

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: DIMETHYL SULFOXIDE

TRADE NAMES/SYNONYMS:

SULFINYLBIS(METHANE); METHYL SULFOXIDE; DMSO; DEMESO; DEMASORB; DIMETHYL SULPHOXIDE; DELTAN; DEMAVET; DMS-70; DMS-90; DOLICUR; DOLIGUR; DOMOSO; DROMISOL; HYADUR; INFILTRINA; RIMSO-50; RIMSO-100; C2H6OS; MAT07770; RTECS PV6210000

CHEMICAL FAMILY: sulfoxides

CREATION DATE: Jan 24 1989

REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: DIMETHYL SULFOXIDE
CAS NUMBER: 67-68-5
PERCENTAGE: 100.0

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=2 REACTIVITY=0



EMERGENCY OVERVIEW:

CHANGE IN APPEARANCE: hygroscopic

COLOR: colorless

PHYSICAL FORM: liquid

ODOR: garlic odor

MAJOR HEALTH HAZARDS: harmful if inhaled, respiratory tract irritation, skin irritation, eye irritation

PHYSICAL HAZARDS: Combustible liquid and vapor.

POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EXPOSURE: irritation, nausea, vomiting, headache, dizziness

LONG TERM EXPOSURE: liver damage

SKIN CONTACT:

SHORT TERM EXPOSURE: irritation, allergic reactions, blisters, rash, itching, nausea, vomiting, diarrhea, chest pain, headache, drowsiness, blood disorders

LONG TERM EXPOSURE: same as effects reported in short term exposure

EYE CONTACT:

SHORT TERM EXPOSURE: irritation, blurred vision

LONG TERM EXPOSURE: same as effects reported in short term exposure

INGESTION:

SHORT TERM EXPOSURE: nausea, vomiting, diarrhea, stomach pain, drowsiness

LONG TERM EXPOSURE: no information on significant adverse effects

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

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.

NOTE TO PHYSICIAN: For ingestion, consider gastric lavage and activated charcoal slurry. Consider oxygen.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Moderate fire hazard. Vapor/air mixtures are explosive above flash point. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.

EXTINGUISHING MEDIA: regular dry chemical, carbon dioxide, water, regular foam, alcohol-resistant foam

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water

spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. 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). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

FLASH POINT: 192 F (89 C) (CC)

LOWER FLAMMABLE LIMIT: 2.6%

UPPER FLAMMABLE LIMIT: 42%

AUTOIGNITION: 419 F (215 C)

FLAMMABILITY CLASS (OSHA): IIIA

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:

Avoid heat, flames, sparks and other sources of ignition. 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.

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Keep separated from incompatible substances.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

DIMETHYL SULFOXIDE:

250 ppm AIHA WEEL TWA

VENTILATION: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles. 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.

RESPIRATOR: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid

APPEARANCE: clear

COLOR: colorless

CHANGE IN APPEARANCE: hygroscopic

ODOR: garlic odor

TASTE: bitter taste

MOLECULAR WEIGHT: 78.13

MOLECULAR FORMULA: C₂-H₆-O-S

BOILING POINT: Not available

FREEZING POINT: 64 F (18 C)

DECOMPOSITION POINT: 372 F (189 C)

VAPOR PRESSURE: 0.37 mmHg @ 20 C

VAPOR DENSITY (air=1): 2.7

SPECIFIC GRAVITY (water=1): 1.1014

WATER SOLUBILITY: miscible

PH: Not available

VOLATILITY: Not available

ODOR THRESHOLD: Not available

EVAPORATION RATE: 4.3 (carbon tetrachloride=1)

VISCOSITY: 1.1 cP @ 27 C

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

SOLVENT SOLUBILITY:

Soluble: alcohol, ether, acetone, benzene, chloroform

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers.

INCOMPATIBILITIES: combustible materials, acids, metals, oxidizing materials, halogens, metal salts, reducing agents

HAZARDOUS DECOMPOSITION:

Thermal decomposition products: aldehydes, various organic fragments, oxides of sulfur

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

DIMETHYL SULFOXIDE:

IRRITATION DATA: 10 mg/24 hour(s) open skin-rabbit mild; 500 mg/24 hour(s) skin-rabbit mild; 100 mg eyes-rabbit; 500 mg/24 hour(s) eyes-rabbit mild; 100 mg skin-rabbit mild; 100 mg eyes-rabbit mild

TOXICITY DATA: 1600 mg/m³/4 hour(s) inhalation-rat LC50; >11 gm/kg skin-dog LD50; 14500 mg/kg oral-rat LD50

LOCAL EFFECTS:

Irritant: inhalation, skin, eye

ACUTE TOXICITY LEVEL:

Toxic: inhalation

Slightly Toxic: ingestion

Relatively Non-toxic: dermal absorption

TUMORIGENIC DATA: Available.

MUTAGENIC DATA: Available.

REPRODUCTIVE EFFECTS DATA: Available.

ADDITIONAL DATA: Interactions with drugs may occur.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY: 400 ug/L 96 hour(s) LC50 (Mortality) Zebra danio, zebrafish (Brachydanio rerio)

INVERTEBRATE TOXICITY: 96400 ug/L 48 hour(s) LC50 (Mortality) Water flea (Daphnia magna)

ALGAL TOXICITY: 1.3 ug/L 72 hour(s) EC50 (Population Growth) Green algae (Selenastrum capricornutum)

PHYTOTOXICITY: 20000 ug/L 10 hour(s) (Growth) Duckweed (*Lemna perpusilla*)

OTHER TOXICITY: 1.65 ug/L 96 hour(s) LC50 (Mortality) Frog (*Rana temporaria*)

FATE AND TRANSPORT:

BIOCONCENTRATION: 1600 ug/L 4 hour(s) BCF (Residue) Guppy (*Poecilia reticulata*) 1.28 ug/L

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Combustible liquid, n.o.s. (dimethyl sulfoxide)

ID NUMBER: NA1993

HAZARD CLASS OR DIVISION: Combustible liquid

PACKING GROUP: III

LABELING REQUIREMENTS: None



CANADIAN TRANSPORTATION OF DANGEROUS GOODS: No classification assigned.

15. REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart B): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart C): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):

ACUTE: Yes

CHRONIC: No

FIRE: Yes

REACTIVE: No

SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29 CFR 1910.119): Not regulated.

STATE REGULATIONS:

California Proposition 65: Not regulated.

CANADIAN REGULATIONS:

WHMIS CLASSIFICATION: Not determined.

NATIONAL INVENTORY STATUS:

U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

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