unsure that you must report or require further information, call the U.S. EPA Emergency Planning and Community Right-to-Know hotline at (800) 424-9346 or (703) 412-9810 in Washington D.C.

Please note that this notice must accompany the MSDS and if you repackage or otherwise redistribute this product to other industrial customers, a notice similar to this one must be forwarded to those customers.

Ryerson Safety Committee

Section 6 - Health Hazard Data

Note: Products in their usual physical form do not pose any health hazards. However, operations such as burning, welding, sawing, brazing, or grinding may result in the following effects if exposures exceed permissible limits.

Route(s) of Entry: **Inhalation:** Yes **Skin Contact:** Yes **Eye Contact:** Yes **Ingestion:** No

Health Hazards:

Acute: Excess exposure to all metallic fumes and dusts may result in irritation of eyes nose and throat. Also high concentrations of fumes and dusts of iron-oxide, manganese and copper may result in metal fume fever.

Chronic: Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the element:

Copper No chronic debilitating symptoms indicated. Inhalation of **Cu dusts, fumes and mists** may cause irritation of the eyes, nose and throat and a flu-like illness called metal fume fever. Early symptoms of metal fume fever include a metallic or sweet taste in the mouth, dryness and irritation of the throat and coughing. These symptoms may progress to shortness of breath, headache, fever, chills, muscle aches, nausea, vomiting, weakness, fatigue and profuse sweating. The attack may last 6-48 hours and is more likely to occur after a period away from the job. Chronic overexposure to copper fumes may result in blood disorders (anemia) . Repeated or prolonged exposure to Cu fumes may cause discoloration of hair, hands, and soles of the feet (keratinization).
Carcinogenicity: N/A NTP? No IARC? No OSHA Regulated? No

Nitrogen Oxides of nitrogen can cause irritation of the eyes, skin (when moist), and upper respiratory tract. Exposure to high levels of nitrogen oxides can cause delayed pulmonary edema (fluid in the lungs) which may be fatal. Nitric oxide can cause formation of methemoglobin which decreases the blood's ability to carry oxygen. Chronic overexposure can cause pulmonary fibrosis (scarring of the lungs).
Carcinogenicity: N/A NTP? No IARC? No OSHA Regulated? No

Oil coating Some products are supplied with an oil coating or have residual oil from the manufacturing process. Prolonged or repeated skin contact with oil may result in skin irritation, dermatitis, or both. Untreated mildly refined mineral oils have produced skin tumors on repeated applications to laboratory animals. They are listed as carcinogenic on the NTP and IARC. If the product is heated well above the ambient temperatures or machined, **oil vapor or mist** may be generated. Overexposure to oil mist or vapor may cause asthma, bronchitis, respiratory tract irritation and neurological effects such as headaches, dizziness, drowsiness and central nervous system depression.
Carcinogenicity: N/A NTP? No IARC? No* OSHA Regulated? No
*(ACGIH has published notice of intended change to A1 for oils containing a total of 15 polynuclear aromatic hydrocarbons (PAH's) listed as carcinogens by the U.S. NTP)

Oxygen Oxygen can cause irritation of the eyes, skin (when moist), and upper respiratory tract. Exposure to high levels of nitrogen oxides can cause delayed pulmonary edema (fluid in the lungs) which may be fatal. Nitric oxide can cause formation of methemoglobin which decreases the blood's ability to carry oxygen. Chronic overexposure can cause pulmonary fibrosis (scarring of the lungs).
Carcinogenicity: N/A NTP? No IARC? No OSHA Regulated? No

Ozone Overexposure to ozone can result in mucus membrane and respiratory tract irritation. Severe overexposures can cause pulmonary edema (fluid in the lungs).
Carcinogenicity: N/A NTP? No IARC? No OSHA Regulated? No

Welding fumes - Welding fumes cannot be classified simply. The composition and quantity of both are dependent on the alloy being welded and the process and electrodes used. Reliable analysis of fumes cannot be made without considering the nature of the welding process and system being examined; reactive metals and alloys such as aluminum and titanium are arc-welded in a protective, inert atmosphere such as argon. These arcs create relatively little fume, but they do create an intense radiation which can produce ozone. Similar processes are used to arc-weld steels, also creating a relatively low level of fumes. Ferrous alloys also are arc-welded in oxidizing environments that generate considerable fume and can produce carbon monoxide instead of ozone. Such fumes generally are composed of discrete particles of amorphous slags containing iron, manganese, silicon, and other metallic constituents depending on the alloy system involved. Chromium and nickel compounds are found in fumes when stainless steels are arc-welded. Some coated and flux-cored electrodes are formulated with flourides and the fumes associated with them can contain significantly more flourides than oxides. Because of the above factors, arc-welding fumes frequently must be tested for individual constituents that are likely to be present to determine whether specific TLV's are exceeded. Conclusions based on inhalable concentration are generally adequate if no toxic elements are present in welding rod, metal, or metal coating and conditions are not conducive to the formation of toxic gases. Are listed as possibly carcinogenic to humans by IARC.
Carcinogenicity: See above NTP? No IARC? No OSHA Regulated? No

Footnotes:

(1) Common names if applicable, appear in parentheses following the chemical names.

(2) Concentrations may vary somewhat between batches or lots. Where possible, a concentration range is indicated. Occasionally, however, levels may even fall outside of the usual concentration ranges.

(3) All values, unless otherwise specified, refer to 8-hour time-weighted average concentrations and units are in mg/M3.

No information is available for this product.

SECTION XIII - DISPOSAL CONSIDERATIONS

Dispose in accordance with all local, state, and federal regulations.

SECTION XIV - TRANSPORT INFORMATION

In non-bulk containers this product is not a regulated Hazardous Material for transportation (49 CFR 172).

SECTION XV - REGULATORY INFORMATION

The ingredients in this product are listed on the TSCA Inventory maintained by U.S. EPA or are otherwise approved for commercial use under TSCA.

This product contains the following Toxic Chemicals at levels above the applicable de minimis concentrations (40 CFR 372).

None

These Toxic Chemicals (SARA TITLE III SECTION 313) are subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right to Know Act of 1986 and of 40 CFR 372.

SECTION XVI - OTHER INFORMATION

The information contained herein is based on the data available to us and is believed to be correct. However, we make no warranty, expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof, we assume no responsibility for injury from the use of the product described herein.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Form:	SOLID POWDER
Color:	WHITE
Odor:	NEGLIGIBLE
Solubility (in water):	INSOLUBLE
pH Value:	NOT APPLICABLE
Boiling Range:	NOT APPLICABLE
Vapor Pressure (mmHg):	NOT APPLICABLE
Melting Point:	< 300° F
Evaporation Rate:	NOT APPLICABLE
Vapor Density:	NOT APPLICABLE
Partition Coefficient:	NOT APPLICABLE
% Volatile Weight:	< 1 (one hour at 110° C)
% Volatile	See Above
Specific Gravity:	1.68
Molecular Weight:	MIXTURE

SECTION X - STABILITY AND REACTIVITY

Stability: This product is stable under normal conditions of storage and use.

Hazardous Polymerization: Hazardous polymerization will not occur.

Hazardous decomposition products: Combustion byproducts may contain CO, CO2, incompletely burned carbon compounds, NO2 or other nitrogen compounds.

SECTION XI - TOXICOLOGICAL INFORMATION

PRODUCT:

Exposure to this product may cause an allergic reaction and sensitization in some individuals. Extended inhalation of dust can lead to particulate deposition in the lungs.

COMPONENTS:

PRIMARY ROUTES OF EXPOSURE: Eyes, Inhalation, Skin

Skin Contact: Incidental contact is not expected to cause irritation. However, exposure to this product may cause an allergic skin reaction and sensitization in some individuals.

Eye Contact: May cause slight to mild redness and burning. May cause mechanical irritation.

Inhalation: This product contains ingredients with established airborne exposure limits – see Section VIII. Otherwise it is considered a nuisance dust. No effects are expected when exposures are maintained below the exposure limits of Section VIII. However, exposure to this product may cause an allergic reaction and sensitization in some individuals. Lung and respiratory conditions may be aggravated by exposure.

Ingestion: May cause pain and upset stomach.

SECTION IV - FIRST AID MEASURES

Eye Contact: Immediately flush eyes with cool water for 15 minutes, occasionally lifting lids to ensure complete rinsing. Seek medical attention if symptoms persist.

Skin Contact: Wash skin thoroughly with soap and water. Remove and wash clothing and shoes before reuse. Seek medical attention if irritation persists.

Inhalation: Remove to fresh air. If breathing difficulties develop, seek medical attention. If necessary, give artificial respiration.

Ingestion: Seek immediate medical attention. Wash out mouth with water followed by a cupful of water to drink. Repeat if vomiting occurs. Never give anything by mouth to an unconscious person.

SECTION V - FIRE-FIGHTING MEASURES

Flash Range:	Not Applicable
Lower Explosion Limit Range:	30 GM/M3 - 90 GM/M3
Extinguishing Media:	Foam, CO2, dry chemical or water spray.

Fire and Explosion Hazards: An HMIS flammability rating of 1 applies to the product as supplied. However, airborne dust from the product can present a flammability hazard and may form explosive dust mixtures with air. A potentially dangerous situation exists when powder is transferred
from a closed container to a process in which dust concentrations are within the explosion (flammability) limits. The concentration of powder dust in air should be maintained outside of the limits.

Firefighting Instructions: Use fully protective equipment with self-contained breathing apparatus.

SECTION VI - ACCIDENTAL RELEASE MEASURES

PNT166 PAINT

TCI POWDER COATINGS

Material Safety Data Sheet

Date reviewed: August 1st 2008

SECTION I - PRODUCT AND COMPANY INFORMATION

Product Name: SATIN BLACK POLYESTER

Product Code: 9310-90278

HMIS HAZARD RATING: Health:2 Fire:1 Reactivity:1 PPI:X

TCI POWDER COATINGS
734 DIXON DR.
ELLAVILLE,GA 31806

Contact ---------- Chuck Pless
Telephone ---------- 800-533-9067
Fax ---------- 229-937-2904
Emergency Phone ---- 229-815-0011

SECTION II - INGREDIENT INFORMATION

Ingredient	CAS Number	PERCENTAGE
BLOCKED POLYISOCYANATE	NOT PROVIDED	2 -10 %
1,3,5 TRIGLYCIDYL ISOCYANURATE	2451-62-9	3 -6 %
CARBON BLACK	1333-86-4	0.5-1.5%

Note: This product releases a small amount of Caprolactam (CAS#105-60-2) on curing SEE SECTION XI.

SECTION III - HAZARDS IDENTIFICATION

Sweep up carefully or use explosion-proof vacuum cleaner. Then dispose of in accordance with local, state, and federal regulations.

SECTION VII - HANDLING AND STORAGE

Keep all equipment clean and work areas free from dust. Avoid excessive skin contact. Do not ingest or inhale. Personnel should be trained in the safe handling and proper use of this product. Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities.

Store in a cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. Protect from physical damage.

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

Product ingredients other than ingredients with established airborne exposure limits may be considered under the PEL for particulates not otherwise regulated (nuisance dust).

Occupational Exposure Limits

Ingredients	ACGIH TLV	ACGIH TLV-C	ACGIH STEL	OSHA STEL	OSHA PEL
BLOCKED POLYISOCYANATE	10 mg/m3	n/est	n/est	n/est	15 mg/m3
1,3,5 TRIGLYCIDYL ISOCYANURATE					
CARBON BLACK	3.5 mg/m3	n/est	n/est	n/est	3.5 mg/m3
NUISANCE DUST	10 mg/m3	N/est	N/est	N/est	15 mg/m3 (total)
	3 mg/m3				5 mg/m3 (respirable)

ENGINEERING CONTROLS: Provide ventilation to keep airborne particulate concentration below established airborne exposure limits (TLV's or PEL's). Explosion proof exhaust ventilation is recommended. Ventilation equipment, baghouse, and cyclone dust collection should be grounded. Curing ovens and heating chambers should be properly vented to prevent fumes from entering the workplace.

RESPIRATORS: Use a properly fitted NIOSH/MSHA approved respirator if needed to avoid breathing dust.

SKIN PROTECTION: Protective gloves & clothing recommended.

EYE PROTECTION: Goggles or safety glasses with side-shields recommended.

BLOCKED POLYISOCYANATE	This material by itself is expected to be a low hazard for usual industrial handling by trained personnel when in the unheated state. Nevertheless, exposure to this material can cause an allergic reaction and sensitization in some individuals. This material can decompose at elevated temperatures and caution is recommended when storing or processing it above 50 degrees C. Blocked Polyisocyanates are used as curatives in some powder coating powder formulations. Caprolactam is the blocking agent in this material and Caprolactam is released at raised temperatures during the cure of the powder coating product . Trace amounts of vlatile monomeric isocyanates have also been detected in the volatiles during the cure reaction of similar materials. Inhalation of curing oven vapors should be avoided. Do not vent curing oven exhaust into the workplace. Caprolactam has irritating properties. Prolonged exposure to high concentrations of Caprolactam may cause nausea, vomiting, dizziness, headaches, and tremors. Exposure limits established for Caprolactam: ACGIH TLV (particulates) =1mg/M3; ACGIH TLV (vapor)=5ppm (23mg/M3); NIOSH REL (vapor) =.22ppm (1mg/M3); OSHA PEL (total dust)=1mg/M3 (VACATED)
1,3,5 TRIGLYCIDYL ISOCYANURATE	
CARBON BLACK	Carbon Black may cause mechanical irritation to the eyes and temporary discomfort to the respiratory tract at concentrations above the respiratory tract at concentrations above the occupational exposure limit (see Section VIII). Temporary respiratory tract discomfort arising from Carbon Black exposure may occurdue to mechanical irritation. No adverse reactions are usually expected from ingestion or dermal (skin) exposure. Carbon Black has not been reported as causing sensitization in humans. Epidemiological studies of workers in the Carbon Black producing industries of North America and Western Europe show no evidence of clinically significant adverse health effects due to occupational exposure to Carbon Black. Based on a comprehensive independent review of a major epidemiological study, the validity of a relationship between Carbon Black exposure and symptoms of cough and sputum can not be supported by the available data. In a sub-chronic toxicity study of the effects of Carbon Black inhalation on the lungs of rats exposed to Carbon Black for ninety (90) days found the effects included inflammation, hyperplasia, and fibrosis with a NOEL of 1.1 mg/m3. A chronic toxicity study of the effects of Carbon Black inhalation on the lungs of rats exposed to Carbon Black for two (2) years found the effects included inflammation, fibrosis, and tumors (related to fine particle overload rather than to a specific chemical effect). Acute Toxicity: LD50 (oral/rat) = > 8,000 mg/kg. Carcinogenicity: NTP = No; IARC = Yes (IARC considers Carbon Black to be possibly carcinogenic to humans – Group 2B); OSHA = No.

PNT177 PRIMER PAINT

TCI POWDER COATINGS

Material Safety Data Sheet

Date reviewed: August 1st 2008

SECTION I - PRODUCT AND COMPANY INFORMATION

Product Name:	ZINC RICH PRIMER
Product Code:	7520-70138
HMIS HAZARD RATING:	Health:2 Fire:1 Reactivity:1 PPI:X

TCI POWDER COATINGS
734 DIXON DR.
ELLAVILLE,GA 31806

Contact ---------- Chuck Pless
Telephone ---------- 800-533-9067
Fax ---------- 229-937-2904
Emergency Phone ---- 229-815-0011

SECTION II - INGREDIENT INFORMATION

Ingredient	CAS Number	PERCENTAGE
ZINC DUST	7440-66-6	50 -80 %
EPOXY RESIN	25068-38-6	15 -30 %

SECTION III - HAZARDS IDENTIFICATION

PRIMARY ROUTES OF EXPOSURE: Eyes, Inhalation, Skin

Skin Contact: Incidental contact is not expected to cause irritation. However, exposure to this product may cause an allergic skin reaction and sensitization in some individuals.

Eye Contact: May cause slight to mild redness and burning. May cause mechanical irritation.

Inhalation: This product contains ingredients with established airborne exposure limits – see Section VIII. Otherwise it is considered a nuisance dust. No effects are expected when exposures are maintained below the exposure limits of Section VIII. However, exposure to this product may cause an allergic reaction and sensitization in some individuals. Lung and respiratory conditions may be aggravated by exposure.

Ingestion: May cause pain and upset stomach.

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

Product ingredients other than ingredients with established airborne exposure limits may be considered under the PEL for particulates not otherwise regulated (nuisance dust).

Occupational Exposure Limits

Ingredients	ACGIH TLV	ACGIH TLV-C	ACGIH STEL	OSHA STEL	OSHA PEL
ZINC DUST	10 mg/m3	n/est	n/est	n/est	15 mg/m3
EPOXY RESIN	10 mg/m3	n/est	n/est	n/est	15 mg/m3
NUISANCE DUST	10 mg/m3	N/est	N/est	N/est	15 mg/m3 (total)
	3 mg/m3				5 mg/m3 (respirable)

ENGINEERING CONTROLS: Provide ventilation to keep airborne particulate concentration below established airborne exposure limits (TLV's or PEL's). Explosion proof exhaust ventilation is recommended. Ventilation equipment, baghouse, and cyclone dust collection should be grounded. Curing ovens and heating chambers should be properly vented to prevent fumes from entering the workplace.

RESPIRATORS: Use a properly fitted NIOSH/MSHA approved respirator if needed to avoid breathing dust.

SKIN PROTECTION: Protective gloves & clothing recommended.

EYE PROTECTION: Goggles or safety glasses with side-shields recommended.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Form:	SOLID POWDER
Color:	GREY
Odor:	NEGLIGIBLE
Solubility (in water):	INSOLUBLE
pH Value:	NOT APPLICABLE
Boiling Range:	NOT APPLICABLE
Vapor Pressure (mmHg):	NOT APPLICABLE
Melting Point:	< 300° F
Evaporation Rate:	NOT APPLICABLE
Vapor Density:	NOT APPLICABLE

EPOXY RESIN	This resin material has negligible water solubility and low toxicity. Overexposure to solid epoxy resin can cause eye, skin and respiratory irritation due to abrasiveness. Similar resin materials have behaved as moderate eye irritants in animals. Prolonged or repeated contact with epoxy resin may cause sensitization. Exposure studies with related materials have shown some evidence for allergic contact dermatitis, and rarely an allergic respiratory reaction like asthma, in sensitized individuals. Medical conditions that may be aggravated by overexposure to this material include respiratory, allergy, eczema and other skin conditions. The following toxicology information has been reported: LD50 (oral/rat) => 5,000 mg/kg; LD50 (dermal/rabbit) => 4,000 mg/kg. The IARC has concluded that epoxy resin materials of this type are not classifiable as a carcinogen (Group 3), that is human and animal evidence of carcinogenicity is inadequate. Carcinogenicity: OSHA = No, IARC = No, NTP = No. Some resin manufacturers state that some similar resins have shown mutagenic activity in "in vitro" (test tube) tests, while others have not.

SECTION XII - ECOLOGICAL INFORMATION

No information is available for this product.

SECTION XIII - DISPOSAL CONSIDERATIONS

Dispose in accordance with all local, state, and federal regulations.

SECTION XIV - TRANSPORT INFORMATION

In non-bulk containers this product is not a regulated Hazardous Material for transportation (49 CFR 172).

SECTION XV - REGULATORY INFORMATION

The ingredients in this product are listed on the TSCA Inventory maintained by U.S. EPA or are otherwise approved for commercial use under TSCA.

This product contains the following Toxic Chemicals at levels above the applicable de minimis concentrations (40 CFR 372).

None

These Toxic Chemicals (SARA TITLE III SECTION 313) are subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right to Know Act of 1986 and of 40 CFR 372.

PNT178 PAINT

TCI POWDER COATINGS

Material Safety Data Sheet

Date reviewed: August 1st 2008

SECTION I - PRODUCT AND COMPANY INFORMATION

Product Name:	LOWES GREY 300
Product Code:	6550-70304
HMIS HAZARD RATING:	Health:2 Fire:1 Reactivity:1 PPI:X

TCI POWDER COATINGS
734 DIXON DR.
ELLAVILLE,GA 31806

Contact ---------- Chuck Pless
Telephone ---------- 800-533-9067
Fax ---------- 229-937-2904
Emergency Phone ---- 229-815-0011

SECTION II - INGREDIENT INFORMATION

Ingredient	CAS Number	PERCENTAGE
TITANIUM DIOXIDE	13463-67-7	15 -30 %
EPOXY RESIN	25068-38-6	15 -30 %
HYDRATED ALUMINA	21645-51-2	2 -10 %

SECTION III - HAZARDS IDENTIFICATION

PRIMARY ROUTES OF EXPOSURE: Eyes, Inhalation, Skin

Skin Contact: Incidental contact is not expected to cause irritation. However, exposure to this product may cause an allergic skin reaction and sensitization in some individuals.

Eye Contact: May cause slight to mild redness and burning. May cause mechanical irritation.

Inhalation: This product contains ingredients with established airborne exposure limits – see Section VIII. Otherwise it is considered a nuisance dust. No effects are expected when exposures are maintained below the exposure limits of Section VIII. However, exposure to this product may cause an allergic reaction and sensitization in some individuals. Lung and respiratory conditions may be aggravated by exposure.

Ingestion: May cause pain and upset stomach.

Keep all equipment clean and work areas free from dust. Avoid excessive skin contact. Do not ingest or inhale. Personnel should be trained in the safe handling and proper use of this product. Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities.

Store in a cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. Protect from physical damage.

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

Product ingredients other than ingredients with established airborne exposure limits may be considered under the PEL for particulates not otherwise regulated (nuisance dust).

Occupational Exposure Limits

Ingredients	ACGIH TLV	ACGIH TLV-C	ACGIH STEL	OSHA STEL	OSHA PEL
TITANIUM DIOXIDE	10 mg/m3	n/est	n/est	n/est	10 mg/m3
EPOXY RESIN	10 mg/m3	n/est	n/est	n/est	15 mg/m3
HYDRATED ALUMINA	10 mg/m3	n/est	n/est	n/est	15 mg/m3
NUISANCE DUST	10 mg/m3	N/est	N/est	N/est	15 mg/m3 (total)
	3 mg/m3				5 mg/m3 (respirable)

ENGINEERING CONTROLS: Provide ventilation to keep airborne particulate concentration below established airborne exposure limits (TLV's or PEL's). Explosion proof exhaust ventilation is recommended. Ventilation equipment, baghouse, and cyclone dust collection should be grounded. Curing ovens and heating chambers should be properly vented to prevent fumes from entering the workplace.

RESPIRATORS: Use a properly fitted NIOSH/MSHA approved respirator if needed to avoid breathing dust.

SKIN PROTECTION: Protective gloves & clothing recommended.

EYE PROTECTION: Goggles or safety glasses with side-shields recommended.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Form:	SOLID POWDER
Color:	GREY
Odor:	NEGLIGIBLE

TITANIUM DIOXIDE	Signs and symptoms of acute exposure to titanium dioxide may include physical irritation of the skin and eyes, with redness and swelling; cough; and sneezing. Signs and symptoms of chronic exposure to titanium dioxide may include X-ray evidence of mild fibrosis; dysprea; cough; and declines in pulmonary function. Titanium dioxide is not known to cause sensitization. LD50 (oral/rat)=>10,000 mg/kg LD50 (dermal/rabbit)=>10,000 mg/kg In 2006 IARC concluded that titanium dioxide is possibly carcinogenic to humans (Group 2B). This conclusion was based on experimental evidence in animals (rat inhalation studies). There is inadequate evidence in humans for the carcinogenicity of titanium dioxide.
EPOXY RESIN	This resin material has negligible water solubility and low toxicity. Overexposure to solid epoxy resin can cause eye, skin and respiratory irritation due to abrasiveness. Similar resin materials have behaved as moderate eye irritants in animals. Prolonged or repeated contact with epoxy resin may cause sensitization. Exposure studies with related materials have shown some evidence for allergic contact dermatitis, and rarely an allergic respiratory reaction like asthma, in sensitized individuals. Medical conditions that may be aggravated by overexposure to this material include respiratory, allergy, eczema and other skin conditions. The following toxicology information has been reported: LD50 (oral/rat) => 5,000 mg/kg; LD50 (dermal/rabbit) => 4,000 mg/kg. The IARC has concluded that epoxy resin materials of this type are not classifiable as a carcinogen (Group 3), that is human and animal evidence of carcinogenicity is inadequate. Carcinogenicity: OSHA = No, IARC = No, NTP = No. Some resin manufacturers state that some similar resins have shown mutagenic activity in "in vitro" (test tube) tests, while others have not.
HYDRATED ALUMINA	Hydrated Alumina (aluminum hydroxide) is expected to be a low health risk by inhalation and should be treated as a nuisance dust particulate. However, exposure to Hydrated Alumina can cause irritation to the respiratory tract. Symptoms may include coughing and shortness of breath. Exposure to eyes can cause irritation, redness, and pain. Exposure to skin may cause mild irritation. Short term oral toxicity is expected to be low. Acute animal ingestion toxicity values are generally not available since at higher dosages fatal intestinal blockage precludes observing systemic toxicity effects. In general, no adverse effects have been observed in experimental animals following ingestion of 1-2% hydrated Alumina in the diet. Carcinogenicity: NTP=No, IARC=No, OSHA=No.

SECTION XII - ECOLOGICAL INFORMATION

No information is available for this product.

SECTION XIII - DISPOSAL CONSIDERATIONS

PNT212 PAINT

TCI POWDER COATINGS

Material Safety Data Sheet

Date reviewed: August 1st 2008

SECTION I - PRODUCT AND COMPANY INFORMATION

Product Name:	WIN GREY
Product Code:	9900-7111
HMIS HAZARD RATING:	Health:2 Fire:1 Reactivity:1 PPI:X

TCI POWDER COATINGS
734 DIXON DR.
ELLAVILLE,GA 31806

Contact ---------- Chuck Pless
Telephone ---------- 800-533-9067
Fax ---------- 229-937-2904
Emergency Phone ---- 229-815-0011

SECTION II - INGREDIENT INFORMATION

Ingredient	CAS Number	PERCENTAGE
CALCIUM CARBONATE	471-34-1	15 -30 %
TITANIUM DIOXIDE	13463-67-7	15 -30 %
1,3,5 TRIGLYCIDYL ISOCYANURATE	2451-62-9	3 -6 %

SECTION III - HAZARDS IDENTIFICATION

Sweep up carefully or use explosion-proof vacuum cleaner. Then dispose of in accordance with local, state, and federal regulations.

SECTION VII - HANDLING AND STORAGE

Keep all equipment clean and work areas free from dust. Avoid excessive skin contact. Do not ingest or inhale. Personnel should be trained in the safe handling and proper use of this product. Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities.

Store in a cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. Protect from physical damage.

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

Product ingredients other than ingredients with established airborne exposure limits may be considered under the PEL for particulates not otherwise regulated (nuisance dust).

Occupational Exposure Limits

Ingredients	ACGIH TLV	ACGIH TLV-C	ACGIH STEL	OSHA STEL	OSHA PEL
CALCIUM CARBONATE	10 mg/m3	n/est	n/est	n/est	15 mg/m3
TITANIUM DIOXIDE	10 mg/m3	n/est	n/est	n/est	10 mg/m3
1,3,5 TRIGLYCIDYL ISOCYANURATE					
NUISANCE DUST	10 mg/m3 3 mg/m3	N/est	N/est	N/est	15 mg/m3 (total) 5 mg/m3 (respirable)

ENGINEERING CONTROLS: Provide ventilation to keep airborne particulate concentration below established airborne exposure limits (TLV's or PEL's). Explosion proof exhaust ventilation is recommended. Ventilation equipment, baghouse, and cyclone dust collection should be grounded. Curing ovens and heating chambers should be properly vented to prevent fumes from entering the workplace.

RESPIRATORS: Use a properly fitted NIOSH/MSHA approved respirator if needed to avoid breathing dust.

SKIN PROTECTION: Protective gloves & clothing recommended.

EYE PROTECTION: Goggles or safety glasses with side-shields recommended.

CALCIUM CARBONATE	Overexposure to Calcium Carbonate may result in irritation to eyes, skin and respiratory system. Acute ingestion may result in mild gastrointestinal distress while chronic exposure may result in hypercalcemia, alkalosis and renal impairment. Approximately 70-80% of inhaled Calcium Carbonate was retained in the lungs. Animal studies suggest that inhalation of Calcium Carbonate dusts may enhance susceptibility to respiratory infection. Acute Toxicity: LD50 (oral/rat)=6450 mg/kg. Carcinogenicity: NTP=No, IARC=No, OSHA=No.
TITANIUM DIOXIDE	Signs and symptoms of acute exposure to titanium dioxide may include physical irritation of the skin and eyes, with redness and swelling; cough; and sneezing. Signs and symptoms of chronic exposure to titanium dioxide may include X-ray evidence of mild fibrosis; dysprea; cough; and declines in pulmonary function. Titanium dioxide is not known to cause sensitization. LD50 (oral/rat)=>10,000 mg/kg LD50 (dermal/rabbit)=>10,000 mg/kg In 2006 IARC concluded that titanium dioxide is possibly carcinogenic to humans (Group 2B). This conclusion was based on experimental evidence in animals (rat inhalation studies). There is inadequate evidence in humans for the carcinogenicity of titanium dioxide.
1,3,5 TRIGLYCIDYL ISOCYANURATE	

SECTION XII - ECOLOGICAL INFORMATION

No information is available for this product.

SECTION XIII - DISPOSAL CONSIDERATIONS

Dispose in accordance with all local, state, and federal regulations.

SECTION XIV - TRANSPORT INFORMATION

In non-bulk containers this product is not a regulated Hazardous Material for transportation (49 CFR 172).

SECTION XV - REGULATORY INFORMATION

PNT212 PAINT

TCI POWDER COATINGS

Material Safety Data Sheet

Date reviewed: August 1st 2008

SECTION I - PRODUCT AND COMPANY INFORMATION

Product Name:	WIN GREY
Product Code:	9900-7111
HMIS HAZARD RATING:	Health:2 Fire:1 Reactivity:1 PPI:X

TCI POWDER COATINGS
734 DIXON DR.
ELLAVILLE,GA 31806

Contact ---------- Chuck Pless
Telephone ---------- 800-533-9067
Fax ---------- 229-937-2904
Emergency Phone ---- 229-815-0011

SECTION II - INGREDIENT INFORMATION

Ingredient	CAS Number	PERCENTAGE
CALCIUM CARBONATE	471-34-1	15 -30 %
TITANIUM DIOXIDE	13463-67-7	15 -30 %
1,3,5 TRIGLYCIDYL ISOCYANURATE	2451-62-9	3 -6 %

SECTION III - HAZARDS IDENTIFICATION

Sweep up carefully or use explosion-proof vacuum cleaner. Then dispose of in accordance with local, state, and federal regulations.

SECTION VII - HANDLING AND STORAGE

Keep all equipment clean and work areas free from dust. Avoid excessive skin contact. Do not ingest or inhale. Personnel should be trained in the safe handling and proper use of this product. Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities.

Store in a cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. Protect from physical damage.

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

Product ingredients other than ingredients with established airborne exposure limits may be considered under the PEL for particulates not otherwise regulated (nuisance dust).

Occupational Exposure Limits

Ingredients	ACGIH TLV	ACGIH TLV-C	ACGIH STEL	OSHA STEL	OSHA PEL
CALCIUM CARBONATE	10 mg/m3	n/est	n/est	n/est	15 mg/m3
TITANIUM DIOXIDE	10 mg/m3	n/est	n/est	n/est	10 mg/m3
1,3,5 TRIGLYCIDYL ISOCYANURATE					
NUISANCE DUST	10 mg/m3 3 mg/m3	N/est	N/est	N/est	15 mg/m3 (total) 5 mg/m3 (respirable)

ENGINEERING CONTROLS: Provide ventilation to keep airborne particulate concentration below established airborne exposure limits (TLV's or PEL's). Explosion proof exhaust ventilation is recommended. Ventilation equipment, baghouse, and cyclone dust collection should be grounded. Curing ovens and heating chambers should be properly vented to prevent fumes from entering the workplace.

RESPIRATORS: Use a properly fitted NIOSH/MSHA approved respirator if needed to avoid breathing dust.

SKIN PROTECTION: Protective gloves & clothing recommended.

EYE PROTECTION: Goggles or safety glasses with side-shields recommended.

CALCIUM CARBONATE	Overexposure to Calcium Carbonate may result in irritation to eyes, skin and respiratory system. Acute ingestion may result in mild gastrointestinal distress while chronic exposure may result in hypercalcemia, alkalosis and renal impairment. Approximately 70-80% of inhaled Calcium Carbonate was retained in the lungs. Animal studies suggest that inhalation of Calcium Carbonate dusts may enhance susceptibility to respiratory infection. Acute Toxicity: LD50 (oral/rat)=6450 mg/kg. Carcinogenicity: NTP=No, IARC=No, OSHA=No.
TITANIUM DIOXIDE	Signs and symptoms of acute exposure to titanium dioxide may include physical irritation of the skin and eyes, with redness and swelling; cough; and sneezing. Signs and symptoms of chronic exposure to titanium dioxide may include X-ray evidence of mild fibrosis; dysprea; cough; and declines in pulmonary function. Titanium dioxide is not known to cause sensitization. LD50 (oral/rat)=>10,000 mg/kg LD50 (dermal/rabbit)=>10,000 mg/kg In 2006 IARC concluded that titanium dioxide is possibly carcinogenic to humans (Group 2B). This conclusion was based on experimental evidence in animals (rat inhalation studies). There is inadequate evidence in humans for the carcinogenicity of titanium dioxide.
1,3,5 TRIGLYCIDYL ISOCYANURATE	

SECTION XII - ECOLOGICAL INFORMATION

No information is available for this product.

SECTION XIII - DISPOSAL CONSIDERATIONS

Dispose in accordance with all local, state, and federal regulations.

SECTION XIV - TRANSPORT INFORMATION

In non-bulk containers this product is not a regulated Hazardous Material for transportation (49 CFR 172).

SECTION XV - REGULATORY INFORMATION

406A Slocum Adhesive C-1274 (ADH102)

MATERIAL SAFETY DATA SHEET

6/21/2007

PRODUCT NAME: C-1274

NFPA CODES: H F R P
1 0 0 B

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: Slocum Adhesives Corp.
ADDRESS : 2500 Carroll Avenue
Lynchburg, VA 24501

EMERGENCY PHONE : 800-424-9300 (CHEMTREC)
INFORMATION PHONE : 434-847-5671

DATE PRINTED : 6/21/2007
DATE REVISED : 04/16/07

SECTION II - HAZARDOUS INGREDIENTS

REPORTABLE COMPONENTS	CAS NUMBER	VAPOR PRESS.	WT. %
Naphtha 2429 (VM&P) OSHA PEL: 400 ppm ACGIH TLV: 300 ppm TWA	64742-65-7	26.0	5 - 15%

No SARA reportable components.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT(°F): 258
VAPOR DENSITY: Heavier than air.
EVAPORATION RATE: Faster than nBuAc.
ODOR: Faint odor.
VOLATILE (WT.%): 45.9228%

SPECIFIC GRAVITY: 1.0153
WEIGHT PER GAL.: 8.4544 lb/gl
SOLUBILITY IN WATER: Dispersible.
APPEARANCE: Off-white liquid.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT(°F): N/A **METHOD USED: N/A**
FLAMMABLE LIMITS IN AIR (% BY VOL): LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: Use foam or water.

SPECIAL FIREFIGHTING PROCEDURES
The use of self-contained breathing apparatus is recommended for fire fighters.

SECTION V - REACTIVITY DATA

STABILITY: Stable.

CONDITIONS TO AVOID: Avoid extremes of heat or cold.

INCOMPATIBILITY (MATERIALS TO AVOID): Incompatible with alkali metals, halogens, and strong acids or bases.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Carbon monoxide, carbon dioxide, smoke, and other unidentified organic compounds may be formed during combustion.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Stop spill/release if it can be done without risk. Wear appropriate protective equipment including respiratory protection as conditions warrant and stay upwind. Prevent material from entering sewers, storm drains, or other natural waterways. Dike far ahead of spill for later recovery or disposal. Spilled material may be absorbed into an appropriate absorbent material. Immediate clean-up of any spill is recommended. Notify fire authorities and appropriate federal, state, and local agencies.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Avoid extremes of heat or cold. Keep product containers at normal room temperatures and avoid freezing which will result in irreversible coagulation. Keep product containers closed when not in use. Use and store material in well-ventilated areas away from open flames, heat, hot metal surfaces, and other potential sources of ignition. Store only in approved containers. Personal contact and inhalation should be avoided.

========== SECTION VIII - CONTROL MEASURES ==========

RESPIRATORY PROTECTION: None would generally be required for this product.

VENTILATION: Use only in well-ventilated area.

PROTECTIVE GLOVES: Impermeable gloves.

EYE PROTECTION: Wear safety glasses or goggles to protect against exposure.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: May use impermeable apron as needed, eye washes, and safety showers.

========== SECTION IX - DISCLAIMER ==========

The information contained herein is based on the data available to us and is believed to be correct. However, Slocum Adhesives Corporation makes no warranty, expressed or implied, regarding the accuracy of these data or the results to be obtained from the use thereof. Slocum Adhesives Corporation assumes no responsibility for injury from the use of the product described herein.

Tuf-Skin 400A 55007
Insulation

Johns Manville

Material Name: Fiber Glass Specialty Insulation

Safety Data Sheet
ID: 1001

Section 1 - Product and Company Identification

Hazard Label WARNING label

Company Information

Johns Manville
Insulation Systems
P.O. Box 5108
Denver, CO 80127 USA

Telephone: 303-978-2000 8:00AM-5:00PM M-F
Internet Address: http://www.jm.com
Emergency: 800-424-9300 (Chemtrec, In English)

Trade Names:

Appliance Spin-Glas® (ASG);
CM-24;
CM-26;
Exact-O-Board®;
Flex-Glas™ PC;
Microlite® Duct Wrap;
Microlite® MW;
Microlite® TC;
Microlite® WH;
Microlite® XP;
Microlite®;
Range Spin-Glas®;
Spin-Glas® (SG) 22-32;
Spin-Glas® All Types;
Spin-Glas® Board Equipment Insulation;
Spin-Glas® Water Heater (SG-WH);
Tuf-Glas™;
Tuf-Skin® II;
Tuf-Skin®;
Valulite™

Section 2 - Composition / Information on Ingredients

CAS #	Component	Percent
65997-17-3	Fiber Glass Wool	50-99
Not Available	Urea extended phenol-formaldehyde binder (cured)	1-20**
Not Available	Urea extended phenol-melamine formaldehyde binder(cured)	1-20**
1333-86-4	Carbon black (encapsulated)	0-20*
Not Available	Phenol-formaldehyde binder (cured)	1-6***
50-00-0	Formaldehyde	<1

Component Related Regulatory Information

Glass filaments, Glass wool fiber, Fibrous glass.
*Carbon black is a component of some black products only and is encapsulated within binder or coatings. Note: Due to the product form, exposures to hazardous dusts or fumes are not expected to occur. Exposure limits are given for reference only.
** For trade names other than Range Spin-Glas®, binder may be any of these.
*** Range Spin-Glas® binder.
Some products have facings of kraft paper, vinyl, or other materials.

Free formaldehyde released only with high temperature and humidity. Temperatures >32°C/90°F.

Section 3 - Hazards Identification

Emergency Overview

APPEARANCE AND ODOR: Fibrous glass blanket or board; white, gold-to-yellow, orange, black, or black with an amber or black core; with or without non-woven facings. No significant odor.

Inhalation of excessive amounts of dust from the product may cause temporary upper respiratory irritation and/or congestion--remove individual to fresh air.

Potential Health Effects

Summary

Breathing dust from this product may cause a scratchy throat, congestion, and slight coughing. Getting dust or fibers on the skin, or in the eyes may cause itching, rash, or redness. Additional health and safety information is provided in Section 11 of this material safety data sheet.

Inhalation

Irritation of the upper respiratory tract (scratchy throat), coughing, and congestion may occur in extreme exposures.

Skin

Temporary irritation (itching) or redness may occur.

Storage Procedures

Warehouse storage should be in accordance with package directions, if any. Material should be kept clean, dry, and in original packaging.

Section 8 - Exposure Controls / Personal Protection

The Occupational Safety and Health Administration (OSHA) has not adopted specific occupational exposure standards for fiber glass. Fiber glass is treated as a nuisance dust and is regulated by OSHA as a particulate not otherwise regulated (total dust) shown in CFR 1910.1000 Table Z-3.
Respirable fraction 5 mg/m3
Total dust 15 mg/m3

Carbon black (encapsulated) (1333-86-4)
ACGIH: 3.5 mg/m3 TWA
OSHA: 3.5 mg/m3 TWA

Formaldehyde (50-00-0)
ACGIH: 0.3 ppm Ceiling
OSHA: 0.5 ppm Action Level; 0.75 ppm TWA; 2 ppm STEL (Irritant and potential cancer hazard - see 29 CFR 1910.1048)

Exposure Limits for Chemicals which may be generated during processing

Methyl isocyanate (624-83-9)
ACGIH: 0.02 ppm TWA
Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA: 0.02 ppm TWA; 0.05 mg/m3 TWA
Prevent or reduce skin absorption
NIOSH: 0.02 ppm TWA; 0.05 mg/m3 TWA
Potential for dermal absorption

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Safety glasses with side shields are recommended to keep dust out of the eyes.

Personal Protective Equipment: Ears

Use ear protection (earplugs, hood, or earmuffs) to prevent airborne dust or fibers from entering the ear, if necessary.

Personal Protective Equipment: Skin

Leather or cotton gloves should be worn to prevent skin contact and irritation. Barrier creams may also be used to reduce skin contact and irritation caused by fiber glass.

Personal Protective Equipment: Respiratory

A respirator should be used if ventilation is unavailable, or is inadequate for keeping dust and fiber levels below the applicable exposure limits. In those cases, use a NIOSH-certified disposable or reusable particulate respirator with an efficiency rating of N95 or higher (under 42 CFR 84) when working with this product. For exposures up to five times the established exposure limits use a quarter-mask respirator, rated N95 or higher; and for exposures up to ten times the established exposure limits use a half-mask respirator (e.g., MSA's DM-11, Racal's Delta N95, 3M's 8210), rated N95 or higher. Operations such as sawing, blowing, tear out, and spraying may generate airborne fiber concentrations requiring a higher level of respiratory protection. For exposures up to 50 times the established exposure limits use a full-face respirator, rated N99 or higher.

Ventilation

In fixed manufacturing settings, local exhaust ventilation should be provided at areas of cutting to remove airborne dust and fibers. General dilution ventilation should be provided as necessary to keep airborne dust and fibers below the applicable exposure limits and guidelines. The need for ventilation systems should be evaluated by a professional industrial hygienist, while the design of specific ventilation systems should be conducted by a professional engineer.

Personal Protective Equipment: General

Wear a cap, a loose-fitting, long-sleeved shirt and long pants to protect skin from irritation. Exposed skin areas should be washed with soap and warm water after handling or working with fiber glass. Clothing should be washed separately from other clothes, and the washer should be rinsed thoroughly (run empty for a complete wash cycle). This will reduce the chances of fiber glass being transferred to other clothing.

Chronic Toxicity

Fiber Glass Wool: In October 2001, IARC classified fiber glass wool as Group 3, "not classifiable as to its carcinogenicity to humans." The 2001 decision was based on current human and animal research that shows no association between inhalation exposure to dust from fiber glass wool and the development of respiratory disease. This is a reversal of the IARC finding in 1987 of a Group 2B designation (possibly carcinogenic to humans) based on earlier studies in which animals were injected with large quantities of fiber glass. NTP and ACGIH have not yet reviewed the IARC reclassification or the most current fiber glass health research; at this time, both agencies continue to classify glass wool based on the earlier animal injection studies.

Section 12 - Ecological Information

Ecotoxicity

A: General Product Information

No data available for this product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Carbon black (encapsulated) (1333-86-4)

24 Hr EC50 Daphnia magna: >5600 mg/L

Formaldehyde (50-00-0)

96 Hr LC50 Pimephales promelas: 24.1 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 0.10 mg/L [flow-through]; 96 Hr LC50 Brachydanio rerio: 41 mg/L [static]
5 min EC50 Photobacterium phosphoreum: 9.0 mg/L; 15 min EC50 Photobacterium phosphoreum: 7.26 mg/L; 25 min EC50 Photobacterium phosphoreum: 6.81 mg/L; 30 min EC50 Photobacterium phosphoreum: 16.5 mg/L; 1 Hr EC50 Vibrio harveyi: 1.2 mg/L; 5 Hr EC50 Vibrio harveyi: 3.7 mg/L; 72 Hr EC50 Colpoda aspera: 5.39 mg/L
96 Hr EC50 water flea: 20 mg/L; 48 Hr EC50 Daphnia magna: 2 mg/L

Section 13 - Disposal Considerations

US EPA Waste Number & Descriptions

General Product Information

This product, as supplied, is not regulated as a hazardous waste by the U.S. Environmental Protection Agency (EPA) under Resource Conservation and Recovery Act (RCRA) regulations. Comply with state and local regulations for disposal. If you are unsure of the regulations, contact your local Public Health Department, or the local office of the EPA.

Disposal Instructions

Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

Section 14 - Transportation Information

International Transportation Regulations

These products are not classified as dangerous goods according to international transport regulations.

Section 15 - Regulatory Information

US Federal Regulations

A: General Product Information

SARA 311 Status. The following SARA 311 designations apply to this product: Delayed (chronic) health hazard.

B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Formaldehyde (50-00-0)

SARA 302: 500 lb TPQ
SARA 313: 0.1 % de minimis concentration
CERCLA: 100 lb final RQ; 45.4 kg final RQ

State Regulations

A: General Product Information

Other state regulations may apply. Check individual state requirements.

06/05/02	1001-2.0001	Sect. 2, added acrylic resin for Formaldehyde-free product. Sect. 3 APPEARANCE, inserted "white" for Formaldehyde-free product.
02/27/03	1001-2.0002	Sect. 11 corrected for IARC 2002.
04/30/03	1001-2.0003	Sect. 1: Add "Range-Glas® XG" and "Microlite® XG" new trade names.
06/02/03	1001-2.0004	Sect. 1: Changed manufacturer to Performance Materials Div. Moved XG products to separate MSDS 1201. Updated for carbon black Prop. 65: Sect. 2 and 11.
01/07/04	1001-2.0005	Sect. 1 Changed OEM to Specialty, Sect. 11 Deleted carcinogen statement.
04/30/04	1001-2.0006	Minor regulatory update (LOLI)
06/21/04	1001-2.0007	Sect 3 removed 'green' and replaced it with 'amber or black core'. Updated hazard label from 'FBG-003' to 'FGW-01'.
08/02/05	1001-2.0008	Section 2 addition of trade name Tuf-Glas™. Minor edits throughout.
10/06/05	1001-2.0009	Section 1, removed Microlite AWP from trade names. Obsolete product.
01/16/07	1001-2.0011	Added Methyl Isocyanate to sections 8 and 10 based on analysis. Section 9 added VOC content for products based on analysis. Added article statement in Section 15.
07/02/07	1001-2.0112	Added Microlite Duct Wrap to trade names. Addition of WHMIS classification.

This is the end of MSDS # 1001

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY, OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.

ACCUMULATION START DATE _____

E.P.A. WASTE NO. D002,D005,D007

D.O.T. PROPER SHIPPING NAME RQ, WASTE CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S., (POTASSIUM HYDROXIDE, SODIUM SILICATE)

AND _____

U.N. OR N.A. NO. UN3266 8 PG II

GENERATOR NAME MATTHEWS INDUSTRIES

ADDRESS 23 SECOND STREET, S.W.

CITY DECATUR STATE AL 356012861

E.P.A. I.D. NO. ALD981758188

MANIFEST DOCUMENT NO. _____

44410

HAZARDOUS WASTE
HANDLE WITH CARE

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY, OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.

ACCUMULATION START DATE _____ **E.P.A. WASTE NO.** D001,F003,F005

D.O.T. PROPER SHIPPING NAME RQ WASTE FLAMMABLE LIQUIDS, N.O.S. (TOLUENE, XYLENE),

AND _____

U.N. OR N.A. NO. UN1993 3 PG II

GENERATOR NAME MATTHEWS INDUSTRIES

ADDRESS 23 SECOND STREET, S.W.

CITY DECATUR **STATE** AL 356012861

E.P.A. I.D. NO. ALD981758188 **MANIFEST DOCUMENT NO.** _____

1184

HAZARDOUS WASTE
HANDLE WITH CARE

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY, OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.

ACCUMULATION START DATE _____ **E.P.A. WASTE NO.** F003

D.O.T. PROPER SHIPPING NAME HAZARDOUS WASTE LIQUID,N.O.S.,

AND _____

U.N. OR N.A. NO. NA3082 9 PG III

GENERATOR NAME MATTHEWS INDUSTRIES

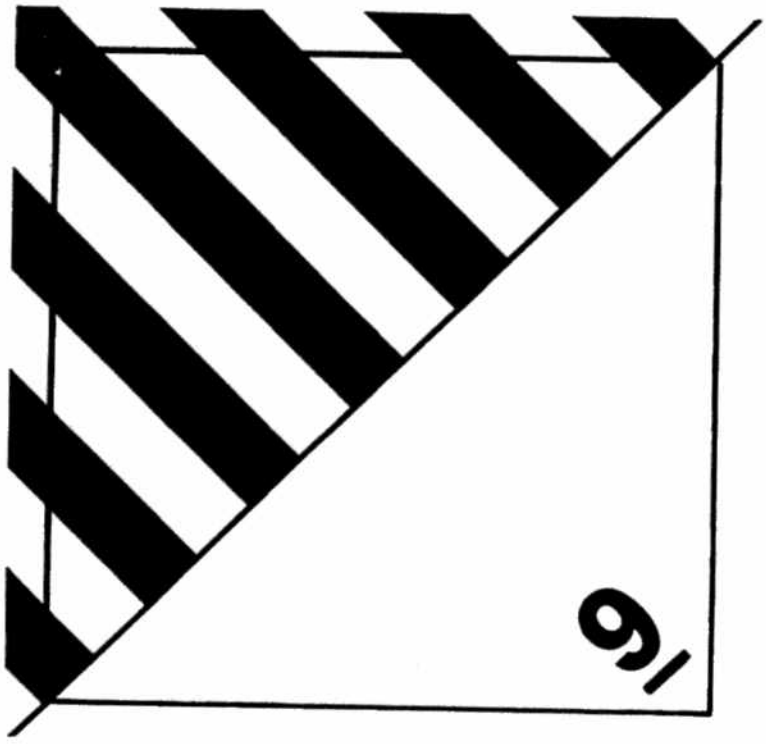
ADDRESS 23 SECOND STREET, S.W.

CITY DECATUR **STATE** AL 356012861

E.P.A. I.D. NO. ALD981758188 **MANIFEST DOCUMENT NO.** _____

12664

HAZARDOUS WASTE
HANDLE WITH CARE



Houghton International Inc.

Material Safety Data Sheet
HOUGHTO-CLEAN 5621

Revision Date : 07/07/2001

1. Chemical Product and Company Identification

Product Name	HOUGHTO-CLEAN 5621	Emergency Phone Number	24 HOUR - (800) 424-9300 (CHEMTREC)
Company Name	Houghton International Inc. Madison & Van Buren Aves Valley Forge, PA 19482	FAX	(610) 666-1376
Website	www.houghtonintl.com	Customer Service	(888) 459-9844
Telephone	(610) 666-4000		

2. Hazardous Ingredients

Component	Cas No	% by Weight	Hazards
Potassium Hydroxide	1310-58-3	10-30	TLV: 2 mg/m³ - ceiling PEL: N/E STEL: N/E Other: N/E

N/E - Not Established; N/A - Not Applicable; Mfr - Manufacturer Recommendation

3. Hazards Identification

Primary Entry Routes	EYES, SKIN, INHALATION
Acute Effects	
Inhalation	MISTS MAY CAUSE SEVERE IRRITATION OR CORROSIVE BURNS OF RESPIRATORY TRACT.
Eye	MAY CAUSE SEVERE IRRITATION OR CORROSIVE BURNS.
Skin	MAY CAUSE SEVERE IRRITATION OR CORROSIVE BURNS.
Ingestion	MAY CAUSE SEVERE IRRITATION OR CORROSIVE BURNS TO MOUTH, THROAT AND DIGESTIVE TRACT.
Carcinogenicity	NO COMPONENT KNOWN TO BE PRESENT IN THIS PRODUCT AT GREATER THAN 0.1% IS LISTED AS A CARCINOGEN BY IARC, NTP OR OSHA.
Medical Conditions Aggravated by LongTerm Exposure	PRE-EXISTING SKIN AND RESPIRATORY CONDITIONS MAY BE AGGRAVATED BY EXPOSURE.
Chronic Effects	UNKNOWN

5. Fire Fighting Measures - continued

NFPA:

Health	3
Flammability	0
Reactivity	1
Special	COR

N/A - Not Applicable; ND - Not Determined; > - Greater Than; < - Less Than

6. Accidental Release Measures

Spill or Release Procedures	WEAR GOGGLES AND GLOVES. DILUTE WITH WATER, NEUTRALIZE WITH DILUTE ACID AND MOP UP THOROUGHLY TO AVOID RESIDUAL SLIPPERINESS.

7. Handling and Storage

Storage and Handling Requirements	CAUTION - MATERIAL IS STRONGLY ALKALINE; CAN CAUSE ALKALINE BURNS. PROTECT SKIN AND EYES WHEN USING. DO NOT STORE NEAR ACIDS. WASH THOROUGHLY AFTER HANDLING. KEEP CONTAINERS CLOSED WHEN NOT IN USE.

8. Exposure Controls/Personal Protection

Engineering Controls	GENERAL MECHANICAL TYPE VENTILATION IS SATISFACTORY.
Personal Protective Equipment	
Eye/Face Protection	SAFETY GOGGLES OR FULL FACESHIELD.
Skin Protection	RUBBER GLOVES.
Respiratory Protection	REQUIRED IF EXPOSURE LIMITS IN SECTION 2 ARE EXCEEDED.
Other	RUBBER APRON; EYE BATH AND SAFETY SHOWER.

Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, or applying cosmetics.

12. Ecological Information

NO DATA AVAILABLE

13. Disposal Considerations

Disposal	FOLLOW PERTINENT REGULATIONS FOR DISPOSAL. IT IS THE RESPONSIBILITY OF THE PRODUCT USER TO DETERMINE, AT THE TIME OF DISPOSAL, WHETHER A MATERIAL CONTAINING THE PRODUCT OR DERIVED FROM THE PRODUCT SHOULD BE CLASSIFIED AS A HAZARDOUS WASTE. (40 CFR 261.20-24)
RCRA Hazardous Waste Number	D002; CORROSIVITY.

14. Transportation Information

Proper Shipping Name	POTASSIUM HYDROXIDE SOLUTION, 8, UN 1814, II.

15. Regulatory Information

TSCA Section 8(b)	ALL OF THE COMPONENTS IN THIS PRODUCT ARE ON THE TSCA INVENTORY.
CERCLA Reportable Quantity	POTASSIUM HYDROXIDE - RQ: 1000 LBS.
SARA Title III, Section 313	THIS PRODUCT CONTAINS NO TOXIC CHEMICAL SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.
Ozone Depleting Substances	THIS PRODUCT WAS NOT MANUFACTURED, DOES NOT CONTAIN, AND WAS NOT PACKAGED USING ANY CLASS I OR CLASS II OZONE DEPLETING SUBSTANCE AS DEFINED BY THE CLEAN AIR ACT.

16. Other Information

Prepared By	GARY CARL
Title	MANAGER, PRODUCT SAFETY

Houghton International Inc.

Material Safety Data Sheet
HOUGHTO-PHOS 5542

Revision Date : 08/05/2005

1. Chemical Product and Company Identification

Product Name	HOUGHTO-PHOS 5542	Emergency Phone Number	24 HOUR - (800) 424-9300 (CHEMTREC)
Company Name	Houghton International Inc. Madison & Van Buren Aves Valley Forge, PA 19482	FAX	(610) 666-1376
Website	www.houghtonintl.com	Customer Service	(888) 459-9844
Telephone	(610) 666-4000		

2. Hazardous Ingredients

Component	Cas No	% by Weight	Hazards
Manganese Nitrate	10377-66-9	1-10	TLV: 0.2 mg/m³ as Mn PEL: 5 mg/m³ as Mn STEL: N/E Other: N/E
Nickel Nitrate	13138-45-9	1-10	TLV: 0.1 mg/m³ as Ni PEL: 1 mg/m³ as Ni STEL: N/E Other: N/E
Phosphoric Acid	7664-38-2	10-30	TLV: 1 mg/m³ PEL: 1 mg/m³ STEL: 3 mg/m³ Other: N/E

N/E - Not Established; N/A - Not Applicable; Mfr - Manufacturer Recommendation

3. Hazards Identification

Primary Entry Routes: EYES, SKIN, INHALATION

Acute Effects

Inhalation	AVOID BREATHING MISTS OF PRODUCT AND/OR DILUTIONS, WHICH MAY CAUSE IRRITATION OF UPPER RESPIRATORY TRACT.
Eye	MAY CAUSE SEVERE IRRITATION OR CORROSIVE BURNS.
Skin	MAY CAUSE SEVERE IRRITATION OR CORROSIVE BURNS.
Ingestion	MAY CAUSE SEVERE IRRITATION OR CORROSIVE BURNS OF MOUTH, THROAT AND DIGESTIVE TRACT.

5. Fire Fighting Measures - continued

Extinguishing Media	N/A - WILL NOT BURN.
Unusual Fire or Explosion Hazards	MATERIAL IS STRONGLY ACIDIC. IF SPILLED DURING FIREFIGHTING, WEAR PROTECTIVE GEAR.
Fire Fighting Instructions	IF WATER IS REMOVED, USE CARBON DIOXIDE, FOAM, OR DRY CHEMICAL.
NFPA:	
Health	3
Flammability	0
Reactivity	1
Special	COR

N/A - Not Applicable; ND - Not Determined; > - Greater Than; < - Less Than

6. Accidental Release Measures

Spill or Release Procedures	WEAR GOGGLES AND GLOVES. NEUTRALIZE WITH SODA ASH, DILUTE WITH WATER AND MOP UP THOROUGHLY.

7. Handling and Storage

Storage and Handling Requirements	STORE AWAY FROM STRONG ALKALI. MATERIAL IS STRONGLY ACIDIC. WEAR RECOMMENDED PROTECTIVE EQUIPMENT. WASH THOROUGHLY AFTER HANDLING. KEEP CONTAINERS CLOSED WHEN NOT IN USE.

8. Exposure Controls/Personal Protection

Engineering Controls	EXHAUST FOR MIST CONDITIONS. GENERAL TYPE FOR NORMAL USAGE.
Personal Protective Equipment	
Eye/Face Protection	SAFETY GOGGLES OR FACESHIELD.
Skin Protection	RUBBER GLOVES.
Respiratory Protection	REQUIRED IF EXPOSURE LIMITS IN SECTION 2 ARE EXCEEDED.
Other	PROTECTIVE CLOTHING; EYE BATH AND SAFETY SHOWER.

11. Toxicological Information

NO DATA AVAILABLE

12. Ecological Information

NO DATA AVAILABLE

13. Disposal Considerations

Disposal	FOLLOW PERTINENT REGULATIONS FOR DISPOSAL. IT IS THE RESPONSIBILITY OF THE PRODUCT USER TO DETERMINE, AT THE TIME OF DISPOSAL, WHETHER A MATERIAL CONTAINING THE PRODUCT OR DERIVED FROM THE PRODUCT SHOULD BE CLASSIFIED AS A HAZARDOUS WASTE. (40 CFR 261.20-24)
RCRA Hazardous Waste Number	D002 AS RECEIVED

14. Transportation Information

Proper Shipping Name	PHOSPHORIC ACID SOLUTION, 8, UN 1805, III.

15. Regulatory Information

TSCA Section 8(b)	ALL OF THE COMPONENTS IN THIS PRODUCT ARE ON THE TSCA INVENTORY.
CERCLA Reportable Quantity	PHOSPHORIC ACID: RQ - 5000 LBS; NICKEL NITRATE - 100 LBS.
SARA Title III, Section 313	3% NICKEL COMPOUNDS (0.7% NICKEL) AND 3% MANGANESE COMPOUNDS (1% MANGANESE), 10% WATER DISSOCIABLE NITRATE COMPOUNDS IN AQUEOUS SOLUTION, 5% ZINC IN ZINC COMPOUNDS .
Michigan Critical Materials Register	0.7% NICKEL AND 5% ZINC.
Ozone Depleting Substances	THIS PRODUCT WAS NOT MANUFACTURED, DOES NOT CONTAIN, AND WAS NOT PACKAGED USING ANY CLASS I OR CLASS II OZONE DEPLETING SUBSTANCE AS DEFINED BY THE CLEAN AIR ACT.

Continued on Next Page

Material Safety Data Sheet
HOUGHTO-RINSE 5907

1. Chemical Product and Company Identification

Product Name	HOUGHTO-RINSE 5907	Emergency Phone Number	24 HOUR - (800) 424-9300 (CHEMTREC)
Company Name	Houghton International Inc. Madison & Van Buren Aves Valley Forge, PA 19482	FAX	(610) 666-1376
Website	www.houghtonintl.com	Customer Service	(888) 459-9844
Telephone	(610) 666-4000		

2. Hazardous Ingredients

Component	Cas No	% by Weight	Hazards
Hexafluorozirconic Acid	12021-95-3	1-10	TLV: 2.5 mg/m³ as F; 5 mg/m³ as Zr PEL: 2.5 mg/m³ as F; 5 mg/m³ as Zr STEL: 10 mg/m³ as Zr Other: N/E

N/E - Not Established; N/A - Not Applicable; Mfr - Manufacturer Recommendation

3. Hazards Identification

Primary Entry Routes	EYES, SKIN, INHALATION
Acute Effects	
Inhalation	MAY CAUSE SEVERE IRRITATION OR CORROSIVE BURNS TO MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT.
Eye	MAY CAUSE SEVERE IRRITATION OR CORROSIVE BURNS.
Skin	MAY CAUSE SEVERE IRRITATION OR CORROSIVE BURNS.
Ingestion	MAY CAUSE SEVERE IRRITATION OR CORROSIVE BURNS TO MOUTH, THROAT AND DIGESTIVE TRACT.
Carcinogenicity	NO COMPONENT KNOWN TO BE PRESENT IN THIS PRODUCT AT GREATER THAN 0.1% IS LISTED AS A CARCINOGEN BY IARC, NTP OR OSHA.
Medical Conditions Aggravated by LongTerm Exposure	PRE-EXISTING SKIN AND RESPIRATORY CONDITIONS MAY BE AGGRAVATED BY EXPOSURE.
Chronic Effects	SEE ABOVE EFFECTS.

Continued on Next Page

5. Fire Fighting Measures - continued

Hazardous Combustion Products	COMBUSTION WILL RELEASE HYDROGEN FLUORIDE.
Fire Fighting Instructions	WEAR PROTECTIVE GEAR.
NFPA:	
Health	3
Flammability	0
Reactivity	1
Special	COR

N/A - Not Applicable; ND - Not Determined; > - Greater Than; < - Less Than

6. Accidental Release Measures

Spill or Release Procedures	WEAR PROTECTIVE GEAR. PROVIDE VENTILATION. APPLY DRY ABSORBENT MATERIAL AND SWEEP UP. FLUSH AREA WITH WATER AND MOP UP THOROUGHLY.

7. Handling and Storage

Handling Precautions	KEEP AWAY FROM STRONG OXIDIZERS AND ALKALIES. CAUTION: PRODUCT IS HIGHLY ACIDIC. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. WASH THOROUGHLY AFTER HANDLING. USE WITH ADEQUATE VENTILATION.
Storage Requirements	STORE AWAY FROM STRONG OXIDIZERS. KEEP CONTAINERS CLOSED WHEN NOT IN USE. EMPTY CONTAINERS MAY RETAIN PRODUCT RESIDUE. PRECAUTIONS APPLY TO EMPTY CONTAINERS.

8. Exposure Controls/Personal Protection

Engineering Controls	PROVIDE GENERAL AND/OR LOCAL EXHAUST VENTILATION TO MAINTAIN AIRBORNE CONCENTRATIONS BELOW THE EXPOSURE LIMITS IN SECTION 2.
Personal Protective Equipment	
Eye/Face Protection	SAFETY GOGGLES OR FULL FACE SHEILD.

11. Toxicological Information

NO DATA AVAILABLE

12. Ecological Information

NO DATA AVAILABLE

13. Disposal Considerations

Disposal	FOLLOW PERTINENT REGULATIONS FOR DISPOSAL. IT IS THE RESPONSIBILITY OF THE PRODUCT USER TO DETERMINE, AT THE TIME OF DISPOSAL, WHETHER A MATERIAL CONTAINING THE PRODUCT OR DERIVED FROM THE PRODUCT SHOULD BE CLASSIFIED AS A HAZARDOUS WASTE. (40 CFR 261.20-24)
RCRA Hazardous Waste Number	D002 (CORROSIVITY)

14. Transportation Information

Proper Shipping Name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (HEXAFLUOROZIRCONIC ACID), 8 , UN 3264, III.

15. Regulatory Information

TSCA Section 8(b)	ALL OF THE COMPONENTS IN THIS PRODUCT ARE ON THE TSCA INVENTORY.
SARA Title III, Section 313	THIS PRODUCT CONTAINS NO TOXIC CHEMICAL SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.
Ozone Depleting Substances	THIS PRODUCT WAS NOT MANUFACTURED, DOES NOT CONTAIN, AND WAS NOT PACKAGED USING ANY CLASS I OR CLASS II OZONE DEPLETING SUBSTANCE AS DEFINED BY THE CLEAN AIR ACT.

Continued on Next Page

16. Other Information

Prepared By	GARY CARL
Title	MANAGER, PRODUCT SAFETY

Disclaimer: The information presented herein has been compiled from sources considered to be dependable and is accurate as of the date issued. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use are beyond our control, Houghton International makes no warranty regarding the accuracy of such data or its suitability for any purchaser¿s use or for any consequence of its use. The data in this MSDS relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process. Safe handling and use remains the responsibility of the purchaser and the purchaser has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. Houghton International assumes no responsibility for injury to the recipient or to third persons or for any damage to any property and the recipient assumes all such risks.

8. Exposure Controls/Personal Protection - continued

Comments	USE OF GLOVES AND OTHER SKIN PROTECTION DEPENDS ON THE DURATION OF EXPOSURE AND THE TASK BEING PERFORMED. IF NECESSARY, USE CHEMICALLY RESISTANT GLOVES SUCH AS NEOPRENE, NITRILE OR EQUIVALENT MATERIALS.

Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, or applying cosmetics.

9. Physical and Chemical Properties

Appearance	CLEAR HOMOGENEOUS, STRAW COLORED LIQUID	Water Solubility	COMPLETE
Odor	SLIGHT ALKALINE ODOR	Boiling Point	215°F
Vapor Pressure (mmHg)	AS WATER	Freezing/ Melting Point	N/D
Vapor Density (Air = 1)	AS WATER	Evaporation Rate (BuAc = 1)	<1
Specific Gravity (Water = 1)	1.0404		
pH (Neat)	8.8		
pH (Dilution)			
At Percent	1		
pH	8.68		

N/D - Not Determined; N/A - Not Applicable; > - Greater Than; < - Less Than

10. Stability and Reactivity

Stability	THIS PRODUCT IS STABLE AT ROOM TEMPERATURE IN CLOSED CONTAINERS UNDER NORMAL STORAGE AND HANDLING CONDITIONS.
Chemical Incompatibilities	STRONG OXIDIZERS
Hazardous Decomposition Products	THERMAL; OXIDES OF CARBON
Hazardous Polymerization	HAZARDOUS POLYMERIZATION WILL NOT OCCUR.

3. Hazards Identification - continued

Health	1
Flammability	0
Reactivity	0

* indicates that there may be chronic health effects present

4. First Aid Measures

Inhalation	REMOVE TO A SOURCE OF FRESH AIR.
Eye Contact	FLUSH WITH WATER FOR 15 MINUTES. CONSULT PHYSICIAN.
Skin Contact	WASH WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND LAUNDER BEFORE REUSING. CONSULT PHYSICIAN IF IRRITATION PERSISTS.
Ingestion	GIVE LIQUIDS TO DILUTE. INDUCE VOMITING AND CONSULT PHYSICIAN.
Note to Physicians	NO SPECIFIC ANTIDOTE KNOWN. BASED ON INDIVIDUAL REACTIONS OF THE PATIENT, THE PHYSICIAN'S JUDGMENT SHOULD BE USED TO CONTROL SYMPTOMS AND CLINICAL CONDITIONS.

N/A - Not Applicable

5. Fire Fighting Measures

Flash Point	N/A - PRODUCT CONTAINS WATER.
Autoignition Temperature	N/D
LEL	N/D
UEL	N/D
Extinguishing Media	IF WATER IS REMOVED, USE CARBON DIOXIDE, DRY CHEMICAL OR FOAM.
Unusual Fire or Explosion Hazards	CLOSED CONTAINERS MAY SWELL AND RUPTURE WHEN EXPOSED TO EXTREME HEAT. USE WATER SPRAY TO COOL CONTAINERS EXPOSED TO FIRE AND HEAT.
Fire Fighting Instructions	WEAR PROTECTIVE GEAR DURING FIREFIGHTING.

NFPA:

Health	1

Houghton International Inc.

Material Safety Data Sheet
HOUGHTO-PREP ZP SL

Revision Date : 04/05/2007

1. Chemical Product and Company Identification

Product Name	HOUGHTO-PREP ZP SL	Emergency Phone Number	24 HOUR - (800) 424-9300 (CHEMTREC)
Company Name	Houghton Metal Finishing 1055 Windward Ridge Suite 140 Alpharetta, GA 30005	FAX	770-753-4902
		Customer Service	800-638-8819
Website	www.houghtonintl.com		
Telephone	770-753-4892		

2. Hazardous Ingredients

Component	Cas No	% by Weight	Hazards
Inorganic Fluoride	proprietary	< 1	TLV: 2.5 mg/m³ as F PEL: 2.5 mg/m³ as F
Nitric Acid	7697-37-2	< 1	TLV: 2 ppm PEL: 2 ppm STEL: 4 ppm Other:
Phosphoric Acid	7664-38-2	<1	TLV: 1 mg/m³ PEL: 1 mg/m³ STEL: 3 mg/m³ Other:

N/E - Not Established; N/A - Not Applicable; Mfr - Manufacturer Recommendation

3. Hazards Identification

Primary Entry Routes: EYES, SKIN, INHALATION

Acute Effects

Inhalation: AVOID BREATHING MISTS OF PRODUCT AND/OR DILUTIONS, WHICH MAY CAUSE IRRITATION OF UPPER RESPIRATORY TRACT.

Eye: MAY CAUSE SEVERE EYE IRRITATION OR CHEMICAL BURNS. MAY CAUSE PERMENANT DAMAGE.

Skin: MAY CAUSE SEVERE SKIN IRRITATION OR CHEMICAL BURNS. BLISTERING MAY OCCUR.

Ingestion: INGESTION MAY CAUSE SEVERE IRRITATION OR CORROSIVE BURNS OF MOUTH, THROAT AND DIGESTIVE TRACT.

Continued on Next Page

5. Fire Fighting Measures - continued

Extinguishing Media	SUITABLE EXTINGUISHING MEDIA FOR THE SURROUNDING FIRE SHOULD BE USED.
Unusual Fire or Explosion Hazards	PRODUCT IS STRONGLY ACIDIC. IF PRODUCT IS SPILLED, WEAR PROTECTIVE GEAR.
Fire Fighting Instructions	USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL. WEAR PROTECTIVE GEAR DURING FIREFIGHTING.
NFPA:	
Health	3
Flammability	0
Reactivity	0
Special	COR

N/A - Not Applicable; ND - Not Determined; > - Greater Than; < - Less Than

6. Accidental Release Measures

Spill or Release Procedures	WEAR PROTECTIVE EQUIPMENT. NEUTRALIZE WITH SODA ASH, DILUTE WITH WATER AND MOP UP THOROUGHLY.

7. Handling and Storage

Handling Precautions	CAUTION: PRODUCT IS ACIDIC. WEAR RECOMMENDED PROTECTIVE EQUIPMENT. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING.
Storage Requirements	STORE AWAY FROM STRONG ALKALI. KEEP CONTAINERS CLOSED WHEN NOT IN USE. EMPTY CONTAINERS MAY RETAIN PRODUCT RESIDUE. PRECAUTIONS APPLY TO EMPTY CONTAINERS.

8. Exposure Controls/Personal Protection

Engineering Controls	PROVIDE GENERAL AND/OR LOCAL EXHAUST VENTILATION TO MAINTAIN AIRBORNE CONCENTRATIONS BELOW THE EXPOSURE LIMITS IN SECTION 2.
Personal Protective Equipment	
Eye/Face Protection	WEAR SAFETY GOGGLES OR FACESHIELD.

10. Stability and Reactivity - continued

Hazardous Polymerization	HAZARDOUS POLYMERIZATION WILL NOT OCCUR.

11. Toxicological Information

NO DATA AVAILABLE

12. Ecological Information

NO DATA AVAILABLE

13. Disposal Considerations

Disposal	FOLLOW PERTINENT REGULATIONS FOR DISPOSAL. IT IS THE RESPONSIBILITY OF THE PRODUCT USER TO DETERMINE, AT THE TIME OF DISPOSAL, WHETHER A MATERIAL CONTAINING THE PRODUCT OR DERIVED FROM THE PRODUCT SHOULD BE CLASSIFIED AS A HAZARDOUS WASTE. (40 CFR 261.20-24)
RCRA Hazardous Waste Number	D002 (CORROSIVITY)

14. Transportation Information

Proper Shipping Name	REFER TO BILL OF LADING OR CONTACT HOUGHTON METAL FINISHING CO.

15. Regulatory Information

TSCA Section 8(b)	ALL OF THE COMPONENTS IN THIS PRODUCT ARE ON THE TSCA INVENTORY.
CERCLA Reportable Quantity	NONE
SARA Title III, Section 313	THIS PRODUCT CONTAINS NO TOXIC CHEMICAL SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

Continued on Next Page

Houghton International Inc.

Material Safety Data Sheet
HOUGHTO-SEAL ZG

Revision Date : 09/18/2007

1. Chemical Product and Company Identification

Product Name	HOUGHTO-SEAL ZG	Emergency Phone Number	24 HOUR - (800) 424-9300 (CHEMTREC)
Company Name	Houghton International Inc. Madison & Van Buren Aves Valley Forge, PA 19482	FAX	(610) 666-1376
Website	www.houghtonintl.com	Customer Service	(888) 459-9844
Telephone	(610) 666-4000		

2. Hazardous Ingredients

Component	Cas No	% by Weight	Hazards
Hexafluorozirconic Acid	12021-95-3	1-10	TLV: 2.5 mg/m³ as F; 5 mg/m³ as Zr PEL: 2.5 mg/m³ as F; 5 mg/m³ as Zr STEL: 10 mg/m³ as Zr Other:
Hydrofluoric Acid	7664-39-3	< 0.1	TLV: 3 ppm - ceiling, as F PEL: 3 ppm as F

N/E - Not Established; N/A - Not Applicable; Mfr - Manufacturer Recommendation

3. Hazards Identification

Primary Entry Routes	EYES, SKIN, INHALATION
Acute Effects	
Inhalation	INHALATION OF MISTS MAY CAUSE IRRITATION TO MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT.
Eye	MAY CAUSE EYE IRRITATION.
Skin	PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE IRRITATION.
Ingestion	INGESTION MAY CAUSE IRRITATION TO MOUTH, THROAT AND DIGESTIVE TRACT.
Carcinogenicity	THIS PRODUCT DOES NOT CONTAIN ANY COMPONENT REPORTABLE AS A CARCINOGEN UNDER 29 CFR 1910.1200.

5. Fire Fighting Measures - continued

Extinguishing Media	IF WATER IS REMOVED, USE APPROPRIATE MEDIA TO TREAT SURROUNDING FIRES.
Unusual Fire or Explosion Hazards	CLOSED CONTAINERS MAY SWELL AND RUPTURE WHEN EXPOSED TO EXTREME HEAT. USE WATER SPRAY TO COOL CONTAINERS EXPOSED TO FIRE AND HEAT.
Hazardous Combustion Products	COMBUSTION WILL RELEASE HYDROGEN FLUORIDE.
Fire Fighting Instructions	CAUTION! WEAR PROTECTIVE GEAR IF SPILLED DURING FIRE FIGHTING.
NFPA:	
Health	1
Flammability	0
Reactivity	0
Special	N/A

N/A - Not Applicable; ND - Not Determined; > - Greater Than; < - Less Than

6. Accidental Release Measures

Spill or Release Procedures	WEAR PROTECTIVE GEAR. PROVIDE VENTILATION. APPLY DRY ABSORBENT MATERIAL AND SWEEP UP. FLUSH AREA WITH WATER AND MOP UP THOROUGHLY.

7. Handling and Storage

Handling Precautions	KEEP AWAY FROM STRONG OXIDIZERS. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. WASH THOROUGHLY AFTER HANDLING. USE WITH ADEQUATE VENTILATION. DO NOT ADD NITRITES TO THIS PRODUCT.
Storage Requirements	KEEP CONTAINERS CLOSED WHEN NOT IN USE. STORE IN A COOL DRY WELL VENTILATED AREA. EMPTY CONTAINERS MAY CONTAIN HAZARDOUS VAPORS AND RESIDUE AND THEREFORE RETAIN ALL HAZARDS.

10. Stability and Reactivity

Stability	THIS PRODUCT IS STABLE AT ROOM TEMPERATURE IN CLOSED CONTAINERS UNDER NORMAL STORAGE AND HANDLING CONDITIONS.
Chemical Incompatibilities	STRONG OXIDIZING AGENTS AND ALKALIES; SILICON-BASED MATERIALS
Hazardous Decomposition Products	THERMAL; HYDROGEN FLUORIDE AND OXIDES OF NITROGEN
Hazardous Polymerization	HAZARDOUS POLYMERIZATION WILL NOT OCCUR.

11. Toxicological Information

NO DATA AVAILABLE

12. Ecological Information

NO DATA AVAILABLE

13. Disposal Considerations

Disposal	FOLLOW PERTINENT REGULATIONS FOR DISPOSAL. IT IS THE RESPONSIBILITY OF THE PRODUCT USER TO DETERMINE, AT THE TIME OF DISPOSAL, WHETHER A MATERIAL CONTAINING THE PRODUCT OR DERIVED FROM THE PRODUCT SHOULD BE CLASSIFIED AS A HAZARDOUS WASTE. (40 CFR 261.20-24)
RCRA Hazardous Waste Number	N/A

14. Transportation Information

Proper Shipping Name	NOT HAZARDOUS UNDER DOT, AIR OR IMO REGULATIONS.

15. Regulatory Information

TSCA Section 8(b)	ALL OF THE COMPONENTS IN THIS PRODUCT ARE ON THE TSCA INVENTORY.
CERCLA Reportable Quantity	HYDROFLUORIC ACID - RQ 100 LBS

Challenge, Inc.
MATERIAL SAFETY DATA SHEET

1. Product and Company Identification.

Product name: **HW-1219**
Product use: Alkaline cleaner
Manufacturer: **Challenge, Inc.**
7950 Georgetown Road
Indianapolis, IN 46268
U.S.A.

Ph: **317-875-5068**
(M-F / 7:30-5:00)
Fax: **317-876-1103**
E-mail: **info@challenge-inc.com**

In case of emergency call:
CHEMTREC
@ (800-424-9300) or (202-483-7616)
(24 hours / 7 days / Week)

2. Composition / Information on Ingredients.

Ingredient name:	CAS #	% by wt.	OSHA	ACGIH

Under OSHA regulations, this material is classified as: Non Hazardous

Trace impurities and additional material names not listed above may also appear in Section 15, Regulatory Information. These materials may also be listed for community "Right to Know" compliance and for other reasons.

3. Hazardous Identification.

Emergency Overview:

Material is a clear It is water soluble, mildly alkaline and non-hazardous, but is slippery if spilled.

Potential health effects:

Eyes: Liquid or mist will irritate the eyes. May cause injury.

Skin: Prolonged or repeated contact will cause irritation.

Ingestion: No hazard expected from ingestion incidental to industrial exposure. Swallowing large quantities may cause nausea and vomiting.

Inhalation: No hazard in normal industrial use. Vapors and mists will cause irritation.

Delayed Effects: None known.

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

Ingredient	NTP Status	IARC Status	OSHA List
None			

Inhalation: Not generally required.

Additional Recommendations:
Eye wash and safety shower should be nearby.

Exposure Guidelines: **(See Section 2 for Component Exposure Guidelines.)**

9. Physical and Chemical Properties

Appearance: Clear
Chemical Formula: N/A
Solubility in Water: 100 (weight %)
Freezing point: 32°F
Vapor Density: N/I (air = 1)
% Volatile: N/I
Flash Point: N/A

Physical State: Liquid
Odor: Mild
pH: Approx. 11
Vapor Pressure: N/I
Evaporation Rate: 1 (Compared to: water = 1)
VOC: N/A Lbs./gal. (minus water)

Molecular Weight: N/A
Specific Gravity: 1.07
Boiling Point: 212°F

(Flash point method and additional flammability data are found in Section # 5.)

10. Stability and Reactivity

Stability: Stable **Conditions to avoid:** None known.

Materials to avoid (Incompatibilities): Any materials incompatible with water. Strong oxidizers and/or acids.

Hazardous decomposition products: Combustion may result in undefined organics and oxides of Carbon and Nitrogen.

Hazardous polymerization: Will not occur.

11. Toxicological Information

N/I

12. Ecological Information

N/I

13. Disposal Considerations

RCRA (Is the product a RCRA hazardous waste if discarded?): No RCRA ID # is: N/A
Other disposal considerations:
Dispose of in accordance with all applicable federal, state and local regulations. This product does contain phosphates.

The information offered here is for the products as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and proper disposal method.

14. Transportation Information

Proper shipping name: Not DOT Regulated
U. S. DOT Hazard Class: N/A
U. S. DOT ID Number and Packing group: N/A
Additional information: N/A

15. Regulatory Information

Toxic Substances Control Act (TSCA) status: The ingredients of this product are listed on the TSCA chemical substance inventory.

Challenge, Inc.
MATERIAL SAFETY DATA SHEET

1. Product and Company Identification.

Product name: **Blackfast 971T**
Product use: Polymer Phosphate
Manufacturer: **Challenge, Inc.**
7950 Georgetown Road
Indianapolis, IN 46268
U.S.A.

Ph: **317-875-5068**
(M-F / 7:30-5:00)
Fax: **317-876-1103**
E-mail: **mktg@challenge-inc.com**

In case of emergency call:
CHEMTREC
@ (800-424-9300) or (202-483-7616)
(24 hours / 7 days / Week)

2. Composition / Information on Ingredients.

Ingredient name:	CAS #	% by wt.	OSHA	NIOSH
Phosphoric acid	7664-38-2	1-5	1 mg/ m^3, TWA	3 mg/m^3, STEL
Nitric acid	7697-37-2	1-5	2 ppm, TWA	4 ppm, STEL
Hexafluorozirconic acid	12021-95-3	1-5		2.5 mg/m^3,
				(TLV fluorides as F)

Under OSHA regulations, this material is classified as: Hazardous

Trace impurities and additional material names not listed above may also appear in Section 15, Regulatory Information. These materials may also be listed for community "Right to Know" compliance and for other reasons.

3. Hazardous Identification.

Emergency Overview:

Material is a clear yellow liquid. It is water soluble and hazardous. May cause burns to the eyes, skin and mucous membranes. May cause permanent eye damage. Inhalation of mist or spray can cause severe lung damage. Product will react with alkaline materials and other substances.

Potential health effects:

Eyes: Vapors, mist and liquid are extremely corrosive to the eyes. Brief contact can cause severe eye damage and prolonged contact may cause permanent eye injury which may be followed by blindness.

Skin: Vapors, mist and liquid are extremely corrosive to the skin and can rapidly cause severe chemical burns. Prolonged liquid contact will burn or destroy surrounding tissue and death may accompany burns which extend over large portions of their body. A latent period may exist between exposure and sense of irritation.

Ingestion: Vapors, liquids or mists are extremely corrosive to the mouth and throat. Swallowing liquids causes severe and rapid burning of the mouth, throat and digestive tract accompanied by severe pain, vomiting and collapse. Some effects may be delayed. Swallowing large amounts can cause death.

Inhalation: Vapors or mists are extremely corrosive to the entire respiratory tract. Breathing vapors or mists can destroy the mucous membranes and can cause severe chemical pneumonitis.

Delayed Effects: A latent period may exist between exposure and sense of irritation.

8. Exposure Controls and Personal Protection

Engineering Controls: Local or general ventilation. No special requirements.

Personal Protection Equipment:
Eye / face: Full face shield or chemical goggles with side shields. Do not wear contact lenses as primary eye protection. If contact lenses must be worn, use full face shield or chemical goggles with side shields.

Skin: Wear gloves, boots and apron to protect against burns. Where contact is likely, wear a face shield.

Inhalation: Sufficient to avoid vapors and mists. Use NIOSH approved equipment when airborne exposure is excessive.

Additional Recommendations:
Eye wash and safety shower should be nearby and ready to use.

Exposure Guidelines: **(See Section 2 for Component Exposure Guidelines.)**

9. Physical and Chemical Properties

Appearance: Clear yellow.
Chemical Formula: N/A
Solubility in Water: 100 (weight %)
Freezing point: N/I
Vapor Density: N/I (air = 1)
% Volatile: N/I
Flash Point: N/A

Physical State: Liquid
Odor: None
pH: Approx. 2
Vapor Pressure: N/I
Evaporation Rate: 1 (Compared to: water = 1)
VOC: N/A Lbs./gal. (minus water)

Molecular Weight: N/A
Specific Gravity: 1.05
Boiling Point: 212°F

(Flash point method and additional flammability data are found in Section # 5.)

10. Stability and Reactivity

Stability: Stable **Conditions to avoid:** Excessive heat and any type of contamination.

Materials to avoid (Incompatibilities): Strong bases, combustible materials. Reactive metals such as Aluminum, Magnesium, Tin, Galvanized, Brass and Bronze. Glass.

Hazardous decomposition products: Potentially toxic fumes/asphyxiants when heated to decomposition. Oxides of Phosphorus. Hydrogen fluoride if heated to decomposition.

Hazardous polymerization: Will not occur.

11. Toxicological Information

Human Dermal exposure: Regardless of concentration, the severity of damage and extent of its irreversibility increases with length of contact time. Prolonged contact with even dilute material can cause a high degree of tissue destruction. The latent period, following skin contact during which no sensation of irritation occurs, also varies with concentration.

12. Ecological Information

The primary environmental concern for release is the impact on aquatic and terrestrial species. Due care should be taken to avoid the accidental release of this material to aquatic and terrestrial environments.

13. Disposal Considerations

RCRA (Is the product a RCRA hazardous waste if discarded?): Yes RCRA ID # is: D002
Other disposal considerations:
Dispose of in accordance with all applicable federal, state and local regulations.

Challenge, Inc.
MATERIAL SAFETY DATA SHEET

1. Product and Company Identification.

Product name: **Blackfast 975**
Product use: Detergent additive
Manufacturer: **Challenge, Inc.**
7950 Georgetown Road
Indianapolis, IN 46268
U.S.A.

Ph: **317-875-5068**
(M-F / 7:30-5:00)
Fax: **317-876-1103**
E-mail: **mktg@challenge-inc.com**

In case of emergency call:
CHEMTREC
@ (800-424-9300) or (202-483-7616)
(24 hours / 7 days / Week)

2. Composition / Information on Ingredients.

Ingredient name:	CAS #	% by wt.	OSHA	ACGIH

Under OSHA regulations, this material is classified as: Non Hazardous

Trace impurities and additional material names not listed above may also appear in Section 15, Regulatory Information. These materials may also be listed for community "Right to Know" compliance and for other reasons.

3. Hazardous Identification.

Emergency Overview:

Material is a clear amber liquid. It is water soluble and non-hazardous, but is very slippery if spilled.

Potential health effects:

Eyes: Liquid or mist will irritate the eyes.

Skin: Prolonged or repeated contact may cause irritation.

Ingestion: No hazard expected from ingestion incidental to industrial exposure. Swallowing large quantities may cause nausea and vomiting.

Inhalation: No hazard in normal industrial use. Vapors and mists may cause irritation.

Delayed Effects: None known.

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

8. Exposure Controls and Personal Protection

Engineering Controls: Local or general ventilation. No special requirements.

Personal Protection Equipment:
Eye / face: Chemical goggles or a face shield. Do not wear contact lenses.

Skin: Wear chemical resistant gloves.

Inhalation: Not generally required. Use NIOSH approved respirator where there are mists or vapors present.

Additional Recommendations:
Eye wash and safety shower should be nearby.

Exposure Guidelines: **(See Section 2 for Component Exposure Guidelines.)**

9. Physical and Chemical Properties

Appearance: Clear amber yellow.
Chemical Formula: N/A
Solubility in Water: 100 (weight %)
Freezing point: 32°F
Vapor Density: >1 (air = 1)
% Volatile: N/I
Flash Point: N/A

Physical State: Liquid
Odor: mild
pH: N/I
Vapor Pressure: N/I
Evaporation Rate: 1 (Compared to: water = 1)
VOC: N/I Lbs./gal. (minus water)

Molecular Weight: N/A
Specific Gravity: 1.02
Boiling Point: 212°F

(Flash point method and additional flammability data are found in Section # 5.)

10. Stability and Reactivity

Stability: Stable **Conditions to avoid:** None known.

Materials to avoid (Incompatibilities): Any materials incompatible with water. Strong oxidizing agents.

Hazardous decomposition products: Oxides of Carbon and sulfur.

Hazardous polymerization: Will not occur.

11. Toxicological Information

N/I

12. Ecological Information

N/I

13. Disposal Considerations

RCRA (Is the product a RCRA hazardous waste if discarded?): No RCRA ID # is: N/A
Other disposal considerations:
Dispose of in accordance with all applicable federal, state and local regulations.

The information offered here is for the products as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and proper disposal method.

FCT

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Extended Product Info

Soda Ash (Sodium Carbonate) - MSDS from Supplier

Home
Chemical Info
Usage
COA
Packing
MSDS
Contact

Note: This is a typical MSDS for Soda Ash (Sodium Carbonate). This document is provid supplier and is for information purposes only.

Country (

Product Identification

- Product Name: *Sodium carbonate, anhydrous, pure*
- Synonyms: *Soda ash*
- CAS: *497-19-8*
- Hazard Symbols: *XI*
- Risk Phrases: *36*

Physical and Chemical Properties

- Physical State: *Powder*
- Color: *White*
- Odor: *Odorles*
- Vapor Pressure: *Not available.*
- Viscosity: *Not available.*
- Boiling Point: *1600 deg C @ 760.00mm Hg*
- Melting Point: *851 deg C*
- Autoignition Temperature: *Not available.*
- Flash Point: *Not available.*
- Explosion Limits, lower: *Not available.*
- Explosion Limits, upper: *Not available.*
- Solubility in water: *22 G/100 ML WATER (20°C)*
- Specific Gravity/Density: *2.5320g/cm3*
- Molecular Formula: *Na2CO3*
- Molecular Weight: *105.99*

Hazards Identification

- Irritating to eyes.Hygroscopic (absorbs moisture from the air).

  Potential Health Effects

  - Eye: *Causes eye irritation*
  - Skin: *May cause skin irritation*
  - Ingestion: *May cause irritation of the digestive tract*
  - Inhalation: *May cause respiratory tract irritation*

approved respirator when necessar

Stability and Reactivity

- Chemical Stability: *Stable.*
- Conditions to Avoid: *Incompatible materials, exposure to moist air or water, tempe 300°C.*
- Incompatibilities with Other Materials: *Strong acids, aluminum, fluorine, sulfuric ac hydrogen peroxides, lithium, phosphorus pentoxide, 2,4,6-trinitrotoluene, 2,-4-dinit*
- *Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, toxic fum oxide.*
- Hazardous Polymerization: *Has not been reported.*

Toxicological Information

- RTECS No.: *CAS# 497-19-8: VZ4050000*
- LD50/LC50: *CAS# 497-19-8:*
  Draize test, rabbit, eye: 100 mg/24H Moderate;
  Draize test, rabbit, eye: 50 mg Severe;
  Draize test, rabbit, skin: 500 mg/24H Mild;
  Inhalation, mouse: LC50 = 1200 mg/m3/2H;
  Inhalation, rat: LC50 = 2300 mg/m3/2H;
  Oral, mouse: LD50 = 6600 mg/kg;
  Oral, rat: LD50 = 4090 mg/kg.
  Carcinogenicity: *Sodium carbonate, anhydrous, pure - Not listed by ACGIH, IARC or OSHA.*
  Other: *See actual entry in RTECS for complete information.*

Ecological Information

- Ecotoxicity: *Toxic to aquatic life: damaging action due to shift in pH*

Disposal Considerations

- Dispose of in a manner consistent with federal, state, and local regulations.

Transport Information

- IATA: *No information available.*
- IMO: *No information available.*
- RID/ADR: *No information available.*

Regulatory Information

- European/International Regulations

  European Labeling in Accordance with EC Directives

PETERS CHEMICAL COMPANY

HOME
Contact Us
Calcium Oxide
Calcium Hydroxide
Lime Kiln Dust
Calcium Chloride
Magnesium Chloride
Sodium Acetate
Calcium Magnesium Acetate
Potassium Chloride
Urea
Ice Melter Blends
Sodium Chloride
Fertilizers
PCC Agricultural Limestone

MATERIAL SAFETY DATA SHEET

Product Name: Calcium Hydroxide (Hydrated Lime)

EPA Reg. No: N/A

1. PRODUCT IDENTIFICATION

Product Name.....Hydrated Lime (Calcium Hydroxide)

UN/MA#.....N/A

DOT Hazard Class.....N/A

2. TYPICAL CHEMICAL COMPOSITION

Recommended Exposure Limits

Hazardous Components	CAS Number	OSHA PEL	ACGIH TLV-TWA
		Mg/m^3	Mg/m^3
Calcium Hydroxide	1305-52-0	5	5
Magnesium Oxide	1309-48-4	10 (fume)	10 (fume)
Calcium Carbonate	1317-65-3	15	15
Silica	7831-86-9	$80/(\%SiO_2)$	5

3. PHYSICAL DATA

Boiling Point.....N/A

Melting Point.....1076 F (580 C°)

Vapor Pressure.....N/A

Vapor Density.....N/A

pH.....N/A

For Hazardous Waste Regulation: call 1-800-424-9346 - The RCRA Hotline.

7. HEALTH HAZARD DATA

Inhalation: Over exposure may produce irritation of the mucous membranes, nose, throat, coughing and shortness of breath. In addition it may contain small amounts of silica particles less than 5mm in diameter. These silica particles are capable of causing silicosis if inhaled in high enough concentrations over an extended period of time. The principal manifestation of silicosis if difficulty in breathing. This condition can progress to dry cough, shortness of breath on exertion, decreased lung function and pulmonary fibrosis.

Skin Contact: May cause irritation, particular on damp skin. Repeated or prolonged contact could lead to dermatitis. Wash affected area with mild soap and water.

Eye Contact: May cause irritation and conjunctivitis. Flush with large amounts of water for at least 15 minutes, while rolling eyeball and lifting eyelid. Get medical attention.

Ingestion: Give milk, egg whites, or water to

8. EMERGENCY AND FIRST AID PROCEDURE

Inhalation: Remove from exposure. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated. Immediately seek medical aid.

Skin Contact: Wash thoroughly with soap and water. Seek medical aid.

Eye Contact: Flush immediately with large amounts of water, lifting the lower and upper lids occasionally. Seed medical help.

Ingestion: Give 1 -2 large glasses of water or milk. Immediately seek medical aid. Never give liquids to an unconscious person.

Carcinogenicity: Not listed as a carcinogen by NTP, (ARC, or OSHA

Routes of Entry: Inhalation, Skin and Eye Contact if handled in such a manner that dust is generated.

Effects of Overexposure: As sold, this product is not anticipated to pose an acute or significant health hazard. However, if subjected to dust generating processes, adverse health effects may occur.

Calcium oxide is caustic to living tissue. Overexposure may cause irritation of the eyes, skin, and upper respiratory tract Inflammation of the respiratory tract, ulceration and perforation of the nasal septum, bronchitis and pneumonia have also bee attributed to inhalation of calcium oxide dust. Eye

Ferric Chloride

MATERIAL SAFETY DATA SHEET
Ferric Chloride

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

SUPPLIER: HARCROS CHEMICALS, INC
5200 Speaker road
Kansas City, KS 66106-1095
SUPPLIERS TELEPHONE NUMBER: 913-321-3131

TRANSPORTATION EMERGENCY TELEPHONE: 1-800-424-9300

MSDS No 106882

REVISION DATE: 10-01-06

Product Name:	Ferric Chloride
Chemical Family:	Inorganic Salts
Formula:	$FeCl_3$
Synonym:	Iron (III) Chloride
Acceptable Product Uses:	Water and wastewater treatment, odor removal, adhesive for dye, textile impression pigment, ink and photoengraving.

2. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS Number #	Concentration	ACGIH TWA
Ferric Chloride	7705-08-0	28 – 43 %	1 mg/m3 (as Fe)
Hydrochloric Acid	7647-01-0	<5 %	5 ppm

3. HAZARDS IDENTIFICATION

Emergency Overview: Eye contact may cause irritation. Harmful if inhaled. Harmful or fatal if swallowed.

Potential Effects on Health: Acute and chronic.

Carcinogenicity: Does not contain any known carcinogens or potential carcinogens.

4. FIRST AID MEASURES

General: If you feel unwell, seek medical attention (show the label or this MSDS if possible). Effects of exposure (inhalation, ingestion, or skin contact) to substance may be delayed. Ensure that medical personnel are

Small Spills – Absorb spill with clay or dry material or neutralize with lime, limestone or soda ash and collect in appropriate container for disposal. Neutralization with soda ash can generate carbon dioxide so additional ventilation may be necessary.

→ **Large Spills** – Prevent entry into sewers and confined areas. Dike, if possible. Keep unnecessary people away, isolate area and deny entry. Pump liquid material into appropriate vessels as possible or absorb spill with clay absorbents or non-reactive dry materials and collect in appropriate container for disposal.

Neutralize spill residuals carefully with lime, limestone, or soda ash and collect in suitable container for disposal. Flush area with water. This could generate carbon dioxide so additional ventilation may be necessary. Notify the appropriate environmental authorities.

7. HANDLING AND STORAGE

Handling: Handle all chemicals with respect. Review the label, this MSDS and any other applicable information before use. Keep separated from incompatible substances. Use appropriate Personal Protective Equipment per Section 8. Handle only with equipment, materials and supplies specified by their manufacturer as being compatible and appropriate for use with this product.

Storage Requirements:

Bulk storage containers and ancillary fill and feed systems should be constructed out of appropriate materials such as polyethylene, polypropylene, rubber-lined steel and FRP designated as appropriate for use with this product. Storage tanks should be vented to scrubber or exterior atmosphere. Storage facilities should have secondary containment as required by law or regulation. **Storage tanks, piping and offloading points should be labeled with appropriate signage to avoid accidents.**

Some concentrations of this product will freeze or crystallize at low temperatures. Insulate and heat-trace storage tanks, pumps, pipes and ancillary equipment as necessary.

Product should be used within one (1) year.

Material may be stored in tightly closed shipping containers, preferably the supplier containers. Containers of this material may be hazardous when empty, since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Preventive Measures:

Engineering Controls: A ventilation system of local/general exhaust is recommended to keep employee exposure below the Airborne Exposure Limits. Ensure that eyewash station and safety showers are proximal to the workstation location.

Personal Protection Equipment:

Eye Protection: Wear splash resistant chemical goggles and, where splashing is possible, a full face shield. Maintain eye wash fountain and quick-drench facilities in work area.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to avoid skin contact.

Recommended Protective Material: Neoprene

Teratogenicity and Fetotoxicity: Not available

Synergistic Materials: Not available

12. ECOLOGICAL INFORMATION

Based on Ferric Chloride Solution

Ecotoxicological Information: TLm Daphnia 15 ppm/96 hr fresh water / Conditions of bioassay not specified

Persistence and Degradation: No data available

13. DISPOSAL CONSIDERATIONS

Review Federal, State, Provincial, and Local government regulations prior to disposal. This material exhibits the characteristic of corrosivity to metals and other building materials and any disposal must comply with hazardous waste disposal requirements. Any residues and/or rinse waters from cleaning of tanks, containers, piping systems and accessories may be a hazardous characteristic waste and must be properly disposed of in accordance with federal, state, provincial and local laws.
RCRA: Test waste material for corrosivity, D002, prior to disposal

14. TRANSPORT INFORMATION

	Canada (TDG)	U.S. (DOT)
Shipping Name	Ferric Chloride Solution	Ferric Chloride Solution
Hazard Class/Division	8: Corrosive liquid	8: Corrosive liquid
Identification No. **Packing Group:**	UN2582 III	UN2582 III

IATA/ICAO Class: 8

15. REGULATORY INFORMATION

USA CLASSIFICATION:

OSHA Classification: Hazardous by definition of Hazard Communication Standard (29 CFR 1920.1200)

CERCLA: Hazardous substance/reportable quantity (RQ): final RQ = 1000 lb. (454 kg)
Based on Anhydrous Ferric Chloride (divide by solution concentration to obtain solution weight)

SARA Regulations sections 313 and 40 CFR 372: No

SARA Hazard Categories, SARA SECTIONS 311/312 (40CRF370.21):

Acute	Yes
Chronic	No
Fire	No
Reactive	No
Sudden Release	No