# MSDS

## MATERIAL SAFETY DATA SHEET

**PART I** ***What is the material and what do I need to know in an emergency?***

## 1. PRODUCT IDENTIFICATION

**TRADE NAME (AS LABELED):** **HOMAX STEEL WOOL**

**PRODUCT CODES:** **1012159, 10120000, 10121000, 1021100, 10121110, 10121111, 10121112, 10121113, 10121114, 10121152, 10121153, 10121154, 10121155, 10121156, 10121157, 10121158, 10121160, 10121160, 10121161, 10121162, 10121163, 10121164, 10121165, 10121166, 105040, 105041, 105042, 105043, 105044, 105045, 105046, 106600-06, 106600-10-06, 106601-06, 106602-06, 106603-06, 106604-06, 106605-06, 106606-06, 106606-10-06, 106607-06, 106608-06, 106608-10-06**

**PRODUCT USE:** Abrasive

**SUPPLIER/MANUFACTURER'S NAME:** **HOMAX PRODUCTS, INC.**

**ADDRESS:** 200 Westerly Rd.
Bellingham, WA 98226

**CHEMTREC EMERGENCY NO.:** 1-800-424-9300 (United States)
1-703-527-3887 (International Collect)

**BUSINESS PHONE:** 1-800-729-9029

**DATE OF PREPARATION:** April,2011

Note: This product is sold to consumers for household use. This MSDS has been developed to address safety concerns affecting those individuals working in warehouses and other places where large numbers of these containers are stored, as well as those affecting potential users of this product in industrial/occupational settings. All pertinent health, safety and environmental information have been presented in this document, per the requirements of the US Federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and Canadian WHMIS. The language contained in this MSDS treats steel wool as an article; defined by OSHA (29 CFR 1910.1200).

## 2. COMPOSITION and INFORMATION ON INGREDIENTS

| CHEMICAL NAME | CAS # | % w/w | EXPOSURE LIMITS IN AIR | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | ACGIH-TLV | | OSHA-PEL | | NIOSH-REL | | |
| | | | TWA $mg/m^3$ | STEL $mg/m^3$ | TWA $mg/m^3$ | STEL $mg/m^3$ | TWA $mg/m^3$ | STEL $mg/m^3$ | IDLH ppm |
| Iron | 7439-89-6 | 60 - 100 | 5 | NE | 10 | NE | 5 | NE | 2500 |
| Water and ingredients present in concentrations of less than 1% (or less than 0.1% if carcinogens) | | Balance | The ingredients in the balance of this product do not contribute significant hazards beyond those described in this document. All pertinent health, safety and environmental information has been presented, per the requirements of the US Federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and Canadian WHMIS. | | | | | | |

NE = Not Established. Exposure limits in the air are based on the Iron oxide. See Section 16 for Definitions of Terms Used.

**NOTE (1):** ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

## 3. HAZARD IDENTIFICATION

**EMERGENCY OVERVIEW:**

PHYISCAL DESCRIPTION: This product is a fibrous, metallic-gray pad.

HEALTH HAZARD: Dust or particles produced by use of this product may cause mild irritation to the eyes and respiratory system.

FIRE HAZARD: Direct exposure to an ignition source this product can ignite, and may be difficult to extinguish.

REACTIVITY HAZARD: This product is stable in dry air, but oxidizes in moist air forming rust. Decomposes when heated.

ENVIRONMENTAL HAZARD: This product does not normally present a significant hazard to aquatic or terrestrial life.

**SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE:** The most significant route of occupational overexposure is contact with skin and eyes. Overexposure is not anticipated to be a significant occurrence in occupational use. The symptoms of overexposure to dust or particles produced by use of this product are as follows:

## 3. HAZARD IDENTIFICATION - Continued

**INHALATION:** Overexposure can cause irritation to the respiratory tract. Symptoms may include coughing and shortness of breath.

**CONTACT WITH SKIN or EYES:** If exposure to dust or particles of steel wool occurs to the eye, it may cause irritation, redness and pain. Deposition of iron particles can leave a "rust ring" or brownish stain on the cornea.

**SKIN ABSORPTION:** This material is not reported to be absorbed through intact skin.

**INGESTION:** Extremely large oral dosages may produce gastrointestinal disturbances. An overdose of iron may cause vomiting, abdominal pain, and shock. In severe cases, toxicity may progress and develop into an increase in acidity in the blood, bluish skin discoloration, fever, and liver damage.

**INJECTION:** Not applicable.

**Hazardous Materials Identification System (HMIS)**

| | |
|---|---|
| **Health** | **1** |
| **Flammability** | **2** |
| **Physical Hazard** | **1** |
| **Protective Equipment** | **B** |

**See Section 16 for Definition of Ratings**

**HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms.**

**ACUTE:** Depending on the duration of contact, overexposures to dust or particles of steel wool can mildly to moderately irritate the eyes and gastrointestinal tract.

**CHRONIC:** Long-term ingestion of greater than 50 to 100 mg of iron per day may result in iron deposition in body tissues. Repeated iron ingestion can produce cardiac toxicity.

**TARGET ORGANS:** Acute: Eyes, gastrointestinal disturbances Chronic: Eyes, liver, gastrointestinal tract, respiratory system, and cardiovascular system.

# PART II *What should I do if a hazardous situation occurs?*

## 4. FIRST-AID MEASURES

Victims of chemical exposure must be taken for medical attention if any adverse effects occur. Take a copy of label and MSDS to physician or health professional with victim.

**SKIN EXPOSURE:** If this product contaminates the skin, immediately begin decontamination with running water. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek immediate medical attention if any adverse exposure symptoms develop.

**EYE EXPOSURE:** If this product enters the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek medical attention.

**INHALATION:** If vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. Victim must seek immediate medical attention if any adverse exposure symptoms develop. If necessary, use artificial respiration to support vital functions.

**INGESTION:** If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION.DO NOT INDUCE VOMITING, unless directed by medical personnel. Have victim rinse mouth with water, if conscious. Never induce vomiting or give a diluent (e.g., water) to someone who is unconscious, having convulsions, or unable to swallow. If contaminated individual is convulsing, maintain an open airway and obtain immediate medical attention.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Persons with pre-existing skin disorders, eye problems, impaired liver, kidney, respiratory or lymphoid system function can be more susceptible to health effects associated with overexposures to this product.

**RECOMMENDATIONS TO PHYSICIANS:** Treat symptoms and eliminate overexposure.

## 5. FIRE-FIGHTING MEASURES

**FLASH POINT:** 482 F (250 C)

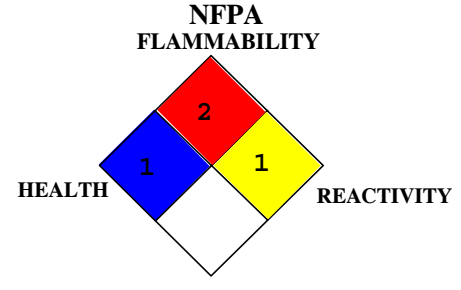
**AUTOIGNITION TEMPERATURE:** Not applicable.

**FLAMMABLE LIMITS (in air by volume, %):**

Lower: Not applicable. Upper: Not applicable.

**FIRE EXTINGUISHING MATERIALS:** Use class D extinguishing material.

Water Spray: NO Carbon Dioxide: NO Foam: NO



Dry Chemical: NO Halon: NO USE: Powdered graphite, salt or limestone.

**UNUSUAL FIRE AND EXPLOSION HAZARDS**: High levels of dust may be an explosion hazard. When involved in a fire, this material may decompose generating dusts, irritating fumes and toxic gases (e.g., Iron oxides).

OTHER
Dusts, irritating fumes and toxic gases

Explosion Sensitivity to Mechanical Impact: Not sensitive under normal conditions.

Explosion Sensitivity to Static Discharge: Not sensitive under normal conditions.

**SPECIAL FIRE-FIGHTING PROCEDURES:** Structural firefighters must wear NIOSH-approved Self-Contained Breathing Apparatus and full protective equipment with full face-piece operated in the pressure demand mode. Incipient fire responders should wear eye protection. Move containers from fire area if it can be done without risk to personnel. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

## 6. ACCIDENTAL RELEASE MEASURES

**SPILL AND LEAK RESPONSE:** For clean-up of large qualities of dusts and particles, dampen material prior to clean-up to avoid airborne particulates and wear gloves when handling.

**RESPONSE TO INCIDENTAL RELEASES:** Not applicable.

**RESPONSE TO NON-INCIDENTAL RELEASES:** Not applicable.

**RESPONSE EQUIPMENT AND PROCEDURES:** Use personal protection equipment (PPE) appropriate for industrial location.

# PART III *How can I prevent hazardous situations from occurring?*

## 7. HANDLING and STORAGE

**WORK PRACTICES AND HYGIENE PRACTICES:** As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash the pad thoroughly after using this product, as remnants remaining on pad may react with steel wool. Do not eat or drink while using this material. Avoid generating dusts and particulates of this product. Use with adequate ventilation.

**STORAGE AND HANDLING PRACTICES:** Store product in a cool, dry location, away from direct sources of intense heat. Store away from incompatible materials (see Section 10, Stability and Reactivity).

**PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:** Not applicable.

## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

**VENTILATION AND ENGINEERING CONTROLS:** Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in Section 2 (Composition and Information on Ingredients).

**RESPIRATORY PROTECTION:** None needed under normal conditions of use. Use NIOSH approved respirators if ventilation is inadequate to control dusts, mists, fumes or vapors. Maintain airborne contaminate concentrations below guidelines listed in Section 2 (Composition and Information on Ingredients). Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres use of a full-face-piece pressure/demand SCBA or a full face-piece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (29 CFR 1910.134).

**EYE PROTECTION:** For consumer use, wearing eye protection (such as splash goggles) is advisable. However, for specific industrial applications, enhanced eye protection can be necessary. Use approved safety goggles or safety glasses, as described in OSHA 29 CFR 1910.133. If necessary, refer to U.S. OSHA 29 CFR 1910.133, or appropriate Canadian standards.

**HAND PROTECTION:** For consumer use, wearing protective gloves is recommended. For specific industrial applications, wear chemical impervious gloves (e.g., Neoprene or Nitrile). If necessary, refer to U.S. OSHA 29 CFR 1910.138 or the appropriate standards of Canada.

**BODY PROTECTION:** For consumer use, no specific body protection is normally needed. For specific industrial applications, body protection is not normally needed. Use body protection appropriate for task (e.g., Tyvek suit, rubber apron). If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects can pierce the soles of the feet or where employee's feet can be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136.

**HMIS PERSONAL PROTECTIVE EQUIPMENT RATING:** Industrial Use situations: B; Safety glasses and gloves.

## 9. PHYSICAL and CHEMICAL PROPERTIES

**RELATIVE VAPOR DENSITY (air = 1):** Not available.

**EVAPORATION RATE (BuAc =1):** Negligible.

**SPECIFIC GRAVITY:** 7.86 @ 20 $^{o}$C

**MELTING/FREEZING POINT:**1535 $^{o}$F (2795 $^{o}$C)

**SOLUBILITY IN WATER:** Insoluble, can react with water.

**BOILING POINT:** 2795 $^{o}$F (4982 $^{o}$C)

**VAPOR PRESSURE, mm Hg @ 1787°C:** 1

**pH:** Not available.

**ODOR THRESHOLD:** Negligible

**COATING V.O.C.:** Negligible.

**COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT):** Negligible.

**APPEARANCE, ODOR AND COLOR**: This product is a fibrous, metallic-gray pad.

**HOW TO DETECT THIS SUBSTANCE (warning properties):** The appearance of this product will act as a warning in the event of an accidental release.

## 10. STABILITY and REACTIVITY

**STABILITY:** Decomposes when heated. Stable in dry air; oxidizes in moist air, forming rust.

**DECOMPOSITION PRODUCTS:** Thermal decomposition of this product may generate dusts, irritating fumes, and toxic gases (e.g., Iron oxides).

**MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE:** This material is not compatible with strong oxidizers, acids, hydrogen peroxide, nitrogen dioxide. May react with acetaldehyde, ammonium peroxodisulfate, chloroformamidinium, chloric acid, ammonium nitrate, halogens, dinitrogen tetraoxide, nitryl fluoride, polystyrene, sodium acetylide, potassium dichromate, peroxyformic acid, nitryl fluoride or chlorine trifluoride.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** Avoid heat, flame, ignition sources, dusting and incompatible chemicals.

## PART IV *Is there any other useful information about this material?*

## 11. TOXICOLOGICAL INFORMATION

**TOXICITY DATA:** There are currently no toxicity data available for this product; the following toxicology information is available for components greater than 1% in concentration.

**The following data are available for iron:**

Intratracheal-Rat TDLo: 450 mg/kg/15W-I:Equivocal tumorigenic agent
Oral-cld TDLo: 77 mg/kg:BAH,Gastrointestinal tract effects,Blood effects
Oral-Rat $LD_{50}$: 30 g/kg
Intraperitoneal-Rabbit, adult LDLo: 20 mg/kg

**SUSPECTED CANCER AGENT:** The following table summarizes the carcinogenicity listing for the components of this product."NO" indicates that the substance is not considered to be, or suspected to be, a carcinogen by the listed agency.

| CHEMICAL | IARC | NTP | NIOSH | OSHA | ACGIH | PROP 65 |
|---|---|---|---|---|---|---|
| Iron | 3 | NO | NO | NO | A4 | NO |

**Note (1): See section 16 for definition of ratings.**

**IRRITANCY OF PRODUCT:** This product can be mildly irritating to tissue.

**SENSITIZATION TO THE PRODUCT:** The components of this product are not reported to be sensitizers.

**TOXICOLOGICAL SYNERGISTIC PRODUCTS:** None known.

**REPRODUCTIVE TOXICITY INFORMATION:** Listed below is information concerning the effects of this product and its components on the human reproductive system.

Mutagenicity: This product is not expected to produce mutagenic effects in humans when used as instructed.
Embryotoxicity: This product is not expected to produce embryotoxic effects in humans when used as instructed.
Teratogenicity: his product is not reported to cause teratogenic effects in humans when used as instructed.
Reproductive Toxicity: This product is not reported to cause reproductive effects in humans when used as instructed.

*A mutagen is a chemical that causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical that causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical that causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance that interferes in any way with the reproductive process.*

**BIOLOGICAL EXPOSURES INDICES (BEIs):** There currently is no BEI established for any component of this product.

## 12. ECOLOGICAL INFORMATION

**ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.**

**ENVIRONMENTAL STABILITY:** The following environmental data is available for components of this product: No data are available for the component of this product.

**EFFECT OF MATERIAL ON PLANTS or ANIMALS:** This product is not anticipated to cause significant effects on terrestrial plants or animals if released in small, consumer-sized volumes. This product may be harmful to animal life if large volumes of it are released into the environment. Refer to Section 11 (Toxicological Information) for specific animal data.

**EFFECT OF CHEMICAL ON AQUATIC LIFE:** This product is not anticipated to cause significant effects on aquatic plants or animals if released in small, consumer-sized volumes. This product may be harmful to contaminated aquatic life (especially if large volumes of it are released into an aquatic environment). The following aquatic toxicity data is available for components of this product: Not available.

## 13. DISPOSAL CONSIDERATIONS

**PREPARING WASTES FOR DISPOSAL: Consumer Waste:** Dispose of according to pertinent state and local household waste and requirements**. Industrial Use:** Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations or with regulations of Canada.

**EPA WASTE NUMBER:** Wastes consisting only of this product has no RCRA code; however, the specific RCRA codes depend on the exact nature of the discarded material.

## 14. TRANSPORTATION INFORMATION

**THIS PRODUCT IS NOT HAZARDOUS PER 49 CFR 172.101, THE U.S. DEPARTMENT OF TRANSPORTATION.**

**PROPER SHIPPING NAME:** Not regulated.
**HAZARD CLASS NUMBER and DESCRIPTION:** Not regulated.
**UN IDENTIFICATION NUMBER:** Not regulated.
**DOT LABEL(S) REQUIRED:** Not regulated.
**PACKAGING GROUP:** Not regulated.

**NORTH AMERICAN RESPONSE GUIDEBOOK NUMBER (2000):** Not regulated.

**MARINE POLLUTANT:** No component is designated as a DOT Marine Pollutant.

**TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:** This product is not considered as dangerous goods, per Transport Canada regulations.

## 15. REGULATORY INFORMATION

**ADDITIONAL U.S. REGULATIONS:**

**EPA REPORTING REQUIREMENTS:** The following reporting requirements are applicable to components of this product:

| CHEMICAL | SECTION 302 (40 CFR 355, Appendix A) | SECTION 304 (40 CFR Table 302.4) | SECTION 313 (40 CFR 372.65) |
|---|---|---|---|
| Iron | NO | NO | NO |

**U.S. SARA SECTION 311/312 FOR PRODUCT:** Acute health effects; chronic health effects.

**U.S. TSCA INVENTORY STATUS:** The components of this product are listed on the TSCA Inventory.

**OTHER U.S. FEDERAL REGULATIONS:** Not applicable.

**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):** This material is not found on either the Proposition 65 Carcinogen List or the Adverse Reproductive Effects List.

**ANSI LABELING (Z129.1):** CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO EYES AND RESPIRATORY TRACT.

**ANSI LABEL PRECAUTIONS:** Keep away from heat, sparks and flame. Avoid contact with eyes. Avoid breathing dust. Do not take internally. Avoid contact with skin and clothing. Wash thoroughly after handling.

**ENVIRONMENTAL HAZARDS:** Do not discharge effluent containing this product into streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

**ADDITIONAL CANADIAN REGULATIONS:**

**CANADIAN DSL/NDSL INVENTORY STATUS:**The components of this product are listed on the DSL Inventory.

**CANADIAN WHMIS SYMBOLS:** Uncontrolled product according to WHMIS classification criteria.

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

## 16. OTHER INFORMATION

**Disclaimer:** As the handling and use of products under user's conditions are beyond our control, no warranty, expressed or implied, including, but not limited to merchantability or fitness for a particular use, is made concerning this product. The user assumes all risk of use or handling whether or not in accordance with any directions or suggestions of the supplier. Seller shall not be liable to purchaser or any other person for loss or damages directly or indirectly arising from the use of our products, from breach of any warranty or from any other cause, the exclusive remedy against the seller being to require replacement or repair of defective goods.

## DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these, which are commonly used, include the following:

**CAS #**: This is the Chemical Abstract Service Number that uniquely identifies each compound.

**ACGIH** - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

**TLV -** Threshold Limit Value - an airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average **(TWA)**, the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level **(C)**. Skin

absorption effects must also be considered.
**OSHA** - U.S. Occupational Safety and Health Administration.
**PEL -** Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL that was vacated by Court Order.
**IDLH -** Immediately Dangerous to Life and Health **-** This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. **O**ccupational **S**afety and **H**ealth **A**dministration (**OSHA**). NIOSH issues exposure guidelines called **R**ecommended **E**xposure **L**evels (**REL**s). When no exposure guidelines are established, an entry of **NE** is made for reference.
**HAZARD RATINGS:**
**HAZARDOUS MATERIALS IDENTIFICATION SYSTEM:** Health Hazard: **0** (minimal acute or chronic exposure hazard); **1** (slight acute or chronic exposure hazard); **2** (moderate acute or significant chronic exposure hazard); **3** (severe acute exposure hazard; onetime overexposure can cause permanent injury and may be fatal); **4** (extreme acute exposure hazard; onetime overexposure can be fatal). Flammability Hazard: **0** (minimal hazard); **1** (materials that require substantial pre-heating before burning); **2** (combustible liquid or solids; liquids with a flash point of 38-93◦C [100-200◦F]); **3** (Class IB and IC flammable liquids with flash points below 38◦C [100◦F]); **4** (Class IA flammable liquids with flash points below 23◦C [73◦F] and boiling points below 38◦C [100◦F]. Reactivity Hazard: **0** (normally stable); 1 (material that can become unstable at elevated temperatures or which can react slightly with water); **2** (materials that are unstable but do not detonate or which can react violently with water); **3** (materials that can detonate when initiated or which can react explosively with water); **4** (materials that can detonate at normal temperatures or pressures).
**NATIONAL FIRE PROTECTION ASSOCIATION:** Health Hazard: **0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure could cause death or major residual injury). Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".
**FLAMMABILITY LIMITS IN AIR**: Much of the information related to fire and explosion is derived from the National Fire Protection Association (**NFPA**). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.
**TOXICOLOGICAL INFORMATION:**
Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **$LD_{50}$** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **$LC_{50}$** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **$mg/m^3$** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, **LDo**, **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV. Ecological Information: **EC** is the effect concentration in water. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources and ratings are: **IARC** - the International Agency for Research on Cancer; 1 = Carcinogenic to humans, 2A, 2B = Probably carcinogenic to humans, 3 = Unclassifiable as to carcinogenicity in humans, and 4 = Probably not carcinogenic to humans. **NTP** - the National Toxicology Program; K =Known to be a human carcinogen, and R = Reasonably anticipated to be a human carcinogen. **RTECS** - the Registry of Toxic Effects of Chemical Substances. **OSHA -** Occupational Safety and Health Administration and **CAL/OSHA -** California's subunit of the Occupational Safety and Health Administration; Ca = Carcinogen defined with no further categorization. **ACGIH –** American Conference of Governmental Industrial Hygienists; A1 = Confirmed human carcinogen, A2 = Suspected human carcinogen, A3 = Confirmed animal carcinogen with unknown relevance to humans, A4 = Not classifiable as a human carcinogen, and A5 = Not suspected as a human carcinogen. **NIOSH** – U.S. National Institute for Occupational Safety and Health; Ca = Potential occupational carcinogen, with no further categorization. **EPA** – U.S. Environmental Protection; A = Human carcinogen, B = Probable human carcinogen, C = Possible human carcinogen, D = Not classifiable as to human carcinogenicity, E = Evidence of Non-carcinogenicity for humans, K = Known human

carcinogen, L = Likely to produce cancer in humans, CBD = Cannot be determined, NL = Not likely to be carcinogenic in humans, and I = Data are inadequate for an assessment of human carcinogenic potential.

**REGULATORY INFORMATION:**

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act **(SARA)**; the Canadian Domestic/Non-Domestic Substances List **(DSL/NDSL)**; the U.S. Toxic Substance Control Act **(TSCA)**; Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act **(CERCLA or Superfund)**; and various state regulations. This section also includes information on the precautionary warnings that appear on a material's industrial package label.