



**Tel: 514-956-7503**  
**Fax: 514-956-7504**  
**Internet: [www.megs.ca](http://www.megs.ca)**  
**E-mail:**  
**[support@megs.ca](mailto:support@megs.ca)**

**Montreal**  
**Ottawa**  
**Quebec**

**St-Laurent**  
**Nepean**  
**Quebec**

**Tel : 514-956-7503**  
**Tel : 613-226-4228**  
**Tel : 418-834-7447**

**Fax : 514-956-7504**  
**Fax : 613-226-4229**  
**Fax : 418-834-3774**

## **CARBON DISULFIDE- MATERIAL SAFETY DATA SHEET**

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### **24 Hour EMERGENCY CONTACT**

**U.S- CHEMTREC 1-800-  
424-9300**

**CANADA- CANUTEC 613-  
996-6666**

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## **1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

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### **Matheson Tri-Gas, Inc.**

*The telephone numbers listed below are  
emergency numbers, please contact your local  
branch for routine inquiries.*

#### **USA**

959 Route 46 East  
Parsippany, New Jersey  
07054-0624 USA  
**Phone: 973-257-1100**

#### **CANADA**

530 Watson Street  
Whitby, Ontario  
L1N 5R9 Canada  
**Phone: 905-668-3570**

**SUBSTANCE: CARBON DISULFIDE**

**SYMBOL:** CS<sub>2</sub>

**TRADE NAMES/SYNONYMS:**

CARBON BISULFIDE; CARBON BISULPHIDE; CARBON DISULPHIDE; CARBON SULFIDE;  
DITHIOCARBONIC ANHYDRIDE; SULPHOCARBONIC ANHYDRIDE; CARBON SULFIDE  
(CS<sub>2</sub>); CARBON SULPHIDE; UN 1131; RCRA P022; CS<sub>2</sub>; MAT04280; RTECS FF6650000

**CHEMICAL FAMILY:** organic sulfur compounds

**CREATION DATE:** Jan 24 1989

**REVISION DATE:** Mar 16 1999

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## 2. COMPOSITION, INFORMATION ON INGREDIENTS

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**COMPONENT:** CARBON DISULFIDE

**CAS NUMBER:** 75-15-0

**EC NUMBER (EINECS):** 200-843-6

**EC INDEX NUMBER:** 006-003-00-3

**PERCENTAGE:** 100.0

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## 3. HAZARDS IDENTIFICATION

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**NFPA RATINGS (SCALE 0-4):** HEALTH=3 FIRE=3 REACTIVITY=0

**WHMIS CLASSIFICATION:** BD2

**EC CLASSIFICATION (ASSIGNED):**

F Highly Flammable

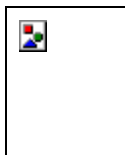
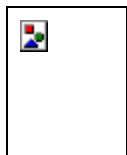
T Toxic

Xi Irritant

Reproductive Toxin Category 3

R 11-36/38-48/23-62-63

EC Classification may be inconsistent with independently-researched data.



**EMERGENCY OVERVIEW:**

**Color:** colorless to yellow

**Physical Form:** liquid

**Major Health Hazards:** respiratory tract irritation, skin irritation (possibly severe), eye irritation (possibly severe), central nervous system depression, nerve damage

**Physical Hazards:** Flammable liquid and vapor. Vapor may cause flash fire.

**POTENTIAL HEALTH EFFECTS:**

**INHALATION:**

**Short Term Exposure:** irritation, chest pain, headache, symptoms of drunkenness, disorientation, tingling sensation, dilated pupils, coma

**Long Term Exposure:** irregular heartbeat, drowsiness, visual disturbances, impotence, liver damage, nerve damage, paralysis, effects on the brain

**SKIN CONTACT:**

**Short Term Exposure:** same as effects reported in short term inhalation, irritation (possibly severe), absorption may occur, symptoms of drunkenness

**Long Term Exposure:** kidney damage, liver damage, nerve damage

**EYE CONTACT:**

**Short Term Exposure:** irritation (possibly severe), blurred vision

**Long Term Exposure:** same as effects reported in short term exposure

**INGESTION:**

**Short Term Exposure:** low body temperature, vomiting, digestive disorders, difficulty breathing, irregular heartbeat, symptoms of drunkenness, disorientation, dilated pupils, bluish skin color, convulsions, coma

**Long Term Exposure:** kidney damage, liver damage, nerve damage

**CARCINOGEN STATUS:**

**OSHA:** N

**NTP:** N

**IARC:** N

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**4. FIRST AID MEASURES**

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**INHALATION:**

Remove from exposure immediately. Use a bag valve mask or similar device to perform artificial respiration (rescue breathing) if needed. Get medical attention.

**SKIN CONTACT:**

Remove contaminated clothing, jewelry, and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). Get medical attention, if needed.

**EYE CONTACT:**

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. Get medical attention immediately.

**INGESTION:**

Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

**ANTIDOTE:**

amyl nitrite, inhalation; sodium nitrite, intravenous; pyridoxine, intravenous; urea, intravenous.  
CAUTION! Get medical attention immediately.

**NOTE TO PHYSICIAN:**

For ingestion, consider gastric lavage.

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**5. FIRE FIGHTING MEASURES**

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**FIRE AND EXPLOSION HAZARDS:**

Severe fire hazard. Severe explosion hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor/air mixtures are explosive. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion.

**EXTINGUISHING MEDIA:**

alcohol resistant foam, carbon dioxide, regular dry chemical, water

Large fires: Use alcohol-resistant foam or flood with fine water spray.

**FIRE FIGHTING:**

Move container from fire area if it can be done without risk. Dike for later disposal. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Water may be ineffective.

**FLASH POINT:**

-22 F (-30 C) (CC)

**LOWER FLAMMABLE LIMIT:**

1.0%

**UPPER FLAMMABLE LIMIT:**

50.0%

**AUTOIGNITION:**

194 F (90 C)

**FLAMMABILITY CLASS (OSHA):**

IB

**HAZARDOUS COMBUSTION PRODUCTS:**

Thermal decomposition products or combustion: oxides of carbon, oxides of sulfur

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**6. ACCIDENTAL RELEASE MEASURES**

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**AIR RELEASE:**

Reduce vapors with water spray. Stay upwind and keep out of low areas.

**SOIL RELEASE:**

Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal. Absorb with sand or other non-combustible material.

**WATER RELEASE:**

Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Absorb with activated carbon. Collect spilled material using mechanical equipment. Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

**OCCUPATIONAL RELEASE:**

Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry. Reportable Quantity (RQ): Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

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**7. HANDLING AND STORAGE**[Up to Table of Contents](#)

Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Protect from physical damage. Store outside or in a detached building. Avoid contact with light. Store at room temperature. Use diking sufficient to contain total contents plus 10%. Store under an inert atmosphere. Avoid heat, flames, sparks and other sources of ignition. Grounding and bonding required. Keep separated from incompatible substances. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30).

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**8. EXPOSURE CONTROLS, PERSONAL PROTECTION**[Up to Table of Contents](#)**EXPOSURE LIMITS:****CARBON DISULFIDE:**

20 ppm OSHA TWA

30 ppm OSHA ceiling

100 ppm OSHA peak 30 minute(s)

4 ppm (12 mg/m<sup>3</sup>) OSHA TWA (skin) (vacated by 58 FR 35338, June 30, 1993)

12 ppm (36 mg/m<sup>3</sup>) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)

10 ppm (30 mg/m<sup>3</sup>) ACGIH TWA (skin)

1 ppm (3 mg/m<sup>3</sup>) NIOSH recommended TWA 10 hour(s) (skin)

10 ppm (30 mg/m<sup>3</sup>) NIOSH recommended STEL

**VENTILATION:** Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

**EYE PROTECTION:** Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**CLOTHING:** Wear appropriate chemical resistant clothing.

**GLOVES:** Wear appropriate chemical resistant gloves.

**PROTECTIVE MATERIAL TYPES:** nitrile butadiene rubber (NBR), polyvinyl alcohol (PVA)

**RESPIRATOR:** The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

**10 ppm**

Any chemical cartridge respirator with organic vapor cartridge(s).

Any supplied-air respirator.

**25 ppm**

Any supplied-air respirator.

Any powered, air-purifying respirator with organic vapor cartridge(s).

**50 ppm**

Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).

Any air-purifying respirator with a full facepiece and an organic vapor canister.

Any powered, air-purifying respirator with a full facepiece and organic vapor cartridge(s).

Any self-contained breathing apparatus with a full facepiece.

Any supplied-air respirator with a full facepiece.

**500 ppm**

Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode.

**Escape -**

Any air-purifying respirator with a full facepiece and an organic vapor canister.

Any appropriate escape-type, self-contained breathing apparatus.

**For Unknown Concentrations or Immediately Dangerous to Life or Health -**

Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full facepiece.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**PHYSICAL STATE:** liquid

**APPEARANCE:** clear

**COLOR:** colorless to yellow

**ODOR:** Not available

**MOLECULAR WEIGHT:** 76.13

**MOLECULAR FORMULA:** C-S2

**BOILING POINT:** 115 F (46 C)

**FREEZING POINT:** -168 F (-111 C)

**VAPOR PRESSURE:** 300 mmHg @ 20 C

**VAPOR DENSITY (air=1):** 2.6

**SPECIFIC GRAVITY (water=1):** 1.261 @ 22 C

**WATER SOLUBILITY:** 0.22% @ 22 C

**PH:** Not available

**VOLATILITY:** 100%

**ODOR THRESHOLD:** Not available

**EVAPORATION RATE:** 22.6 (butyl acetate=1)

**VISCOSITY:** 0.367 cP @ 20 C

**COEFFICIENT OF WATER/OIL DISTRIBUTION:** Not available

**SOLVENT SOLUBILITY:**

**Soluble:** ethanol, methanol, ether, benzene, chloroform, carbon tetrachloride, oils

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## 10. STABILITY AND REACTIVITY

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**REACTIVITY:**

Stable at normal temperatures and pressure.

**CONDITIONS TO AVOID:**

Avoid heat, flames, sparks and other sources of ignition. Minimize contact with material. Avoid inhalation of material or combustion by-products. Keep out of water supplies and sewers.

**INCOMPATIBILITIES:**

metals, combustible materials, oxidizing materials, amines, halogens, metal oxides

**HAZARDOUS DECOMPOSITION:**

Thermal decomposition products or combustion: oxides of carbon, oxides of sulfur

**POLYMERIZATION:**

Will not polymerize.

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## 11. TOXICOLOGICAL INFORMATION

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**CARBON DISULFIDE:**

**TOXICITY DATA:**

25 gm/m<sup>3</sup>/2 hour(s) inhalation-rat LC50; 2125 mg/kg oral-guinea pig LD50

**LOCAL EFFECTS:**

Irritant: inhalation, skin, eye

**ACUTE TOXICITY LEVEL:**

Moderately Toxic: inhalation, ingestion

**TARGET ORGANS:** nervous system

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** central nervous system disorders, eye disorders, heart or cardiovascular disorders, kidney disorders, liver disorders, nervous system disorders

**MUTAGENIC DATA:** Available.

**REPRODUCTIVE EFFECTS DATA:** Available.

**ADDITIONAL DATA:** May cross the placenta. Alcohol may enhance the toxic effects.

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## 12. ECOLOGICAL INFORMATION

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### ECOTOXICITY DATA:

**FISH TOXICITY:** 65000 ug/L 96 hour(s) LC50 (Mortality) Bleak (*Alburnus alburnus*)

**INVERTEBRATE TOXICITY:** 2100 ug/L 48 week(s) LC50 (Mortality) Water flea (*Daphnia magna*)

**ALGAL TOXICITY:** 21000 ug/L 96 week(s) EC50 (Growth) Green algae (*Chlorella pyrenoidosa*)

### FATE AND TRANSPORT:

**KOW:** 16982.44 (log = 4.23) (estimated from water solubility)

**KOC:** 10046.16 (log = 4.00) (estimated from water solubility)

**HENRY'S LAW CONSTANT:** 1.4 E -2 atm-m3/mol

**BIOCONCENTRATION:** 8.15 (estimated from water solubility)

**AQUATIC PROCESSES:** 2.2637771 hours (River Model: 1 m deep, 1 m/s flow, 3 m/s wind)

### ENVIRONMENTAL SUMMARY:

Moderately toxic to aquatic life. Relatively non-persistent in the environment. Not expected to leach through the soil or the sediment. Accumulates very little in the bodies of living organisms. Highly volatile from water.

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## 13. DISPOSAL CONSIDERATIONS

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Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): P022.

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## 14. TRANSPORT INFORMATION

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**U.S. DOT 49 CFR 172.101. SHIPPING NAME-UN NUMBER; HAZARD CLASS; PACKING GROUP; LABEL:**

Carbon disulfide-UN1131; 3; I; Flammable liquid; Poison



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## 15. REGULATORY INFORMATION

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### U.S. REGULATIONS:

**TSCA INVENTORY STATUS:** Y

**TSCA 12(b) EXPORT NOTIFICATION:** Not listed.



**CERCLA SECTION 103 (40CFR302.4): Y**

**Carbon disulfide:** 100 LBS RQ

**SARA SECTION 302 (40CFR355.30): Y**

**Carbon disulfide:** 10000 LBS TPQ

**SARA SECTION 304 (40CFR355.40): Y**

**Carbon disulfide:** 100 LBS RQ

**SARA SECTION 313 (40CFR372.65): Y**

**Carbon disulfide**

**SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40CFR370.21):**

**ACUTE:** Y

**CHRONIC:** Y

**FIRE:** Y

**REACTIVE:** N

**SUDDEN RELEASE:** N

**OSHA PROCESS SAFETY (29CFR1910.119): N**

**STATE REGULATIONS:**

**California Proposition 65:** Y

Known to the state of California to cause the following:

**Carbon disulfide**

Developmental toxicity (Jul 01, 1989)

Male reproductive toxicity (Jul 01, 1989)

Female reproductive toxicity (Jul 01, 1989)

**EUROPEAN REGULATIONS:**

**EC NUMBER (EINECS):** 200-843-6

**EC RISK AND SAFETY PHRASES:**

R 11	Highly flammable.
R 36/38	Irritating to eyes and skin.
R 48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R 62	Possible risk of impaired fertility.
R 63	Possible risk of harm to the unborn child.
S 16	Keep away from sources of ignition - No smoking.
S 33	Take precautionary measures against static discharges.
S 36/37	Wear suitable protective clothing and gloves.
S 45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**CONCENTRATION LIMITS:**

C>=20% T R 36/38-48/23-62-63

1%≤C<20% T R 48/23-62-63  
0.2%≤C<1% Xn R 48/20

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## 16. OTHER INFORMATION

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