

# Safety Data Sheet



# Martrex, Inc.

## Section 1: Chemical Product and Company Information

**Product name:** Crystalline Silica in the form of Quartz

**Reference Number:** n/a

**Supplier/ Further Information:** Martrex, Inc.

1107 Hazeltine Blvd,

Suite 535 MD 27,

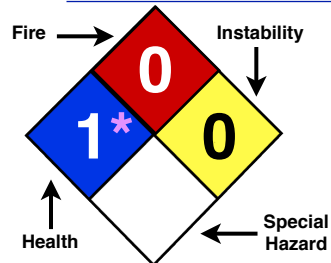
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**EPA Registration Number:** n/a

**CAS#:** 14808-60-7

**Chemical Name:** Crystalline Silica

**Synonyms:** Quartz, Crystalline Silica, Silicon Dioxide

**Chemical Family:** Silica, Quartz

\* For NFPA Explanation see Section 16

**24 Hour Emergency Phone - Chemtrec Transport: 1-800-424-9300; Medical: 1-800-441-3637**

## Section 2: Hazards Identification

### Emergency Overview

**Danger! Lung injury and Cancer Hazard.**

**GHS Classification** (Global Harmonized Classification see Section 16):

**Carcinogenicity** Category 1A (H350)

**Specific target organ toxicity, single exposure; Respiratory tract irritation** Category 3 (H335)

**Specific target organ toxicity, repeated exposure** Category 1 (H372)

**GHS Label, Hazards and Precautionary Statements**

**GHS Pictogram:**



(GHS Pictogram Hazards Definitions See Section 16)

**Label Signal Word:** **Danger**

**Hazard Statements:**

**May cause CANCER (inhalation)** (H350)

**May cause respiratory irritation** (H335)

**Causes damage to organs (lung/respiratory system)...**

**...through prolonged or repeated exposure (inhalation)** (H372)

**Precautionary Statements:**

**Prevention:**

Obtain special instructions before use. (P201)

Do not handle until all safety precautions have been read and understood. (P202)

Wash skin thoroughly after handling. (P264)

Do not eat, drink or smoke when using this product. (P270)

Wear protective gloves, protective clothing, eye protection, face protection. (P280)

Do not breathe dust/fume/gas/mist/vapor/spray. (P260+P261)

Use only outdoors or in a well-ventilated area. (P271)

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1-800-441-3637 Medical**

**Response:**

**IF INHALED:** Remove person to fresh air and keep comfortable for breathing. (P304+P340)

**Call a POISON CONTROL CENTER/doctor** if you feel unwell. (P312)

**IF Exposed** or concerned: Get Medical advice / attention. (P308+P313)

**If you feel unwell:** Get Medical Advice / Attention. (P314)

**Storage:**

Store in well-ventilated place. (P403)

Keep container tightly closed. (P233)

Store Locked-Up. (P405)

**Disposal Considerations:**

Dispose of this material and its container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. (P501)

**Potential Health Effects:**

**Inhalation: Do not breathe dust. May cause delayed lung injury. Long term exposure can cause silicosis. Silicosis is a respiratory disease, which can result in delayed, disabling and sometimes fatal lung injury. IARC and NTP have determined that crystalline silica inhaled from occupational sources can cause **CANCER in humans**. Risk of injury is dependent on the duration and level of exposure. A single exposure will not result in serious adverse effects. See "Health Hazards" in Section 11 for detailed information. See exposure limit presentation in Section 8 for further information.**

**Avoid creating dust** when handling, using or storing.

**Use only with adequate ventilation** to keep exposure below recommended exposure limits.

**Target Organs:** Lungs

**Regulatory status:** This material is considered hazardous. See Section 2 and 8)

**EU Classification of Substance/Preparation:** Harmful (Xn) R48/20 (see Section 16 explanation)

**Section 3: Composition/Information on Ingredients**

Hazardous Component	CAS# / EINECS#	%	EU Class	OSHA & MSHA PEL	ACGIH TLV	NIOSH
Crystalline Silica, Quartz	<b>CAS:</b> 14808-60-7 <b>EINECS:</b> 238-878-4	87-99.9%	(67/548/EEC) Xn R48/20	10 mg/m <sup>3</sup> % Silica + 2 (8 hour TWA)	0.025 mg/m <sup>3</sup> (8 hour TWA)	0.05 mg/m <sup>3</sup> (10 Hour Day 40 Hour Week)

Refer to section 16 for further information on EU Classification.  
See Section 8 for additional occupational exposure limit information.

**Section 4: First Aid Measures**

**Gross Inhalation:** Remove victim to fresh air. If breathing has stopped, perform artificial respiration. If breathing is difficult have qualified personnel administer oxygen. **Get prompt medical attention.**

**Skin Contact:** No first aid should be needed since dermal contact with this product does not affect the skin. Wash exposed skin with soap and water before breaks and at the end of the shift.

**Eye Contact:** Flush the eyes immediately with large amounts of running water, lifting the upper and lower lids occasionally. **If irritation persists or for imbedded foreign body, get immediate medical attention.**

**Ingestion:** If large amounts are swallowed, **get immediate medical attention.**

**NOTE TO THE PHYSICIAN:** Treat symptomatically and supportively.

**Section 5: Fire Fighting Measures**

**Non-combustible mineral:** This product is a chemically inert.

**Suitable Extinguishing Media:** This product will not burn but is compatible with all extinguishing media. Use any media that is appropriate for the surrounding fire.

**Special Fire-Fighting Procedures:** None required with respect to this product. Firefighters should always wear self-contained breathing apparatus for fires indoors or in confined areas.

**Unusual Fire and Explosion Hazard:** None

**Hazardous Combustion Products:** None

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1-800-441-3637 Medical**

## Section 6: Accidental Release Measures

**Wear appropriate protective equipment.** (See Section 8)

**If uncontaminated:** collect using dustless method (HEPA vacuum or wet method) and place in appropriate container for use.

**If contaminated: a)** use appropriate method for the nature of contamination, and **b)** consider possible toxic or fire hazards associated with the contaminating substances. Collect for appropriate disposal.

## Section 7: Handling and Storage

**Handling:** Do not breathe dust. Do not rely on your sight to determine if dust is in the air. Silica may be in the air without a visible dust cloud. Use normal precautions against bag breakage or spills of bulk material. Avoid creation of respirable dust.

**Do not use as a dry abrasive blasting agent.** ANSI / AIHA Z9.4:1997 recommends that silica sand be prohibited as an abrasive blasting agent for use in fixed location abrasive-blast enclosures. Use good housekeeping in storage and use areas to prevent accumulation of dust in work area.

**To reduce the risk of developing silicosis, lung cancer and other adverse health effects,** the ACGIH recommends that the industrial hygienist use every means available to keep exposures below the recommended TLV. NIOSH recommends reducing airborne exposure levels as low as possible below NIOSH's recommended exposure limit, substituting less hazardous materials when feasible, using appropriate respiratory protection when source controls cannot keep exposures below the recommended limit and making medical examinations available to exposed workers.

**Use adequate ventilation and dust collection.** To minimize exposure, wear a respirator approved for silica dust when using, handling, storing or disposing of this product or bag. Refer to the most recent standards of ANSI (Z88.2), OSHA (29 CFR 1910.134), MSHA (30 CFR Parts 56 and 57) and NIOSH Respirator Decision Logic. Maintain, clean and fit test respirators in accordance with OSHA regulations. Maintain and test ventilation and dust collection equipment. Launder clothing that has become dusty. Empty containers (bags, bulk containers, storage tanks, etc.) retain silica residue and must be handled in accordance with the provisions of this Safety Data Sheet. WARN and TRAIN employees in accordance with state and federal regulations.

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

**See also:** American Society for Testing and Materials (ASTM) Standard Practice E1132-99a, "Standard Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica".

**Additional information on silica hazards:** and precautionary measures can be found at these websites:

NIOSH Joint Campaign on Silicosis Prevention: <http://www.cdc.gov/niosh/topics/silica/#campaign>  
OSHA Crystalline Silica Website: <http://www.osha.gov/SLTC/silicacrystalline/index.html>  
MSHA Silicosis Prevention Website: <http://www.msha.gov/S&HINFO/SILICO/SILICO.HTM>  
NIOSH Hazard Review—Health Effects of Occupational Exposure to Respirable Crystalline Silica Website: <http://www.cdc.gov/niosh/docs/2002-129/02-129a.html>

**Storage:** Avoid creating dust when handling, using or storing. Use good housekeeping in storage and use areas to prevent accumulation of dust in work area.

## Section 8: Exposure Controls / Personal Protection

### Exposure Limits

**Definitions:** (See Section 16 for a Complete List of Definitions)

**MSHA:** Mine Safety and Health Administration

**NIOSH:** National Institute for Occupational Safety and Health

**OSHA:** Occupational Safety and Health Administration

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**ACGIH:** American Conference of Governmental Industrial Hygienists  
**PEL:** Permissible Exposure Limit (OSHA)  
**REL:** means the NIOSH Recommended Exposure Limit.  
**TLV:** Threshold Limit Value (ACGIH)  
**TWA:** time-weighted average

Hazardous Component	CAS# / EINECS#	%	EU Class	OSHA & MSHA PEL	ACGIH TLV	NIOSH
Crystalline Silica, Quartz	<b>CAS:</b> 14808-60-7 <b>EINECS:</b> 238-878-4	87-99.9%	(67/548/EEC) Xn R48/20	10 mg/m <sup>3</sup> % Silica + 2 (8 hour TWA)	0.025 mg/m <sup>3</sup> (8 hour TWA)	0.05 mg/m <sup>3</sup> (10 Hour Day 40 Hour Week)

**OTHER NOTES on Limits:** In 2006 the **ACGIH lowered the TLV** for Silica, Crystalline: α-Quartz and Cristobalite to 0.025 mg/m<sup>3</sup> stating in the **Documentation of the TLV:** "Because the time between exposure and signs of fibrosis is characteristically very long, as much as 30 to 40 years, the margin of safety for exposure to crystalline silica at the proposed TLV-TWA is not known precisely. **Given the observed association between silicosis and lung cancer**, it is recommended that air concentrations be maintained as far below the proposed TLV as prudent practices permit. The recommended TLV-TWA of 0.025 mg/m<sup>3</sup>, respirable particulate mass, is intended to prevent pulmonary fibrosis that may be a risk factor for lung cancer. An A2, Suspected Human Carcinogen, notation is based on the demonstrated association between lung cancer and the presence of silicosis."

**The documentation further states** "A lack of toxicological and industrial hygiene data does not permit the recommendation of a TLV-STEL. However, it should be noted that high exposures of short duration to freshly fragmented crystalline particles do produce an acute and rapidly progressive form of silicosis."

**The reader is encouraged to Review** the section on Excursion Limits in the: "Introduction to the Chemical Substances" of the current TLV5® and BEI5® book for guidance and control of excursions above the TLV-TWA, even when the 8-hour TWA is within the recommended limits"

NIOSH has issued its REL of 50 micrograms respirable free silica per cubic meter of air (0.05 mg/m<sup>3</sup>) as determined by a full shift sample up to 10-hour working day, 40 hours per week. NIOSH has recommended that OSHA and MSHA adopt the NIOSH REL as the OSHA PEL and the MSHA Exposure Limit. The 1974 NIOSH Criteria for a Recommended Standard for Occupational Exposure to Crystalline Silica should be consulted for more detailed information. Additionally, NIOSH, In a publication entitled NIOSH Hazard Review Health Effects of Occupational Exposure to Respirable Silica (**April 2002**), **NIOSH stated** "...that workers have a significant risk of developing chronic silicosis when they are exposed to respirable crystalline silica over a working lifetime at the current Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL), the Mine Safety and Health Administration (MSHA) PEL, or the National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (REL). Current sampling and analytical methods used to evaluate occupational exposure to respirable crystalline silica do not meet the accuracy criterion needed to quantify exposures at concentrations below the NIOSH REL of 0.05 mg/m<sup>3</sup> as a time-weighted average (TWA) for up to a 10-hr workday during a 40-hr workweek. Until improved sampling and analytical methods are developed for respirable crystalline silica, NIOSH will continue to recommend an exposure limit of 0.05 mg/m<sup>3</sup> to reduce the risk of developing silicosis, lung cancer, and other adverse health effects. NIOSH also recommends minimizing the risk of illness that remains for workers exposed at the REL by substituting less hazardous materials for crystalline silica when feasible, by using appropriate respiratory protection when source controls cannot keep exposures below the NIOSH REL, and by making medical examinations available to exposed workers."

Crystalline silica exists in several forms, the most common of which are quartz (i.e. this product), trydimite and cristobalite, with quartz being the most common form found in nature. **If quartz is heated to more than 870°C, it can change form to trydimite and if quartz is heated to more than 1450°C, it can change form to cristobalite. The OSHA PELs and MSHA Exposure Limits for trydimite and cristobalite are one-half of the PEL for quartz.**

**Ventilation:** Use local exhaust as required to maintain exposures as far as possible below applicable occupational exposure limits. See also ACGIH "Industrial Ventilation - A Manual for Recommended Practice" (current edition). Control of exposure to dust must be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general or local exhaust ventilation and substitution of less toxic materials).

**Respiratory Protection:** When effective engineering controls are not feasible, or while they are being implemented, appropriate respiratory protection must be used. Use appropriate respiratory protection for respirable particulates based on consideration of airborne workplace concentrations and duration of exposure

arising from intended end use. Refer to most recent standards of ANSI (Z88.2), OSHA (29 CFR 1910.134), MSHA (30 CFR Parts 56 and 57) and NIOSH Respirator Decision Logic.

**Gloves:** Protective gloves recommended.

**Eye Protection:** Safety glasses or goggles recommended.

**Other Protective Equipment / Clothing:** As appropriate for the work environment. Dusty clothing should be laundered before reuse.

**Hygienic Work Practices:** Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Dusty clothing should be laundered before reuse.

## Section 9: Physical and Chemical Properties

**Chemical Name:** Crystalline Silica, Quartz

**Percent Equivalent:** 87-99.9%

**Color / Appearance:** white powder

**Odor:** Odorless

**pH:** not applicable

**Boiling Point:** 4046°F (2230°C)

**Melting Point:** 2930°F (1610°C)

**Solubility in Water:** Negligible

**Percent Volatile:** 0%

**Auto Ignition Temperature:** Will not burn

**Specific Gravity (water=1):** 2.65

**Vapor Pressure:** not applicable

**Vapor Density:** not applicable

**Evaporation Rate:** not applicable

**Flash Point:** Fully oxidized, will not burn

**Lower Flammable Limits (LFL):** not applicable

**Upper Flammable Limits (UFL):** not applicable

## Section 10: Stability and Reactivity

**Chemical Stability:** Stable

**Conditions to avoid:** none

**Incompatibility:** Powerful oxidizing agents such as fluorine, chlorine trifluoride, manganese trioxide, etc.

**Hazardous decomposition products:** Silica will dissolve in hydrofluoric acid producing a corrosive gas, silicon tetrafluoride.

**Hazardous Polymerization:** Will not occur.

**Conditions to avoid:** none

## Section 11: Toxicological Information

**Health Hazard:**

**Inhalation:** Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may have the following serious chronic health effects:

**Silicosis:** Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling and sometimes fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop mycobacterial infections (tuberculous and non-tuberculous) and fungal infections. Inhalation of air with a very high concentration of respirable silica dust can cause the most serious forms of silicosis in a matter of months or a few years. Some epidemiological studies have concluded that there is significant risk of developing silicosis even at airborne exposure levels that are equal to the recommended NIOSH REL, the ACGIH TLV, the OSHA PEL, and the MSHA Exposure Limit.

**Carcinogenicity:**

**IARC:** The International Agency for Research on Cancer has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1 - carcinogenic to humans). Refer to IARC Monograph 68, Silica. Some Silicates and Organic Fibres (published in June 1997) in conjunction with the use of these materials.

**NTP:** The National Toxicology Program classifies respirable crystalline silica as "known to be a human carcinogen". Refer to the Eleventh Report on Carcinogens (2005).

**ACGIH:** The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

**Other Data with Possible Relevance to Human Health:** There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by fibrosis of the lungs, skin and other internal organs) rheumatoid arthritis, systemic lupus, erythematosus, sarcoidosis, chronic bronchitis, chronic obstructive pulmonary disease (COPD), emphysema, chronic kidney disease and end-stage renal disease.

**For further information:** consult "Adverse Effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, pages 761-768, 1997, and see also NIOSH Hazard Review - Health Effects of Occupational Exposure to Respirable Crystalline Silica, April 2002 (see Section 7 for NIOSH Hazard Review Website).

**Skin:** No adverse effects expected.

**Eye:** Contact may cause mechanical irritation and possible injury.

**Ingestion:** No adverse effects expected for normal, incidental ingestion.

**Chronic Health Effects:** See "Inhalation" subsection above with respect to silicosis, cancer status and other data with possible relevance to human health.

**Medical Conditions Aggravated by Exposure:** Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to respirable quartz dust.

**Signs and Symptoms of Exposure:** Exposure to dust may cause mucous membrane and respiratory irritation, cough, sore throat, nasal congestion, sneezing and shortness of breath. However, there may be no immediate signs or symptoms of exposure to hazardous concentrations of respirable crystalline silica (quartz). See "Inhalation" subsection above for symptoms of silicosis. The absence of symptoms is not necessarily indicative of safe conditions.

**Acute Toxicity Values:** Silica **LD<sub>50</sub> (oral rat):** > 22,500 mg/kg

## Section 12: Ecological Information

**Additional Ecological Information:**

**Silica: LC<sub>50</sub> carp** >10,000 mg/L/72 hr. This product is not expected to present an environmental hazard.

## Section 13: Disposal Considerations

**Waste Disposal Method:**

Silica is not classified as a hazardous waste under US EPA RCRA regulations. If uncontaminated, dispose as an inert, non-metallic mineral. If contaminated, dispose in accordance with all applicable local, state/provincial and federal regulations in light of the contamination present. Local regulations may be more stringent than regional and national requirements. It is the responsibility of the waste generator to determine the toxicity and physical characteristics of the material to determine the proper waste identification and disposal in compliance with applicable regulations.

**Section 14: Transport Information****U.S. DOT Hazard Classification**

<b>Proper Shipping Name</b>	: Not Regulated
<b>Technical Name</b>	: N/A
<b>UN-Number</b>	: N/A
<b>Hazard Class / Packing Group</b>	: N/A
<b>Label Required</b>	: None
<b>DOT Packaging Requirements</b>	: N/A
<b>Exceptions</b>	: N/A

**Section 15: Regulatory Information**

**SARA 311/312:** Hazard Categories for SARA Section 311/312 Reporting: Chronic Health

**SARA 313:** This Product Contains the Following Chemicals Subject to Annual Release Reporting Requirements  
Under the SARA Section 313 (40 CFR 372): None

**CERCLA Section 103 Reportable Quantity:** none

**California Prop. 65:** This product contains crystalline silica (respirable) which is known to the State of California to cause cancer.

**Toxic Substance Control Act (TSCA):** All of the components of this product are listed on the EPA TSCA Inventory or exempt from pre-manufacture notification requirements.

**European Inventory of Commercial Chemical Substances:** All of the components of this product are listed on the EINECS Inventory or exempt from notification requirements. (The EINECS number for Quartz: 238-878-4)

**European Community Labeling:** Harmful Xn

**Contains: crystalline silica, quartz (238-878-4)**

**R48/20 Harmful:** Danger of serious damage to health by prolonged exposure by inhalation.

**S22:** Do not breathe dust

**S38:** In case of insufficient ventilation, wear suitable respiratory equipment.

**Canadian Environmental Protection Act:** All the components of this product are listed on the Canadian Domestic Substances List or exempt from notification requirements.

**Canadian WHMIS Classification:** Class D, Division 2, Subdivision A (Very Toxic Material causing other Toxic Effects)

**Canadian Controlled Products Regulation (CPR):** This SDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the SDS contains all of the information required by the CPR.

**Japan METI:** All of the components of this product are existing chemical substances as defined in the Chemical Substance Control Law.

**Australian Inventory of Chemical Substances:** All of the components of this product are listed on the AICS inventory or exempt from notification requirements.

**Australian National Occupational Health & Safety Commission Status:** Hazardous according to the criteria of Australian National Occupational Health & Safety Commission: Harmful (Xn); R48/20 Harmful: Danger of serious damage to health by prolonged exposure by inhalation.

**Korea:** All of the components of this product are listed on the ECL inventory or exempt from notification requirements.

**Philippines:** All of the components of this product are listed on the PICCS inventory or exempt from notification requirements.

**Section 16: Other Information**

**EU Classes and Risk Phrases for Reference (from Sections 2 and 3):** Xn Harmful

**R48/20: Harmful:** Danger of serious damage to health by prolonged exposure by inhalation.

**S22:** Do not breathe dust

**S38:** In case of insufficient ventilation, wear suitable respiratory equipment.

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**NFPA Hazard Rating:** Health: 1 \* Fire: 0 Reactivity: 0

\* **Warning . Chronic health effect possible** . inhalation of silica dust may cause lung injury/disease (silicosis). Take appropriate measures to avoid breathing dust. See Section 3.




**References:**

- \* Registry for Toxic Effects of Chemical Substances (RTECS), 2006
- \* Patty’s Industrial Hygiene and Toxicology
- \* NIOSH Hazard Review - Health Effects of Occupational Exposure to Respirable Crystalline Silica, April 2002
- \* NTP Eleventh Report on Carcinogens, 2005
- \* IARC Monograph Volume 68, Silica, Some Silicates and Organic Fibres, 1997
- \* Hazardous Substances Data Bank (HSDB), 2006
- \* Documentation of the TLV - Silica, Crystalline: x-Quartz and Cristobalite, American Conference of Governmental Industrial Hygienists, 2006

**Acronyms**

- ACGIH** - American Conference of Governmental Industrial Hygienists
- ANSI** - American National Standards Institute
- CAS** - Chemical Abstracts Service
- CERCLA** - Comprehensive Environmental Response, Compensation & Liability Act of 1980
- CFR** - Code of Federal Regulations
- CHEMTREC** - Chemical Transportation Emergency Center
- CPR** - Controlled Products Regulations
- CWC** - Chemical Weapons Convention
- DOT** - U.S. Department of Transportation
- DSL** - Canadian Domestic Substance List
- EHS** - Extremely Hazardous Substance
- EPA** - U.S. Environmental Protection Agency
- HMIS** - Hazardous Material Identification System
- IARC** - International Agency for Research on Cancer
- LEL/UEL** - Lower and Upper Explosive Limit
- mg/m<sup>3</sup>** - Milligrams per cubic meter
- NAERG** - North American Emergency Response Guidebook
- NIOSH** - National Institute of Occupational Safety and Health
- NFPA** - National Fire Protection Association
- NTP** - National Toxicology Program
- OSHA** - Occupational Safety and Health Administration
- PEL** - Permissible Exposure Limit (set by OSHA)

**GHS Pictograms and Hazards**

<p><b>Health Hazard</b></p>  <ul style="list-style-type: none"> <li>• Carcinogen</li> <li>• Mutagenicity</li> <li>• Reproductive Toxicity</li> <li>• Respiratory Sensitizer</li> <li>• Target Organ Toxicity</li> <li>• Aspiration Toxicity</li> </ul>	<p><b>Flame</b></p>  <ul style="list-style-type: none"> <li>• Flammables</li> <li>• Pyrophorics</li> <li>• Self-Heating</li> <li>• Emits Flammable Gas</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>	<p><b>Exclamation Mark</b></p>  <ul style="list-style-type: none"> <li>• Irritant (skin and eye)</li> <li>• Skin Sensitizer</li> <li>• Acute Toxicity (harmful)</li> <li>• Narcotic Effects</li> <li>• Respiratory Tract Irritant</li> <li>• Hazardous to Ozone Layer (Non-Mandatory)</li> </ul>
<p><b>Gas Cylinder</b></p>  <ul style="list-style-type: none"> <li>• Gases Under Pressure</li> </ul>	<p><b>Corrosion</b></p>  <ul style="list-style-type: none"> <li>• Skin Corrosion/ Burns</li> <li>• Eye Damage</li> <li>• Corrosive to Metals</li> </ul>	<p><b>Exploding Bomb</b></p>  <ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>
<p><b>Flame Over Circle</b></p>  <ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>	<p><b>Environment (Non-Mandatory)</b></p>  <ul style="list-style-type: none"> <li>• Aquatic Toxicity</li> </ul>	<p><b>Skull and Crossbones</b></p>  <ul style="list-style-type: none"> <li>• Acute Toxicity (fatal or toxic)</li> </ul>

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**PPE** - Personal Protective Equipment  
**RCRA** - Resource Conservation and Recovery Act of 1976  
**SARA** - Superfund Amendments and Reauthorization Act  
**SDS** - Safety Data Sheet  
**STEL** - Concentration to which workers can be exposed continuously for a **short** period of time without suffering from irritation, irreversible tissue damage or narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue or materially reduce work efficiency.  
**TDG** (Canadian): Transport of Dangerous Goods Regulations  
**TLV** - Threshold Limit Value (set by ACGIH)  
**TWA** - 8-hour Time Weighted Average  
**TSCA** - US Toxic Substance Control Act  
**WHMIS** - Workplace Hazardous Material Information System

**SDS Issue Date:** 12-17-2014  
**Revised Date:** 12-17-2014  
**Supersedes:** 4-12-2014

**Disclaimer:** Martrex, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. **MARTREX, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MARTREX, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.**

NFPA Rating Explanation Guide					
Rating Number	Health Hazard	Flammability Hazard	Instability Hazard	Rating Symbol	Special Hazard
4	Can be lethal	Will vaporize and readily burn at normal temperatures	May explode at normal temperatures and pressures	ALK	Alkaline
3	Can cause serious or permanent injury	Can be ignited under almost all ambient temperatures	May explode at high temperature or shock	ACID	Acidic
2	Can cause temporary incapacitation or residual injury	Must be heated or high ambient temperature to burn	Violent chemical change at high temperatures or pressures	BIO	BioHazard
1	Can cause significant irritation	Must be preheated before ignition can occur	Normally stable. High temperatures make unstable	COR	Strong Corrosive
0	No Hazard	Will not burn	Stable	CRYO	Cryogenic
				OXY	Oxidizer
				☢	Radioactive
				W	Reacts violently or explosively with water
				W OX	Reacts violently or explosively with water or oxidizer

*This chart for reference only - For complete specifications consult the NFPA Standard*