

MATERIAL SAFETY DATA SHEET**GRANUSOL™ IRON 50% Fe**

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| AMERICAN MINERALS 901 East Eighth Avenue - Suite 200 King of Prussia, PA, 19406 | EMERGENCY PHONE NUMBERS: AM Health & Safety: (610) 337-8030 CHEMTREC (24-hrs): (800) 424-9300 |
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SECTION 1: PRODUCT AND COMPANY INFORMATION

| | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------|---------|
| HMIS (NPCA) | | GRANUSOL™ IRON 50% Fe | |
| HEALTH | 1 | PRODUCT ID: | AM025 |
| FLAMMABILITY | 0 | PRODUCT NUMBER: | N/A |
| REACTIVITY | 0 | MSDS NUMBER: | N/A |
| PERSONAL PROTECTION | E | PREPARATION DATE: | 01/1989 |
| | | REVISION DATE: | 12/2003 |
| DESCRIPTION: GRANUSOL™ IRON 50% Fe is a sucrate (carboxylate) of iron; a granulated micronutrient formulated to contain 50% iron for use as a mineral additive in fertilizer formulations. | | | |

PRODUCT INFORMATION:

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| CAS NUMBER: | Mixture. (For ingredient CAS numbers, see SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS.) |
| SYNONYMS: | No product synonyms. (For ingredient synonyms, see SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS.) |

SECTION 2: COMPOSITION / INFORMATION ON INGREDIENTS**HAZARDOUS COMPONENTS PLUS OTHER SIGNIFICANT COMPONENTS:**

| COMPONENT | SYNONYMS AND TRADE NAMES | CAS # | % BY WT. |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------|
| Iron Oxide, Saccharated | Ferric oxide, saccharated; Iron saccharate; Iron sugar | 8047-67-4 | 70-100 |
| Nonhazardous Ingredients / Inert Materials | N/A | N/A | 0-30 |
| Quartz (SiO ₂) | Agate; Cristobalite; Crystallized Silicon Dioxide; Quartz Silica; Silica Dust; Silica Flour (Powdered Crystalline Silica); Silica, Crystalline Quartz; Tripoli; | 14808-60-7 | 1-3 |
| Amorphous Silica | N/A | 112926-00-8 | 5 - 10 |

NOTES:

1. These trace metals are not in the free metal form but exist as integral, inorganic, mineralogical constituents in the mineral ores.

SECTION 3: HAZARDS IDENTIFICATION

| COMPONENT | CAS # | % BY WT. | OSHA PEL [mg/m ³] | OSHA CEILING [mg/m ³] | ACGIH TLV [mg/m ³] | ACGIH STEL [mg/m ³] | LISTED CARCINOGEN (YES/NO) | | |
|---------------------------------------------------------|-------------|----------|---------------------------------------------------------------|-----------------------------------|--------------------------------|---------------------------------|----------------------------|------------------|------|
| | | | | | | | NTP | IARC | OSHA |
| Iron Oxide, Saccharated | 8047-67-4 | 70-100 | N/A | N/A | N/A | N/A | NO | YES ⁶ | NO |
| Nonhazardous Ingredients / Inert Materials ¹ | N/A | 0-30 | 15 T; 5 R | N/A | 10 T; 3 R | N/A | NO | NO | NO |
| Quartz (SiO ₂) | 14808-60-7 | 1-3 | 10/(% SiO ₂ +2)R 30/(% SiO ₂ +2)T | N/A | 0.05 R | N/A | YES ⁵ | YES ⁴ | NO |
| Amorphous Silica | 112926-00-8 | 5 - 10 | 20 mpfcf or 80 mg/m ³ divided by %SiO ₂ | N/A | 10 T; | | NO | YES ⁶ | NO |

----- MSDS CONTINUED ON NEXT PAGE -----

MATERIAL SAFETY DATA SHEET

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NOTES:

- Trace metals include: lead = 50-150 ppm; arsenic < 1-5 ppm; cadmium < 1-5 ppm; mercury <1 ppm.
- Exposure limits listed for each ingredient is for exposure to dust that may be generated during product transfer and handling.
- GRANUSOL™ IRON 50% Fe is formulated for use as a mineral additive in fertilizer formulations. Health effects resulting from the product being used for any other purpose or process is not addressed in this material safety data sheet
- IARC Group 2A: Probably carcinogenic to humans.
- NTP Class 2A: Reasonably anticipated to be a carcinogen, limited evidence of carcinogenicity from studies in humans.
- IARC Group 3: Not classifiable as to carcinogenicity to humans.

EMERGENCY OVERVIEW: Not a fire or spill hazard. Low toxicity; dry dust is a nuisance particulate. Generally, health effects are provided for exposure to dust that may be generated during product transfer and handling.

POTENTIAL HEALTH EFFECTS:

Primary Route of Exposure: Inhalation

Relevant Route(s) of Exposure

Eye Contact: Contact with particulate may cause slight to moderate eye irritation. Abrasive action of dust particulate can damage eye.

Skin Contact: Prolonged or repeated contact may cause slight to moderate skin irritation.

Inhalation: Overexposure by inhalation of airborne particulate, dust, or fumes is irritating to the nose, throat, and respiratory tract. Inhalation of excessive levels of dust or fumes may be harmful.

Ingestion: Ingestion is an unlikely route of exposure; no hazard in normal industrial use. Small amounts (< tablespoonful) swallowed during normal handling operations are not likely to cause injury, however, swallowing larger amounts may cause injury. If ingested in sufficient quantity, may cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting, abdominal pain, and diarrhea.

Target Organs: Respiratory system, eyes.

Acute Effects of Exposure: Excessive, short-term exposure to airborne mineral dusts and particulate may cause upper respiratory and eye irritation.

Chronic Effects of Exposure: Excessive, long-term inhalation of airborne mineral dusts and particulate may contribute to the development of bronchitis, reduced breathing capacity, and may lead to the increased susceptibility to lung disease. Long-term exposure to high concentrations of dust and fume containing iron compounds is known to produce a condition known as siderosis. On Xrays it appears to be a benign pneumoconiosis and is not associated with pulmonary fibrosis or disability unless there is concurrent exposure to other fibrosis-producing materials such as silica. Chronic ingestion of excess levels of iron (<50-100 mg/day, as /Fe/) can result in pathological deposition of iron in the body tissues, the symptoms of which are fibrosis of the pancreas, diabetes, mellitus, and liver cirrhosis.

Silica: Crystalline silica (quartz) is a known cause of lung disease (silicosis). Respirable size quartz has been classified as a human carcinogen (lung cancer). Take precautions to avoid inhaling dust or creating dusty conditions. Dust generated from this product may contain crystalline silica (quartz). The prolonged inhalation (usually years) of mineral dust containing free/crystalline silica may result in the development of a disabling pulmonary fibrosis known as silicosis a progressive, incapacitating and sometimes-fatal lung disease. Silicosis is characterized by generalized fibrotic changes and the development of miliary nodules in both lungs, and clinically by shortness of breath, decreased chest expansion, wheezing, lessened capacity for work, absence of fever, and the increased susceptibility to other lung disease. IARC has classified crystalline silica as a "known human carcinogen" Group 1. NTP

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has listed respirable crystalline silica amongst substances, which may “reasonably be anticipated to be carcinogens.

Signs and Symptoms of Exposure: (Dust) tearing of eyes, burning sensation in the throat, cough, chest discomfort.

Medical Conditions Generally Known to be Aggravated by Exposure: The excessive inhalation of mineral dust may aggravate pre-existing chronic lung conditions such as, but not limited to, bronchitis, emphysema, and asthma.

Reproductive Hazards: Not a reproductive hazard.

POTENTIAL ENVIRONMENTAL EFFECTS: Derived from natural ores; no adverse environmental effects known. However, prevent spilled product from entering streams, water bodies, and wastewater systems. This material is used as an agricultural product.

SECTION 4: FIRST AID MEASURES

FIRST AID PROCEDURES:

Eye Contact: Remove material by immediately flushing eyes with clean, flowing, lukewarm water (low pressure) for at least 15 minutes. Get medical attention if pain or irritation persists.

Skin Contact: Immediately wash affected area with mild soap and water to remove any dust adhering to the skin. Get medical attention if irritation develops or persists.

Inhalation: If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop. If not breathing, give artificial respiration or give oxygen by trained personnel, and get medical attention.

Ingestion: Ingestion is an unlikely route of exposure. If ingested in sufficient quantity and victim is conscious, give 1-2 glasses of water or milk. Never give anything by mouth to an unconscious person. Leave decision to induce vomiting to qualified medical personnel, since particles may be aspirated into the lungs. Seek immediate medical attention.

NOTE TO PHYSICIANS: None.

SECTION 5: FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: Material will not burn. No unusual fire or explosion hazards.

EXTINGUISHING MEDIA: Use extinguishing media appropriate to combustibles in the surrounding area.

PROTECTION FOR FIREFIGHTERS: Wet material should be kept out of eyes and off skin. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Material does not give off toxic fumes in a fire unless molten.

SECTION 6: ACCIDENTAL RELEASE MEASURES

CONTAINMENT: Product is dry solid (granular or powder) and not readily soluble in water. However, prevent spilled product from entering streams, water bodies, and wastewater systems.

CLEANUP: Vacuum or sweep up dry material and place in a container for reuse. Avoid creating excessive airborne dust. Cleanup personnel need to wear approved respiratory protection (air-purifying or air-supply), gloves, long sleeved clothing and goggles to prevent irritation from contact and inhalation.

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COLLECTION: If possible, collect and reuse spilled product.

REPORTING: SEE SECTION 15: REGULATORY INFORMATION

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

SECTION 7: HANDLING AND STORAGE

HANDLING: Minimize dust generation and accumulation. Avoid breathing dust. Avoid contact with skin and eyes.

STORAGE: Store in a cool, dry area. Keep container closed when not in use. Segregate from products with which it can react including: hydrogen peroxide, calcium hypochlorite, and fluorine gas.

WARN YOUR EMPLOYEES (AND YOUR CUSTOMERS - USERS IN CASE OF RESALE) BY POSTING AND OTHER MEANS OF THE HAZARDS AND OSHA PRECAUTIONS TO BE USED. PROVIDE TRAINING FOR YOUR EMPLOYEES ABOUT OSHA PRECAUTIONS.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: If user operations generate dust, fume, or mist, use ventilation to keep exposure to airborne contaminants below the exposure limits listed in **SECTION 2**.

PERSONAL PROTECTIVE EQUIPMENT:

Eye & Face Protection: Corrosive to eyes. Wear protective safety goggles when dust generation is likely.

Skin Protection: Wear clothing sufficient to cover the skin, safety shoes, and leather gloves for hand protection against dry material.

Respiratory Protection: Use NIOSH/MSHA approved respiratory protection (air purifying or air supplying) when concentrations are above exposure limit value. A respiratory protection program that meets OSHA 29 CFR part 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant the use of a respirator.

General Hygiene Considerations: Wash thoroughly after using product. Wash contaminated clothing. Wash hands before eating or drinking.

EXPOSURE GUIDELINES: See **SECTION 2**.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Available as dry, black, free-flowing granules less than 1/4 inch in size.

ODOR: Odorless.

PHYSICAL/CHEMICAL PROPERTIES:

| | | | | | |
|---------------------------------|------------------------|-----------------------|--------------|---------------------------|---------------------|
| Bulk density: | 98 lbs/ft ³ | Freeze Point: | Solid at STP | % volatile by vol: | 0% H ₂ O |
| Water solubility: | Slight | Melting Point: | >3002°F | Vapor Density: | N/A |
| pH: (10% aqueous slurry) | N/A | Boiling Point: | N/A | Vapor Pressure: | N/A |

----- MSDS CONTINUED ON NEXT PAGE -----

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SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions of storage.

CONDITIONS TO AVOID: None under normal conditions.

MATERIALS TO AVOID: Components in the product can react violently when mixed with hydrogen peroxide, ethylene oxide, and nitric acid. Violent reaction occurs when heated with powdered aluminum; calcium disilicide; magnesium; metal acetylides. Mixtures with aluminum and sulfur react violently if heated. Ignites on contact with hydrogen trisulfide.

HAZARDOUS DECOMPOSITION PRODUCTS: None under normal conditions.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11: TOXICOLOGICAL PROPERTIES**RTECS TOXICITY DATA FOR PRODUCT COMPONENTS:**

| COMPONENT | CAS # | RTECS TOXICITY DATA |
|---------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Iron Oxide, Saccharated | 8047-67-4 | Acute Intravenous: Mouse Dose: LD ₅₀ : 180 mg/kg; Rabbit (adult) LD ₅₀ : 150 mg(Fe)/kg Tumorigenic: Rat route: Intraperitoneal, Dose: Toxic Dose Low; Rat route: Intramuscular, Dose: Toxic Dose Low; Mouse route: Subcutaneous, Dose: Toxic Dose Low. |
| Nonhazardous Ingredients / Inert Materials ¹ | N/A | N/A |
| Quartz (SiO ₂) | 14808-60-7 | Acute Inhalation: Human LC Lo Dose: 300 ug/m ³ /10Y-I; Toxic Effects: Liver - Other changes. Human TC Lo Dose: 16 mppcf/8H/17.9Y-I; Toxic Effects: Lungs, Thorax, or Respiration -Fibrosis, focal (pneumoconiosis); Lungs, Thorax, or Respiration - Cough; Lungs, Thorax, or Respiration - Dyspnea. Chronic (Multiple Dose) Inhalation: Rat Dose: 80 mg/m ³ /26W-I; Toxic Effects: Lungs, Thorax, or Respiration - Fibrosis, focal (pneumoconiosis); Blood - Changes in spleen. Rat Dose: 108mg/m ³ /6H/3D-I; Toxic Effects: Biochemical - Phosphatases; Biochemical - Other oxidoreductases; Biochemical - Other proteins. Rat Dose: 58 mg/m ³ /13W-I; Toxic Effects: Lungs, Thorax, or Respiration - Other changes; Endocrine - Changes in thymus weight; Blood -Changes in leukocyte (WBC) cell count. Rat Dose: 1475 ug/m ³ /8H/21W-I; Toxic Effects: Lungs, Thorax, or Respiration - Other changes. Rat Dose: 4932 ug/m ³ /24H/39W-C; Toxic Effects: Endocrine - Changes in spleen weight; Immunological including allergic - Decrease in humoral Immune response. Rat Dose: 28 mg/m ³ /3W-I; Toxic Effects: Lungs, Thorax, or Respiration -Otherchanges; Lungs, Thorax, or Respiration - Changes in lung weight; Biochemical - Other enzymes. Mutagenic: Human Micronucleus Test; Cell Type: lung; Dose: 40 ug/cmf ² . Hamster Micronucleus Test; Cell Type: lung; Dose: 160 ug/cmf ² . Tumorigenic: Rat Route: Inhalation; Dose: 50 mg/m ³ /6H/71W-I; Toxic Effects: Tumorigenic -Carcinogenic by RTECS criteria; Liver - Tumors. Rat Route: Intravenous; Dose: 90 mg/kg; Toxic Effects: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria; Blood -Lymphomax including Hodgkin's disease. |
| Amorphous Silica | 112926-00-8 | RTECS # VV731500 Epidemiology: No data available. Teratogenicity: No data available. Reproductive Effects: No data available. Neurotoxicity: No data available. Mutagenicity: No data available. Other studies: No data available. |

SECTION 12: ECOLOGICAL INFORMATION

Derived from mineral ores. No data available on any adverse effects of this material on the environment.

----- MSDS CONTINUED ON NEXT PAGE -----

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SECTION 13: DISPOSAL CONSIDERATIONS

RCRA: This product, as manufactured, is not a RCRA listed hazardous waste and does not exhibit any characteristics of a hazardous waste, including toxicity (by EPA TCLP method.)

DISPOSAL METHOD: This product is generally suitable for landfill disposal. Follow all applicable Federal, State, and local laws, rules, and regulations regarding the proper disposal of this material. If this product has been altered or contaminated with other hazardous materials, appropriate waste analysis may be necessary to determine proper method for disposal. A qualified environmental professional should determine waste characterization, disposal, and treatment methods for this material in accordance with applicable Federal, State and local regulations and requirements.

SECTION 14: TRANSPORTATION INFORMATION

USDOT INFORMATION: This product is not regulated by USDOT as a hazardous material (49 CFR part 172.101). No UN code assigned. No placard required for transportation.

LABEL:

CAUTION!

Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling and use. Keep in a closed container in a well-ventilated area.

FIRST AID MEASURES:

Eye Contact: Remove material by immediately flushing eyes with clean, flowing, lukewarm water (low pressure) for at least 15 minutes. Get medical attention if pain or irritation persists.

Skin Contact: Immediately wash affected area with mild soap and water to remove any dust adhering to the skin. Get medical attention if irritation develops or persists.

Inhalation: If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop. If not breathing, give artificial respiration or give oxygen by trained personnel, and get medical attention.

Ingestion: Ingestion is an unlikely route of exposure. If ingested in sufficient quantity and victim is conscious, give 1-2 glasses of water or milk. Never give anything by mouth to an unconscious person. Leave decision to induce vomiting to qualified medical personnel, since particles may be aspirated into the lungs. Seek immediate medical attention.

CHRONIC HEALTH EFFECTS:

Excessive, long-term inhalation of airborne mineral dusts and particulate may contribute to the development of bronchitis, reduced breathing capacity, and may lead to the increased susceptibility to lung disease.

Silica: Crystalline silica (quartz) is a known cause of lung disease (silicosis). Respirable size quartz has been classified as a human carcinogen (lung cancer). Take precautions to avoid inhaling dust or creating dusty conditions. Dust generated from this product may contain crystalline silica (quartz). The prolonged inhalation (usually years) of mineral dust containing free/crystalline silica may result in the development of a disabling pulmonary fibrosis known as silicosis a progressive, incapacitating and sometimes-fatal lung disease. Silicosis is characterized by generalized fibrotic changes and the development of miliary nodules in both lungs, and clinically by shortness of breath, decreased chest expansion, wheezing, lessened capacity for work, absence of fever, and the increased susceptibility to other lung disease. IARC has classified crystalline silica as a "known human carcinogen" Group 1. NTP has listed respirable crystalline silica amongst substances, which may "reasonably be anticipated to be carcinogens.

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|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|

SECTION 15: REGULATORY INFORMATION**COMPONENTS LISTED IN FEDERAL REGULATIONS AND STATE "RIGHT-TO-KNOW" LAWS:**

| COMPONENT | CAS # | FEDERAL | | | | | STATE (Right-to-Know) | | | |
|--------------------------------------------------|-------------|---------|--------|------|----------|------|-----------------------|-----|-----|-----|
| | | RCRA | CERCLA | SARA | SARA EHS | TSCA | PA | NJ | MA | CA |
| Iron Oxide | 8047-67-4 | NO | NO | NO | NO | YES | NO | NO | NO | NO |
| Nonhazardous Ingredients / Inert Materials | N/A | NO | NO | NO | NO | YES | NO | NO | NO | NO |
| Quartz (SiO ₂) | 14808-60-7 | NO | NO | NO | NO | YES | YES | YES | YES | YES |
| Amorphous Silica | 112926-00-8 | NO | NO | NO | NO | YES | NO | NO | NO | NO |

NOTES:

WARN YOUR EMPLOYEES (AND YOUR CUSTOMERS - USERS IN CASE OF RESALE) BY POSTING AND OTHER MEANS OF THE HAZARDS AND OSHA PRECAUTIONS TO BE USED. PROVIDE TRAINING FOR YOUR EMPLOYEES ABOUT OSHA PRECAUTIONS.

SECTION 16: OTHER INFORMATION**HAZARDOUS MATERIALS IDENTIFICATION SYSTEM of the National Paint & Coatings Association****HEALTH**

- 0 - Normal Material
- 1 - Slightly Hazardous/Significant irritation
- 2 - Hazardous/Temporary incapacitation or residual injury
- 3 - Extreme Danger/Serious or permanent injury
- 4 - Deadly

REACTIVITY

- 0 - Stable
- 1 - Unstable under heat or pressure
- 2 - Violent chemical change under heat or pressure
- 3 - Shock and heat may detonate
- 4 - Capable of Detonation or Explosion

FLAMMABILITY

- 0 - Will not burn
- 1 - Must be preheated before ignition will occur (Flash point greater than 200°F)
- 2 - Must be moderately heated before ignition will occur (Flash point 100°F to 200°F)
- 3 - Can be ignited under almost all ambient temperatures (Flash point 73°F to 100°F)
- 4 - Will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature, or will burn readily when dispersed in air (Flash point below 73°F)

PERSONAL PROTECTION

- A - Safety Glasses
- B - Safety Glasses + Gloves
- C - Safety Glasses + Gloves + Apron
- D - Face Shield + Gloves + Apron
- E - Safety Glasses + Gloves + Dust Respirator
- F - Safety Glasses + Gloves + Apron + Dust Respirator
- G - Safety Glasses + Gloves + Vapor Respirator
- H - Splash Goggles + Gloves + Apron + Vapor Respirator
- I - Safety Glasses + Gloves + Dust and Vapor Respirator
- J - Splash Goggles + Gloves + Apron + Dust and Vapor Respirator
- K - Air Line Hood or Mask + Gloves + Full Suit Boots
- X - Ask supervisor or safety specialist for handling instructions.

----- MSDS CONTINUED ON NEXT PAGE -----

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| | |
|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
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ACRONYMS AND ABBREVIATIONS USED IN THIS MSDS:

| | |
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| ACGIH | American Conference of Governmental Industrial Hygienists |
| ANSI | American National Standards Institute |
| CA | California Right-to-Know Law; <i>CCR TITLE 8 - Division 1 - Chapter 3.2 - Subchapter 1 - Article 5 - §339 The Hazardous Substances List</i> |
| CAA | Clean Air Act; 40 CFR SUBCHAPTER C - AIR PROGRAMS (Parts 50–99) |
| CAS | Chemical Abstract Service |
| CAS# | CAS Registration Number is an assigned number to identify a material |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act, <i>40 CFR part 302.4 - Designation, Reportable Quantities, and Notification (Table 302.4)</i> |
| CWA | Clean Air Act; 40 CFR SUBCHAPTER D - WATER PROGRAMS (Parts 100--149) |
| EPA | United States Environmental Protection Agency |
| HMIS | Hazardous Materials Identification System of the National Paint & Coatings Association |
| IARC | International Agency for Research on Cancer |
| MA | Massachusetts Right-to-Know Law; <i>MGL PART I - TITLE XVI - CHAPTER 111F Hazardous Substances Disclosure By Employers</i> |
| mg/m³ | Milligrams per cubic meter |
| MSHA | Mine Safety and Health Administration |
| N/A | Not applicable |
| NFPA | National Fire Protection Association |
| NIOSH | National Institute of Occupational Safety and Health |
| NJ | New Jersey Right-to-Know Law; <i>NJAC 8:59 - Worker and Community Right to Know Act</i> |
| NTP | U.S. National Toxicology Program |
| OSHA | Occupational Safety and Health Administration |
| PA | Pennsylvania Right-to-Know Law; <i>34 PA Code § 323. Hazardous Substance List (Appendix A)</i> |
| PEL | Permissible Exposure Limit (OSHA) |
| RCRA | Resource Conservation and Recovery Act (EPA), <i>40 CFR part 261 - Identification and Listing of Hazardous Waste</i> |
| REL | Recommended Exposure Limit (NIOSH) |
| RQ | Reportable Quantity |
| RTECS | <i>Registry of Toxic Effects of Chemical Substances</i> : This database contains toxic effects data on some 140,000 chemicals. It is built and maintained by NIOSH. |
| SARA | Superfund Amendments and Reauthorization Act, <i>40 CFR part 372.65 - Toxic Chemical Release Reporting: Community Right-to-Know</i> |
| SARA EHS | <i>(SARA Extremely Hazardous Substances) 40 CFR part 355 - Emergency Planning and Notification (Appendices A & B)</i> |
| STEL | Short-term exposure limit (ACGIH) |
| STP | Standard temperature and pressure (T = ~70°F, P = 1 atm) |
| TCLP | Toxicity Characteristic Leaching Procedure (EPA Method 1311) |
| TLV | Threshold Limit Value (ACGIH) |
| TSCA | Toxic Substances Control Act, <i>40 CFR 716.120 - Health and Safety Data Reporting</i> |
| TWA | Time Weighted Average |
| USDOT | United States Department of Transportation |

DISCLAIMER:

This Material Safety Data Sheet (MSDS) is to be used only for this product in its present form. If this product is altered or used as a component in another material, the information on this MSDS may not be applicable. This document is generated for the purpose of distributing health, safety, and environmental data. This MSDS is not a specification sheet, nor should any displayed data be construed as a specification. Some of the information presented and conclusions drawn herein are obtained from sources other than direct test data on the product.

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