

# Material Safety Data Sheet

## Carbon Disulfide

### 1. Product and company identification

<b>Product name</b>	: Carbon Disulfide
<b>Material uses</b>	: For the manufacture of viscose rayon, cellophane films, rubber vulcanization accelerators, xanthates, pharmaceutical intermediates (such as thiocarbanilide and thiocyanates), mercaptoethylamine, and several fungicides, soil fumigants, insecticides and their intermediates. Carbon disulfide is used as a solvent for rubbers, waxes, fats, oils, plastics, sulfur, phosphorus, selenium, bromine and iodine.
<b>Headquarters</b>	: Marsulex Inc. 111 Gordon Baker Road Suite 300 North York, ON M2H 3R1 (416) 496-9655 www.marsulex.com
<b>Code</b>	: 9504106
<b>MSDS authored by</b>	: KMK Regulatory Services inc.
<b><u>In case of emergency</u></b>	: Canada: CANUTEC +1-613-996-6666 US: CHEMTREC +1-800-424-9300
<b>Product type</b>	: Liquid.

### 2. Hazards identification

#### Emergency overview

<b>Color</b>	: Colorless.
<b>Physical state</b>	: Liquid.
<b>Odor</b>	: Disagreeable.
<b>Signal word</b>	: DANGER!
<b>Hazard statements</b>	: EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. HARMFUL IF INHALED OR SWALLOWED. CAUSES EYE AND SKIN IRRITATION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. DEVELOPMENTAL HAZARD - CAN CAUSE ADVERSE DEVELOPMENTAL EFFECTS.
<b>Precautions</b>	: Keep away from heat, sparks and flame. Avoid exposure - obtain special instructions before use. Do not breathe vapor or mist. Do not ingest. Do not get in eyes or on skin or clothing. Avoid exposure during pregnancy. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
<b>OSHA/HCS status</b>	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
<b>Routes of entry</b>	: Dermal contact. Eye contact. Inhalation. Ingestion.
<b><u>Potential acute health effects</u></b>	
<b><u>Inhalation</u></b>	: Carbon disulfide is very toxic, easily forms very high vapor concentrations at room temperature and so poses a high inhalation hazard. Relatively low concentrations of the vapor can cause harmful effects on the central nervous system (CNS). Initial symptoms may include headache, dizziness, fatigue, excitement or depression. High concentrations can cause serious psychological disturbances and in some cases death. Psychiatric disturbances (including excitability, confusion, extreme irritability, uncontrolled anger, emotional instability, nightmares, depression) have been observed following episodes of exposure to high concentrations of carbon disulfide. Deaths have reportedly occurred rapidly following exposure to 5000 ppm.

## 2. Hazards identification

- Ingestion** : Deaths have been reported following ingestion of approximately 15 mL. Symptoms include tremors, exhaustion, shortness of breath, peripheral vascular collapse, reduced body temperature, dilation of the pupils, convulsions, coma and death in a few hours. It is possible that carbon disulfide can be aspirated (inhaled into the lungs) during ingestion or vomiting. Aspiration of even a small amount of liquid could result in a life threatening accumulation of fluid in the lungs. Ingestion is not a typical route of occupational exposure.
- Skin** : Carbon disulfide liquid can be absorbed through intact skin and may cause harmful effects. Effects are similar to those described for inhalation below. Carbon disulfide vapor may also be absorbed through the skin. Significant skin absorption was observed in volunteers exposed to water solutions containing carbon disulfide. Repeated or prolonged contact may result in blistering and burns, based on human and animal information.
- Eyes** : High vapor concentrations may cause irritation. Eye irritation was reported among employees exposed to high peak concentrations (estimated at 48- 320 ppm (150-1000 mg/m<sup>3</sup>)).

### Potential chronic health effects

- Chronic effects** : May cause target organ damage, based on animal data.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : Can cause developmental abnormalities.
- Fertility effects** : No known significant effects or critical hazards.
- Target organs** : May cause damage to the following organs: kidneys, the reproductive system, liver, peripheral nervous system, cardiovascular system, skin, eyes, central nervous system (CNS).

### Over-exposure signs/symptoms

- Inhalation** : No specific data.
- Ingestion** : No specific data.
- Skin** : Adverse symptoms may include the following:  
irritation  
redness
- Eyes** : Adverse symptoms may include the following:  
pain or irritation  
watering  
redness

- Medical conditions aggravated by over-exposure** : Repeated exposure to a highly toxic material may produce general deterioration of health.

See toxicological information (section 11)

## 3. Composition/information on ingredients

### United States

Name	CAS number	%
Carbon disulfide	75-15-0	>99.9

### Canada

Name	CAS number	%
Carbon disulfide	75-15-0	>99.9

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

## 4. First aid measures

- Eye contact** : Immediately flush eyes with lukewarm running water for a minimum of 20 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY.
- Skin contact** : Remove and discard contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Wash skin gently and thoroughly with water and soap for at least 20 minutes or until the chemical is removed.
- Inhalation** : Move victim to fresh air. Remove any contaminated clothing to prevent further inhalation exposure. Give artificial respiration ONLY if breathing has stopped. Give Cardiopulmonary Resuscitation (CPR) if there is no breathing AND no pulse. Avoid mouth-to-mouth contact by using mouth guards or shields. Obtain medical attention IMMEDIATELY.
- Ingestion** : DO NOT INDUCE VOMITING. If victim is alert and not convulsing, rinse mouth and give 240 to 300 mL (8 to 10 oz) of water to dilute material. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. IMMEDIATELY contact local poison control centre. IMMEDIATELY transport victim to an emergency facility.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Notes to physician** : No specific treatment. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

## 5. Fire-fighting measures

- Flammability of the product** : Flammable.
- Extinguishing media**
- Suitable** : SMALL FIRE: Use dry chemical powder.  
LARGE FIRE: Use alcohol-resistant foam or water spray or fog. Cool containers with water jet in order to prevent pressure build-up, auto-ignition or explosion. Water may be ineffective except as a blanket.
- Not suitable** : Do not use water jet.
- Special exposure hazards** : Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
sulfur oxides
- Special protective equipment for fire-fighters** : Firefighter's normal protective equipment (Bunker Gear) will not provide adequate protection. A full-body encapsulating chemical protective suit with positive pressure self-contained breathing apparatus may be necessary. Caution should be used in fighting a carbon disulfide fire because the flame is nearly invisible. Water may be ineffective except as a blanket. The water must be gently applied to the surface of the liquid. If possible, isolate materials not yet involved in the fire, and move containers from fire area if this can be done without risk, and protect personnel. Otherwise, fire-exposed containers or tanks should be cooled by application of hose streams and this should begin as soon as possible. If this is not possible, use unmanned monitor nozzles and immediately evacuate the area. If a leak or spill has not ignited, use water spray in large quantities to disperse the vapors and to protect personnel attempting to stop a leak. Water spray can be used to dilute spills to nonflammable mixtures and flush spills away from ignition sources. Solid streams of water may be ineffective and spread material. For a massive fire in a large area, use unmanned hose holder or monitor nozzles; if this is not possible withdraw from fire area and allow fire to burn. Stay away from ends of tanks, but be aware that flying material from ruptured tanks may travel in any direction.

## 5. Fire-fighting measures

- Special remarks on fire hazards** : Extremely flammable in presence of oxidizing materials, reducing materials, combustible materials, organic materials, metals, acids, alkalis, moisture.
- Special remarks on explosion hazards** : Because of the very low autoignition temperature, ignition is easily accomplished by contact with hot surfaces such as light bulbs, steam pipes, or engine exhaust pipes. The combination of high volatility, very low flash point, autoignition temperature and ignition energy, and wide flammability range results in a dangerous fire and explosion hazard. Vapor is heavier than air and may travel a considerable distance to a source of ignition and flash back to a leak or open container.

## 6. Accidental release measures

- Personal precautions** : Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Small spill** : Soak up spill with absorbent material which does not react with spilled chemical. Put material in suitable, covered, labeled containers. Flush area with water.
- Large spill** : To contain spill, dike with earth, sand, or absorbent material which does not react with spilled material. Remove liquid by pumps or vacuum equipment, which is airtight, and spark and explosion-proof. Place in suitable, covered, labeled containers. Soak up remainder of spill with absorbent material. Place material in suitable, covered, labeled containers. Flush area with water. Ground all equipment or contact surfaces to prevent ignition by static electricity.

## 7. Handling and storage

- Handling** : Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.
- Storage** : Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Bond together and ground containers before and during transfer to dissipate static electricity.

## 8. Exposure controls/personal protection

### United States

Ingredient	Exposure limits
Carbon disulfide	<p><b>ACGIH TLV (United States, 1/2008). Absorbed through skin.</b> TWA: 1 ppm 8 hour(s).</p> <p><b>NIOSH REL (United States, 12/2001). Absorbed through skin.</b> STEL: 30 mg/m<sup>3</sup> 15 minute(s). STEL: 10 ppm 15 minute(s). TWA: 3 mg/m<sup>3</sup> 10 hour(s). TWA: 1 ppm 10 hour(s).</p> <p><b>OSHA PEL Z2 (United States, 11/2006).</b> AMP: 100 ppm 30 minute(s). CELL: 30 ppm TWA: 20 ppm 8 hour(s).</p> <p><b>Specific States values (United States):</b> <u>California</u> TLV: 4 ppm 8 hour(s). <u>Washington</u> TLV: 4 ppm 8 hour(s). <u>Idaho</u> TLV: 20 ppm 8 hour(s).</p>

## 8. Exposure controls/personal protection

### Canada

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m <sup>3</sup>	Other	ppm	mg/m <sup>3</sup>	Other	ppm	mg/m <sup>3</sup>	Other	Notations
Carbon disulfide	US ACGIH 1/2009	1	-	-	-	-	-	-	-	-	[1]
	AB 6/2008	1	-	-	-	-	-	-	-	-	[1]
	BC 6/2008	4	-	-	12	-	-	-	-	-	[1]
	ON 6/2008	1	-	-	-	-	-	-	-	-	[1]
	QC 6/2008	4	12	-	12	36	-	-	-	-	[1]
	SK 6/2008	10	-	-	15	-	-	-	-	-	[1]

[1] Absorbed through skin.

### Consult local authorities for acceptable exposure limits.

**Recommended monitoring procedures** : Personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

**Engineering measures** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

**Hygiene measures** : Ensure that eyewash stations and safety showers are close to the workstation location. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

### Personal protection

#### Respiratory

- : NIOSH recommendations for carbon disulfide vapor concentrations in air:  
Up to 10 ppm: Chemical cartridge respirator with organic vapor cartridge(s); or Supplied Air Respirator (SAR).
- Up to 25 ppm: SAR operated in a continuous-flow mode; or powered air-purifying respirator with organic vapor cartridge(s).
- Up to 50 ppm: Full-facepiece chemical cartridge respirator with organic vapor cartridge(s); or powered air-purifying respirator with tight-fitting facepiece and organic vapor cartridge(s); or gas mask with organic vapor canister; or full-facepiece SCBA; or full-facepiece SAR.
- Up to 500 ppm: Positive pressure SAR.

#### Hands

- : Gloves.  
Recommended (resistance to breakthrough longer than 8 hours): Polyvinyl alcohol, Viton™, 4H™, Barricade™, Responder™. (43)  
Recommended (estimated resistance to breakthrough longer than 4 hours): Trelchem HPS™.

#### Eyes

- : Safety eyewear should be used when there is a likelihood of exposure. Recommended: Safety glasses with side shields.

#### Skin

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: Lab coat.

#### Environmental exposure controls

- : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## 9. Physical and chemical properties

<b>Physical state</b>	: Liquid.
<b>Flash point</b>	: Closed cup: -30.15°C (-22.3°F) [Pensky-Martens.]
<b>Auto-ignition temperature</b>	: 90°C (194°F)
<b>Flammable limits</b>	: Lower: 1 to 3% Upper: 50%
<b>Color</b>	: Colorless.
<b>Odor</b>	: Disagreeable.
<b>Molecular weight</b>	: 76.13 g/mole
<b>Molecular formula</b>	: CS <sub>2</sub>
<b>Boiling/condensation point</b>	: 46.12°C (115°F)
<b>Melting/freezing point</b>	: -111.66°C (-169°F)
<b>Critical temperature</b>	: 272.9°C (523.2°F)
<b>Specific gravity</b>	: 1.266 g/cm <sup>3</sup>
<b>Vapor pressure</b>	: 39.7 kPa (297.6 mm Hg)
<b>Vapor density</b>	: 2.6 [Air = 1]
<b>Odor threshold</b>	: 0.1 ppm
<b>Evaporation rate</b>	: 10.9 (butyl acetate = 1)
<b>Solubility</b>	: Partially soluble in the following materials: cold water. Soluble in all proportions in ethanol, methanol, diethyl ether, benzene, chloroform, carbon tetrachloride and oils.

## 10. Stability and reactivity

<b>Chemical stability</b>	: The product is stable.
<b>Conditions to avoid</b>	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas. Avoid exposure during pregnancy.
<b>Materials to avoid</b>	: Reactive or incompatible with the following materials: oxidizing materials, reducing materials, metals and alkalis.
<b>Hazardous decomposition products</b>	: Thermal decomposition products are toxic and include oxides of sulfur.
<b>Possibility of hazardous reactions</b>	: Under normal conditions of storage and use, hazardous reactions will not occur.
<b>Hazardous polymerization</b>	: Under normal conditions of storage and use, hazardous polymerization will not occur.

## 11. Toxicological information

### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Carbon disulfide	LD50 Oral	Rat	1200 mg/kg	-

<b>Special remarks on toxicity to animals</b>	: One study has shown embryotoxic and fetotoxic effects in the offspring of rabbits exposed to carbon disulfide, in the absence of harmful effects on mothers. Harmful effects on the embryo and fetus (decreased body weight and deaths) were observed in the offspring of rabbits following exposure to 600 ppm during pregnancy, in the absence of significant harmful effects on mothers. Teratogenic effects were observed at 1200 ppm, but only in the presence of harmful effects on mothers (decreased body weight gain, incoordination and wheezing). No harmful effects were observed at 60-300 ppm. Other studies have shown no harmful effects on offspring or mothers following exposures to as high as 40 ppm.
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## 11. Toxicological information

### Chronic toxicity

#### Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Carbon disulfide	A4	-	-	-	-	-

**IDLH** : 500 ppm

## 12. Ecological information

**Environmental effects** : Not established

### Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Carbon disulfide	Acute LC50 2100 to 2200 ug/L Fresh water Acute LC50 2.99 mg/L Fresh water	Daphnia - Daphnia magna Fish - Poecilia reticulata - Young - 2 cm	48 hours 96 hours

**Mobility** : When released into the soil, this material may biodegrade to a moderate extent and is expected to leach into groundwater. When released into the soil or air this material is expected to quickly evaporate. When released into the water, this material is expected to have a half-life of less than 1 day. This material has an experimentally determined bioconcentration factor (BCF) of less than 100. It is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals and is expected to have a half-life between 1 and 10 days.

**Toxicity of the products of biodegradation** : The products of biodegradation are as toxic as the original product.

**Products of degradation** : Products of degradation: carbon oxides (CO, CO<sub>2</sub>), sulfur oxides (SO<sub>2</sub>, SO<sub>3</sub> etc.).



## 13. Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.







Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

## 14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
<b>DOT Classification</b>	UN1131	CARBON DISULFIDE	3 (6.1)	1	 	<p><b>Reportable quantity</b> 100 lbs. (45.4 kg)</p> <p><b>Limited quantity</b> Yes.</p> <p><b>Packaging instruction</b> <b>Passenger aircraft</b> Quantity limitation: Forbidden.</p> <p><b>Cargo aircraft</b> Quantity limitation: Forbidden.</p>

## 14 . Transport information

						<b>Special provisions</b> B16, T14, TP2, TP7, TP13
<b>TDG Classification</b>	UN1131	CARBON DISULFIDE	3 (6.1)	I	 	<b>Special provisions</b> 102, 109  <b>Remarks</b> 500 ml
<b>IMDG Class</b>	UN1131	CARBON DISULFIDE	3 (6.1)	I	 	-
<b>IATA-DGR Class</b>	UN1131	CARBON DISULFIDE	3 (6.1)	I	 	<b>Passenger and Cargo Aircraft</b> Quantity limitation: Forbidden <b>Cargo Aircraft Only</b> Quantity limitation: Forbidden

PG\* : Packing group

Exemption to the above classification may apply.

**AERG : 131**

## 15 . Regulatory information

### United States

#### HCS Classification

- : Flammable liquid
- Toxic material
- Irritating material
- Target organ effects

#### U.S. Federal regulations

- : **TSCA 4(a) final test rules:** Carbon disulfide
- TSCA 8(a) PAIR:** Carbon disulfide
- United States inventory (TSCA 8b):** This material is listed or exempted.
- TSCA 12(b) one-time export:** Carbon disulfide
- SARA 302/304/311/312 extremely hazardous substances:** Carbon disulfide
- SARA 302/304 emergency planning and notification:** Carbon disulfide
- SARA 302/304/311/312 hazardous chemicals:** Carbon disulfide
- SARA 311/312 MSDS distribution - chemical inventory - hazard identification:**  
Carbon disulfide: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard
- Clean Water Act (CWA) 307:** No products were found.
- Clean Water Act (CWA) 311:** Carbon disulfide
- Clean Air Act (CAA) 112 accidental release prevention:** Carbon disulfide
- Clean Air Act (CAA) 112 regulated flammable substances:** No products were found.
- Clean Air Act (CAA) 112 regulated toxic substances:** Carbon disulfide

#### Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)

- : Listed

## 15. Regulatory information

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

### SARA 313

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
<b>Form R - Reporting requirements</b>	Carbon disulfide	75-15-0	>99.9
<b>Supplier notification</b>	Carbon disulfide	75-15-0	>99.9

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

**State regulations** :

- Connecticut Carcinogen Reporting:** This material is not listed.
- Connecticut Hazardous Material Survey:** This material is not listed.
- Florida substances:** This material is not listed.
- Illinois Chemical Safety Act:** This material is not listed.
- Illinois Toxic Substances Disclosure to Employee Act:** This material is not listed.
- Louisiana Reporting:** This material is not listed.
- Louisiana Spill:** This material is not listed.
- Massachusetts Spill:** This material is not listed.
- Massachusetts Substances:** This material is listed.
- Michigan Critical Material:** This material is not listed.
- Minnesota Hazardous Substances:** This material is not listed.
- New Jersey Hazardous Substances:** This material is listed.
- New Jersey Spill:** This material is not listed.
- New Jersey Toxic Catastrophe Prevention Act:** This material is not listed.
- New York Acutely Hazardous Substances:** This material is listed.
- New York Toxic Chemical Release Reporting:** This material is not listed.
- Pennsylvania RTK Hazardous Substances:** This material is listed.
- Rhode Island Hazardous Substances:** This material is not listed.

### California Prop. 65

**WARNING:** This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>	<u>No significant risk level</u>	<u>Maximum acceptable dosage level</u>
Carbon disulfide	No.	Yes.	No.	No.

### Canada

**WHMIS (Canada)** :

- Class B-2: Flammable liquid
- Class D-1B: Material causing immediate and serious toxic effects (Toxic).
- Class D-2A: Material causing other toxic effects (Very toxic).
- Class D-2B: Material causing other toxic effects (Toxic).

**Canadian lists** :

- CEPA Toxic substances:** This material is not listed.
- Canadian ARET:** This material is not listed.
- Canadian NPRI:** This material is listed.
- Alberta Designated Substances:** This material is not listed.
- Ontario Designated Substances:** This material is not listed.
- Quebec Designated Substances:** This material is not listed.

**Canada inventory** : This material is listed or exempted.

## 15 . Regulatory information

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

### International regulations

- International lists** :
- Australia inventory (AICS):** This material is listed or exempted.
  - China inventory (IECSC):** This material is listed or exempted.
  - Japan inventory:** This material is listed or exempted.
  - Korea inventory:** This material is listed or exempted.
  - New Zealand Inventory of Chemicals (NZIoC):** This material is listed or exempted.
  - Philippines inventory (PICCS):** This material is listed or exempted.

**Chemical Weapons Convention List Schedule I Chemicals** : Not listed

**Chemical Weapons Convention List Schedule II Chemicals** : Not listed

**Chemical Weapons Convention List Schedule III Chemicals** : Not listed

## 16 . Other information

### United States

**Label requirements** : EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. HARMFUL IF INHALED OR SWALLOWED. CAUSES EYE AND SKIN IRRITATION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. DEVELOPMENTAL HAZARD - CAN CAUSE ADVERSE DEVELOPMENTAL EFFECTS.

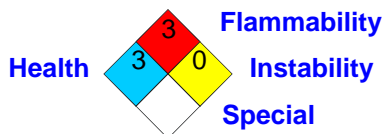
**Hazardous Material Information System (U.S.A.)** :

Health	*	3
Flammability		3
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

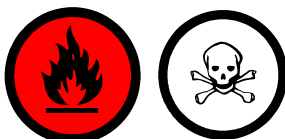
The customer is responsible for determining the PPE code for this material.

**National Fire Protection Association (U.S.A.)** :



### Canada

**WHMIS (Canada)** :



## 16 . Other information

**References** : - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. ANSI Z400.1, MSDS Standard, 2004. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - Manufacturer's Material Safety Data Sheet.

**Date of issue** : 08/15/2009

**Date of previous issue** : 12/15/2008

**Version** : 5.1

### Notice to reader

**To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.**

**Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.**

