

**MATERIAL SAFETY DATA SHEET**  
**DIMETHYL SULFOXIDE**

REGULATORY AGENCY INFORMATION

OSHA-DOT

PREPERATION/REVISION DATE:

J.V. Orle 1/90

317-19

011  
H3C-S-CH2  
DIMETHYL SULFOXIDE: DMSO

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**SECTION I**  
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VALHOMA CORPORATION

9925 E Admiral Place

TULSA, OK 74116

EMERGENCY TELEPHONE NO.:

CHEMICAL NAME: Dimethyl Sulfoxide

COMMON NAME: DMSO, Methyl Sulfoxide

DOT CLASSIFICATION: Combustible liquid, N.O.S.

FORMULA: C2H6CS

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**SECTION II HAZARDOUS INGREDIENTS**  
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CHEMICAL OR COMMON NAME (CAS NO.)	%	APPLICABLE EXPOSURE LIMMITS	
		PEL – OSH	TLV – ACGIH
Dimethyl Sulfoxide 67-68-5	99+	none	none

CARCINOGENIC INGREDIENTS

CHEMICAL OR COMMON NAME	%	IARC	NTP	OSHA	OTHER
None identified					

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**SECTION III HEALTH HAZARD DATA**  
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ACUTE HEALTH EFFECTS:

EYES: Can cause irritation or reddening.

SKIN CONTACT: DMSO is rapidly absorbed through the skin or mucous membranes and may produce smarting, redness or contact dermatitis. It has also produced garlic like breath, headache, sedation, diarrhea, and disturbances in color vision in some individuals after dermal contact. It may accelerate the skin absorption of other materials including toxics.

INGESTION: Based on animal data, large oral dosages can produce bloody urine, kidney damage, or liver damage. The estimated mean lethal single dose in an adult human male exceeds 1 quart.

INHALATION: Headache, nausea, irritation, dizziness. Gross overexposures, (more than 50,000 ppm) have produced chemical pneumonia and death in experimental animals.

CHRONIC HEALTH EFFECTS: Repeated skin exposure can result in allergic sensitization and scaling dermatitis. Dimethyl sulfoxide may accelerate the absorption of toxic materials through the skin. These materials may exhibit chronic health effects.

**ROUTES OF ENTRY:**

**MOST COMMON:** Skin and inhalation.

**OTHER:** Eye and ingestion.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Preexisting skin disease.

**EMERGENCY AND FIRST AID PROCEDURES:**

**EYES:** Flush thoroughly with running water (including under the eyelids) for at least 15 minutes.

If irritation persists after flushing, seek medical attention.

**SKIN:** Remove contaminated clothing promptly (launder before reuse). Wash contaminated skin. Seek medical attention if irritation persists.

**INGESTION:** Do not induce vomiting. Seek immediate medical attention.

**INHALATION:** Remove to fresh air. If breathing has stopped, provide artificial respiration.

Keep the victim warm and seek medical attention.

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**SECTION IV CHEMICAL DATA**

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**BOILING POINT (deg. F):** 372

**SPECIFIC GRAVITY (H<sub>2</sub>O-1):** 1.096

**VAPOR PRESSURE (33Hg.) @ 68 deg. F:** 0.46

**PERCENT VOLATILE BY VOLUME (%):** 100

**VAPOR DENSITY (AIR-1):** 2.7

**EVAPORATION RATE (butyl acetate-1):** Not available

**SOLUBILITY (Specify Solvents):** Miscible with water. Soluble in most organic solvents except straight chain (paraffinic) hydrocarbons.

**APPEARANCE AND ODOR:** Colorless liquid. Mild characteristic (ripe, olive, vegetable) odor.

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**SECTION V PHYSICAL HAZARD DATA**

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**FLASH POINT (Method used):** 192 deg. F closed cup, auto-ignition temp 572 deg.

**FLAMMABLE LIMITS:**

**LEL:** 3%

**UEL:** 63%

**EXTINGUISHING MEDIA:** Water, foam, dry chemical or carbon dioxide.

**SPECIAL FIRE FIGHTING PROCEDURES:** None identified.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Burning dimethyl sulfoxide produces poisonous gases (sulfur oxides, etc). Wear goggles, self-contained breathing apparatus, and rubber suit (including gloves).

**INCOMPATIBILITY (Materials to avoid):** Strong oxidizing agents (such as perchlorates) and alkali metals.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Sulfur dioxides, formaldehyde, methyl mercaptan.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:**

**STABILITY:** Stable.

**CONDITIONS TO AVOID:** Prolonged heating at temperatures above 300 deg. F.

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**SECTION VI SPILL OR LEAK PROCEDURES**

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**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** If a spill or leak occurs, immediately consult your environmental supervisor. Remove ignition sources. Ventilate the area. Do not breathe the vapor or get liquid in eyes or on skin/clothing. For large spills, wear self-contained breathing apparatus with full face-piece and protective clothing. Dilute and flush to wastewater treatment. Do not allow the material to enter streams or waterways.

WASTE DISPOSAL METHOD: Dilute and flush to approved wastewater treatment system as per mill requirements. Bacterial decomposition of dimethyl sulfoxide during wastewater treatment can result in the release of dimethyl sulfide (a volatile substance with a strong disagreeable odor).

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### SECTION VII EXPOSURE CONTROL INFORMATION

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RESPIRATORY PROTECTION (Specify type): Strong vapor or mist present. Organic vapor chemical cartridge respirator. Vessel entry self contained or supplied air respirator with full face-piece.

VENTILATION:

LOCAL EXHAUST: As needed.

MECHANICAL (General): General dilution.

PROTECTIVE GLOVES: Butyl rubber.

EYE PROTECTION: Safety glasses/Chemical goggles/Face shield.

OTHER PROTECTIVE EQUIPMENT: Where splash or mist potential exists, wear chemical worker's goggles and rubber gloves. Other protective equipment such as aprons, rubber boots, face shield, or rubber suit may be needed. Eye wash stations and safety showers should be readily accessible near use areas.

OTHER ENGINEERING CONTROLS: None identified.

WORK PRACTICES: Do not smoke in areas of storage or use. Avoid all contact with skin and eyes.

HYGIENIC PRACTICES: Skin that becomes contaminated should be immediately washed (with soap or water) or showered. Employees who handle dimethyl sulfoxide should wash their hands before using other chemicals, eating, smoking, or using toilet facilities.

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### SECTION VIII SPECIAL PRECAUTIONS

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PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Do not breathe vapors or mist. Avoid all contact with eyes or skin. Do not smoke in areas of storage or use. Wear the appropriate protective equipment. Store dimethyl sulfoxide away from oxidizing agents in a well ventilated, cool, and dry location far from sources of heat or ignition. Protect containers from physical damage.

MAINTENANCE PERSONNEL: Wash down vessels. Check the oxygen and adjustable vapor content of the vessel atmosphere. Use the appropriate protective equipment.

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### SECTION IX HMIS LABEL

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HEALTH: 2

FLAMMABILITY: 2

REACTIVITY: 0

PERSONAL PROTECTION: B

DEPARTMENT OF TRANSPORTATION  
HAZARDOUS MATERIALS REGULATIONS, 49 CFR

PROPER SHIPPING NAME: Combustible Liquid, NOS (Dimethyl Sulfoxide)

HAZARD CLASS: Combustible Liquid

REPORTABLE QUANTITY: None

LABEL REQUIRED: (Drums): None

PLACARD REQUIRED (Bulk): None

MAXIMUM QUANTITY, AIRCRAFT: No Limit

STOWAGE ON VESSELS: Above or below deck

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COMPAS Code: 1250012