

# MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

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

### 1. PRODUCT IDENTIFICATION

**TRADE NAME (AS LABELED):** AntiChlor® 30  
**CHEMICAL NAME/CLASS:** Sodium Salt Solution  
**SYNONYMS:** Not applicable  
**PRODUCT USE:** Water Treatment  
**SUPPLIER/MANUFACTURER'S NAME:** AVISTA TECHNOLOGIES  
**ADDRESS:** 140 Bosstick Blvd  
San Marcos, CA 92069  
**CHEMTREC EMERGENCY NO.:** 1-800-424-9300 (United States)  
1-703-527-3887 (International)  
**BUSINESS PHONE:** (760) 744-0536  
**DATE OF PREPARATION:** January 6, 2000, Revised April 6, 2009

### 2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH-TLV		OSHA-PEL			OTHER
			TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>	TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>	IDLH mg/m <sup>3</sup>	
Sulfite Salt Compound	Proprietary	10-30	5 A4 (Not Classifiable as a Human Carcinogen)	NE	NE	NE	NE	NIOSH REL: TWA = 5
Water and other components which are present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers and mutagens).		Balance	None of the other components contribute significant additional hazards at the concentration present in this product. All pertinent hazard information has been provided in this document, per the requirements of the Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards and Canadian Workplace Hazardous Materials Identification System Standards (CPR 4).					

NE = Not Established. C = Ceiling Limit. See Section 16 for Definitions of Terms Used.

NOTE: All WHMIS information is included; it is located in appropriate sections based on the ANSI Z400.1-1998 format.

### 3. HAZARD IDENTIFICATION

**EMERGENCY OVERVIEW:** This product is a clear, colorless to pale yellow, corrosive solution with a mild odor of rotten eggs. This product can irritate or burn contaminated tissue depending on concentration and duration of exposure. Sulfite Salt Compound (the main component of this product) is a skin and respiratory sensitizer; subsequent exposures to very small amounts can cause allergic reaction. This product is neither reactive nor flammable. Thermal decomposition of this product produces irritating vapors and toxic gases (e.g. sodium oxides and sulfur oxides). Emergency responders must wear personal protective equipment (and have appropriate fire-extinguishing protection) suitable for the situation to which they are responding.

**SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE:** The most significant routes of occupational overexposure are inhalation and contact with skin and eyes. The symptoms of overexposure to this product are as follows:

**INHALATION:** : If vapors, mists, or sprays of this solution are inhaled, irritation of the nose and throat and difficulty breathing and coughing may occur. Severe inhalation overexposure may result in burns to the respiratory system. The Sulfite Salt Compound (the main component of this product) is a respiratory sensitizer; subsequent exposures to very small amounts can cause allergic reaction in susceptible individuals. Symptoms can include shortness of breath, wheezing, cough, and chest tightness.

**CONTACT WITH SKIN or EYES:** Depending on the duration and concentration of overexposure, skin contact can be mildly to moderately irritating or may cause burns. Symptoms of skin contact can include redness and irritation. Prolonged contact may result in burns to exposed tissue. Repeated, low level contact with this product may cause dermatitis (dry, red skin). The Sulfite Salt Compound (the main component of this product) is a skin sensitizer; subsequent exposures to very small amounts can cause allergic reaction (e.g., rash, itching) in susceptible individuals. Direct eye contact with the liquid can cause stinging, tearing and redness; prolonged eye contact may cause burns to tissue and permanent damage to the eyes.

### 3. HAZARD IDENTIFICATION (Continued)

**SKIN ABSORPTION:** Skin absorption is not a significant route of exposure for any component of this product.

**INGESTION:** Ingestion is not anticipated to be a likely route of exposure to this product. Ingestion of this product will result in moderate to severe irritation, or burns of the digestive tract. In addition, ingestion of this product may cause central nervous system depression, gastrointestinal and cardiac abnormalities, and violent colic. Individuals who are sensitive to the Sulfite Salt Compound (the main component of this product) may experience symptoms such as those described under "Inhalation". Ingestion of large quantities of this product may be fatal.




**INJECTION:** Accidental injection of this product can cause burning, reddening, and swelling in addition to the wound. Individuals who are sensitive to the Sulfite Salt Compound (the main component of this product) may experience symptoms such as those described under "Inhalation".

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

**ACUTE:** Inhalation exposure can cause mild to moderate irritation, coughing, and difficulty breathing or burns of the respiratory system, depending on concentration and duration of exposure. Skin and eye contact can cause redness and mild to moderate irritation or burns, depending on concentration and duration of exposure. Ingestion may cause central nervous system depression, gastrointestinal and cardiac abnormalities, and violent colic, as well as irritation or burns to digestive system.

**CHRONIC:** Prolonged or repeated skin overexposure to this product may cause dermatitis (dry, red skin). The Sulfite Salt Compound (the main component of this product) is a skin and respiratory sensitizer; subsequent exposures to very small amounts can cause allergic reaction in susceptible individuals. Symptoms can include those described under "Inhalation".

**TARGET ORGANS:** ACUTE: Skin, eyes, central nervous system, gastrointestinal system, heart, respiratory system.  
CHRONIC: Skin, respiratory system.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH		(BLUE)	3
FLAMMABILITY		(RED)	0
REACTIVITY		(YELLOW)	0
PROTECTIVE EQUIPMENT			C
EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		
For routine industrial applications			

**See Section 16 for Definition of Ratings**

## 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. Rescuers should be taken for medical attention if necessary. 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 should 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. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

**INGESTION:** If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING. 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:** Preexisting dermatitis, other skin conditions, and respiratory conditions may be aggravated by exposures to this product.

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

### 5. FIRE-FIGHTING MEASURES

**FLASH POINT:** Not applicable.

**AUTOIGNITION TEMPERATURE:** Not applicable.

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

Lower: Not applicable.

Upper: Not applicable.

## 5. FIRE-FIGHTING MEASURES (Continued)

**FIRE EXTINGUISHING MATERIALS:** This material will not contribute to the intensity of a fire. Use extinguishing material suitable to the surrounding fire.

Water Spray: YES      Carbon Dioxide: YES  
Foam: YES            Dry Chemical: YES  
Halon: YES            Other: Any "ABC" Class

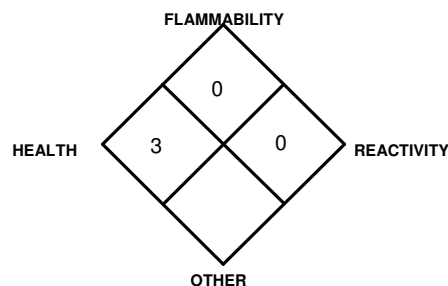
**UNUSUAL FIRE AND EXPLOSION HAZARDS:** This product is corrosive and presents a contact hazard to fire-fighters. In addition, the Sulfite Salt Compound (the main component of this product) is a skin and respiratory sensitizer; subsequent exposures to very small amounts can cause allergic reaction. When involved in a fire, this material may decompose and produce irritating fumes and toxic gases (e.g., sodium oxides and sulfur oxides).

Explosion Sensitivity to Mechanical Impact: Not applicable.

Explosion Sensitivity to Static Discharge: Not applicable.

**SPECIAL FIRE-FIGHTING PROCEDURES:** Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. 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.

### NFPA RATING



**See Section 16 for  
Definition of Ratings**

## 6. ACCIDENTAL RELEASE MEASURES

**SPILL AND LEAK RESPONSE:** Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a spill, clear the affected area and protect people. In the event of an incidental release of this product, personnel should wear gloves and safety glasses (or goggles). In the event of a non-incidental release, Minimum Personal Protective Equipment should be **Level C: triple-gloves, chemical resistant apron, boots, and splash goggles and an Air-Purifying respirator with organic vapor cartridge. Level B, which includes the use of Self-Contained Breathing Apparatus, should be worn when oxygen levels are below 19.5% or are unknown.** Absorb spilled liquid with polypads or other suitable absorbent materials. Neutralize the pH of the residue of the product with neutralizer appropriate for mildly acidic materials. Decontaminate the area thoroughly. Prevent spill rinsate from contamination of storm drains, sewers, soil or groundwater. Place all spill residues in a suitable container and seal. Dispose of in accordance with applicable U.S. Federal, State, or local procedures or appropriate standards of Canada (see Section 13, Disposal Considerations).

## 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 thoroughly after handling this product. Do not eat or drink while handling this material. Avoid generating mists and sprays of this product. Remove contaminated clothing immediately.

**STORAGE AND HANDLING PRACTICES:** All employees who handle this material should be trained to handle it safely. Open containers carefully on a stable surface. Empty containers may contain residual liquid; therefore, empty containers should be handled with care. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials (see Section 10, Stability and Reactivity). Material should be stored in secondary containers, or in a diked area, as appropriate. Storage and use areas should be covered with impervious materials. Storage areas should be made of fire-resistant materials. Keep container tightly closed when not in use. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged.

**PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:** Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely if necessary. Collect all rinsates and dispose of according to applicable U.S. Federal, State, or local procedures or appropriate Canadian standards.

### 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). Ensure eyewash/safety shower stations are available near areas where this product is used.

**RESPIRATORY PROTECTION:** Use NIOSH approved acid/mist respirators if ventilation is inadequate to control mists. Maintain airborne contaminate concentrations below guidelines listed in Section 2 (Composition and Information on Ingredients). If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the Canadian CSA Standard Z94.4-93 and applicable standards of Canadian Provinces. (continued on following page)

## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

RESPIRATORY PROTECTION (continued): Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

EYE PROTECTION: Use approved safety goggles or safety glasses, as described in OSHA 29 CFR 1910.133. Splash goggles with a faceshield may be needed if splash hazards exist.

HAND PROTECTION: Wear chemical impervious gloves (e.g., rubber, Neoprene).

BODY PROTECTION: Use body protection appropriate for task (e.g., Tyvek suit, rubber apron) to protect from splashes and sprays.

HMIS PERSONAL PROTECTIVE EQUIPMENT RATING: C (Safety Glasses, Gloves, Apron)

---

## 9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): Similar to water.

SPECIFIC GRAVITY: 1.1 – 1.25

SOLUBILITY IN WATER: Soluble.

VAPOR PRESSURE, mm Hg @ 20°C: Not available

ODOR THRESHOLD: Not available.

COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Not available.

APPEARANCE, ODOR AND COLOR: This product is a clear, colorless to pale yellow solution with a mild odor of rotten eggs.

HOW TO DETECT THIS SUBSTANCE (warning properties): The odor may act as a warning property associated with this product.

---

## 10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: Thermal decomposition of this product may generate oxides of sodium and sulfur.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong acids and oxidizers.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Avoid contact with 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.

### **SULFITE SALT COMPOUND:**

Mutation in Microorganisms (*Salmonella typhimurium*) = 100 mmol/L

Cytogenetic Analysis (ovary, hamster) = 180 µg/L

Sister Chromatid Exchange (ovary, hamster) = 200 µg/L

TDLo (oral, rat) = 75 mg/kg/15 days/continuous; Kidney, Urethra, Bladder: other changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: phosphatases, dehydrogenases

TDLo (oral, rat) = 40 g/kg; multigenerations: Reproductive: Effects on Newborn: weaning or lactation index (e.g., # alive at weaning per # alive at day 4)

### **SULFITE SALT COMPOUND (continued):**

TDLo (oral, rat) = 20 g/kg; multigenerations: Reproductive: Effects on Newborn - stillbirth

TDLo (oral, mouse) = 14 g/kg/female 8–12 days after conception; Reproductive: Effects on Newborn

TDLo (oral, pig) = 562 g/kg/48 weeks/continuous; Liver: changes in liver weight Kidney, Urethra, Bladder: changes in bladder weight Nutritional and Gross Metabolic - weight loss or decreased weight gain

TDLo (subcutaneous, mouse) = 806 mg/kg/26 weeks/intermittent; Tumorigenic: equivocal tumorigenic agent by RTECS criteria Skin and Appendages - tumors

### **SULFITE SALT COMPOUND (continued):**

TDLo (parenteral, mouse) = 60 mg/kg/female 8 days after conception; Reproductive: Effects on Fetus: fetotoxicity (except death, e.g., stunted fetus), Specific Developmental Abnormalities: musculoskeletal system

LD<sub>50</sub> (intravenous, rat) = 115 mg/kg

LD<sub>50</sub> (parenteral, mouse) = 910 mg/kg

LDLo (intravenous, mouse) = 1220 mg/kg

LDLo (intravenous, rabbit) = 192 mg/kg

LD<sub>50</sub> (oral, mouse) = 5989 mg/kg

LD<sub>50</sub> (intravenous, rabbit) = 1220 mg/kg

SUSPECTED CANCER AGENT: The Sulfite Salt Compound (the main component of this product) is found on the following lists:

**IARC-3** Unclassifiable as to Carcinogenicity in Humans.

**ACGIH-A4** Not Classifiable as a Human Carcinogen.

The other components of this product are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, and CAL/OSHA, and therefore are neither considered to be nor suspected to be cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: This product can irritate contaminated tissue.

SENSITIZATION TO THE PRODUCT: The Sulfite Salt Compound (the main component of this product) is a skin and respiratory sensitizer; subsequent exposures to very small amounts can cause allergic reaction.

TOXICOLOGICAL SYNERGISTIC PRODUCTS: No information is currently available on toxicologically synergistic products of this material.

---

## 11. TOXICOLOGICAL INFORMATION (Continued)

**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 reported to produce mutagenic effects in humans. Animal mutation data are available for the Sulfite Salt Compound component of this product; these data were obtained during clinical studies on specific animal tissues exposed to high doses of this compound.

**Embryotoxicity:** This product is not reported to produce embryotoxic effects in humans.

**Teratogenicity:** This product is not reported to cause teratogenic effects in humans.

**Reproductive Toxicity:** This product is not reported to cause reproductive effects in humans. Clinical studies on test animals exposed to relatively high doses of the Sulfite Salt Compound component of this product provided reproductive toxicity data.

A *mutagen* is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An *embryotoxin* is a chemical which 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 which causes damage to a developing fetus, but the damage does not propagate across generational lines. A *reproductive toxin* is any substance which interferes in any way with the reproductive process.

**BIOLOGICAL EXPOSURES INDICES (BEIs):** Currently, there are no Biological Exposure Indices (BEIs) for any component of this product.

---

## 12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

**ENVIRONMENTAL STABILITY:** The components of this product will decompose into other inorganic compounds over time under normal environmental conditions. Additional environmental data are available as follows:

**SULFITE SALT COMPOUND:**

Water Solubility = 470 g/L (20°C).

Chemical Oxygen Demand (COD) = 165 mg oxygen/g compound.

**EFFECT OF MATERIAL ON PLANTS or ANIMALS:** 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 information on the effects of components of this product on test animals.

**EFFECT OF CHEMICAL ON AQUATIC LIFE:** This product may be harmful to contaminated aquatic life (especially if large volumes of it are released into an aquatic environment. Additional aquatic toxicity data are available as follows:

**SULFITE SALT COMPOUND:**

LC<sub>50</sub> (*Salmo gairdneri*) 96 hours = 150-220 mg/L

EC/LC<sub>50</sub> (*Pseudomonas putida*) 17 hours = 56 mg/L

---

## 13. DISPOSAL CONSIDERATIONS

**PREPARING WASTES FOR DISPOSAL:** Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations or with regulations of Canada. This product, if unaltered by the handling, may be disposed of by treatment at a permitted facility or as advised by your local waste regulatory authority.

**EPA WASTE NUMBER:** D002 (Characteristic/Corrosivity), applicable to wastes consisting only of this product.

---

## 14. TRANSPORTATION INFORMATION

**THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.**

**PROPER SHIPPING NAME:**

Bisulfites, aqueous solutions, n.o.s. (Sodium Metabisulfite)

**HAZARD CLASS NUMBER and DESCRIPTION:**

8 (Corrosive)

**UN IDENTIFICATION NUMBER:**

UN 2693

**DOT LABEL(S) REQUIRED:**

Class 8, Corrosive

**PACKAGING GROUP:**

III

**NORTH AMERICAN RESPONSE GUIDEBOOK NUMBER (1996):** 154

**NATIONAL MOTOR FREIGHT CLASSIFICATION:** LTL: 100; T: 70

**MARINE POLLUTANT:** No component of this product is listed as a marine pollutant by the D.O.T. (49 CFR 172.101, Appendix B).

**TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:** This material is considered as dangerous goods, per the regulations of Transport Canada. Use above, U.S. DOT information for shipments to Canada.

---

## 15. REGULATORY INFORMATION

### ADDITIONAL U.S. REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: No component of this product is subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act.

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for any component of this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs. (4,540 kg) therefore applies, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): The default RQ for Unlisted Wastes, Characteristic Corrosivity of 100 lb (45.4 kg) would apply to wastes of this product.

U.S. TSCA INVENTORY STATUS: The chemicals in this product are listed on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

U.S. STATE REGULATORY INFORMATION: Components of this product are covered under specific State regulations, as denoted below:

**Alaska - Designated Toxic and Hazardous Substances:** Sulfite Salt Compound.

**California - Permissible Exposure Limits for Chemical Contaminants:** Sulfite Salt Compound.

**Florida - Substance List:** Sulfite Salt Compound.

**Illinois - Toxic Substance List:** Sulfite Salt Compound.

**Kansas - Section 302/313 List:** No.

**Massachusetts - Substance List:** Sulfite Salt Compound.

**Michigan - Critical Materials Register:** No.

**Minnesota - List of Hazardous Substances:** Sulfite Salt Compound.

**Missouri - Employer Information/Toxic Substance List:** Sulfite Salt Compound.

**New Jersey - Right to Know Hazardous Substance List:** Sulfite Salt Compound.

**North Dakota - List of Hazardous Chemicals, Reportable Quantities:** Sulfite Salt Compound.

**Pennsylvania - Hazardous Substance List:** Sulfite Salt Compound.

**Rhode Island - Hazardous Substance List:** Sulfite Salt Compound.

**Texas - Hazardous Substance List:** No.

**West Virginia - Hazardous Substance List:** No.  
**Wisconsin - Toxic and Hazardous Substances:** No.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component of this product is on the California Proposition 65 lists.

ANSI LABELING (Z129.1): **WARNING!** MAY CAUSE ALLERGIC RESPIRATORY AND SKIN SENSITIZATION. MAY ANSI LABELING (Z129.1): **DANGER!** CORROSIVE LIQUID. MAY CAUSE RESPIRATORY, SKIN, AND EYE IRRITATION OR BURNS. MAY CAUSE ALLERGIC RESPIRATORY AND SKIN SENSITIZATION. MAY BE HARMFUL OR FATAL IF SWALLOWED. Do not breathe mists or sprays. Avoid prolonged or repeated contact with skin. Avoid contact with eyes. Do not taste or swallow. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves, goggles, and suitable body protection if necessary. **FIRST-AID:** In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If ingested, do not induce vomiting. Get medical attention if any adverse effects occur. **IN CASE OF FIRE:** Use water fog, dry chemical, CO<sub>2</sub>, or "alcohol" foam. **IN CASE OF SPILL:** Absorb spill with inert material and place in suitable container. Consult Material Safety Data Sheet for additional information.

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.

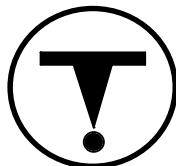
### ADDITIONAL CANADIAN REGULATIONS:

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

OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITY SUBSTANCES LISTS: Not applicable.

CANADIAN WHMIS SYMBOLS: **Class D2B** Materials Causing Other Toxic Effect (Contains a sensitizer)



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

### PREPARED BY:

CHEMICAL SAFETY ASSOCIATES, Inc.  
9163 Chesapeake Drive, San Diego, CA 92123-1002  
858/565-0302  
April 27, 2009

### DATE OF PRINTING

## 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 which 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 which 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 which 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. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called Recommended Exposure Levels (**RELs**). 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 result in 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<sub>50</sub>** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC<sub>50</sub>** - 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<sup>3</sup>** 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. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **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.

### 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 which appear on the material's package label.