SAFETY DATA SHEETS

This SDS packet was issued with item:

078939124

The safety data sheets (SDS) in this packet apply to the individual products listed below. Please refer to invoice for specific item number(s).

078466530 078712922 078917151 078936049 078937160 078937161

Safety Data Sheet
Dimethyl Sulfoxide (DMSO)

SDS Revision Date: 1/6/2016
By: Charles G. Ashe
OSHA HCS 29 CFR 1910.1200

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product Identity Dimethyl Sulfoxide (DMSO)

Alternate Names Enviro S, dimethyl sulphoxide, methyl sulfoxide, sulfinylbis [methane]

1.2. Relevant identified uses of the substance or mixture and uses advised against

Intended use Solvent for manufacture of pharmaceuticals, fine chemicals and polymers

Application Method See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name Valhoma Corporation
1617 N. 93rd E. Ave.
Tulsa, OK 74115-4702

Emergency

CHEMTREC (USA) (800) 424-9300

Customer Service

Valhoma Corporation (918) 836-7135

2. Hazard identification of the product

2.1. Classification of the substance or mixture

Combustible Liquid; H227

Skin Irrit. 2; H315 Causes skin irritation.

Eye Irrit. 2; H319 Causes serious eye irritation.

2.2. Label elements

Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.
GHS Label Pictogram
Signal Word: Warning

Warning

H227 Combustible liquid.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

[Prevention]:

P210 Keep away from heat / sparks / open flames / hot surfaces - No smoking.

P264 Wash thoroughly after handling.

P280 Wear protective gloves / eye protection / face protection.

[Response]:

P302+352 IF ON SKIN: Wash with plenty of soap and water.

P305+351+338 IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.

P321 Specific treatment (see information on this label).

P337+313 If eye irritation persists: Get medical advice / attention.

P362 Take off contaminated clothing and wash before reuse.

[Storage]:

P403+235 Store in a well ventilated place. Keep cool.

[Disposal]:

P501 Dispose of contents / container in accordance with local / national regulations.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Methane, sulfinylbis- **CAS Number: 0000067-68-5**	**75 - 100**	**Skin Irrit. 2; H315** **Eye Irrit. 2; H319**	**[1]**

[1] Substance classified with a health or environmental hazard.
[2] Substance with a workplace exposure limit.
[3] PBT-substance or vPvB-substance.
*The full texts of the phrases are shown in Section 16.

4. First aid measures

4.1. Description of first aid measures

General In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person. In general, DMSO is not dangerous to people, but like any other chemical, it should be treated with care, respect and common sense.

Inhalation Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Give nothing by mouth.

Eyes Irrigate copiously with clean water for at least 15 minutes, holding the eyelids apart and seek medical attention.

Skin Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser.

Ingestion If swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.

4.2. Most important symptoms and effects, both acute and delayed

Overview EFFECTS OF OVEREXPOSURE:
General: DMSO has shown very few toxic symptoms in humans. The most common are nausea, skin rashes and an unusual garlic-onion-oyster smell on body and breath.
Inhalation: High vapor concentrations may cause headache, dizziness, and sedation.
Eyes: Low hazard for usual industrial/ commercial handling by trained personnel.
Skin: Stinging and burning of the skin as well as rashes and vesicles have been seen. A heat reaction may occur if applied to wet skin. Avoid contact with DMSO solutions containing toxic material or materials whose toxicological properties are not known. DMSO easily penetrates the skin and may enhance the rate of skin absorption of skin-permeable substances. But because of DMSO's low toxicity and its inability to carry less-permeable substances with it through the skin, it can be concluded that DMSO does not pose a significant threat by skin absorption.
Ingestion: A low ingestion hazard. See section 2 for further details.

Eyes Causes serious eye irritation.

Skin Causes skin irritation.

5. Fire-fighting measures

5.1. Extinguishing media

Recommended extinguishing media; alcohol resistant foam, CO_2, powder, water spray.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: Sulfur dioxide, formaldehyde, methyl mercaptan, dimethyl sulfide, dimethyl disulfide, and bis (methylthio) methane.

Keep away from heat / sparks / open flames / hot surfaces - No smoking.

5.3. Advice for fire-fighters

Special Exposure Hazards: Burning dimethyl sulfoxide produces poisonous gases (sulfur oxides). Wear rubber gloves, SCBA, and rubber suit.

Wear positive pressure, self-contained breathing apparatus, (SCBA) with a full facepiece and protective clothing. Persons without respiratory protection should leave area. Wear SCBA during clean-up immediately after fire. No smoking.

ERG Guide No. 128

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

In case of mist formation use a respirator of self-contained breathing apparatus (SCBA). Put on appropriate personal protective equipment (see section 8).

6.2. Environmental precautions

Do not allow spills to enter drains or waterways.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.3. Methods and material for containment and cleaning up

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.
Dilute and flush to wastewater treatment or absorb with inert material. Do not allow the material to enter streams or waterways.

7. Handling and storage

7.1. Precautions for safe handling

Keep away from sources of ignition. No smoking. Do not breathe vapor or mist. Avoid contact with skin, eyes, or clothing.
Store in accordance with the National Fire Protection Association's publication NFPA 30, Flammable and Combustible Liquids Code. 29 CFR 1910.106 applies to the handling, storage, and use of flammable and combustible liquids.

See section 2 for further details. - [Prevention]:

7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed, in a well-ventilated place. Freezes (solidifies) at 18°C (64°F).

Store in a cool dry area, away from heat, sparks and open flame. Keep containers sealed when not in use. Store out of direct sunlight.

Prolonged heating above 150°C (302°F) can cause rapid, exothermic decomposition.

Incompatible materials: Organic and inorganic acid chlorides, strong oxidizing agents, alkali metals, hydrobromic acid, acidic solutions of alkali bromides.

See section 2 for further details. - [Storage]:

7.3. Specific end use(s)

No data available.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

CAS No.	Ingredient	Source	Value
0000067-68-5	Methane, sulfinylbis-	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit

Carcinogen Data

CAS No.	Ingredient	Source	Value
0000067-68-5	Methane, sulfinylbis-	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

8.2. Exposure controls

Respiratory	In case of mist formation use a respirator. Respirator type: organic vapor cartridge, SCBA or SAR. If respirators are used, a program should be instituted to assure compliance with OSHA standard 29 CFR 1910.134
Eyes	Safety glasses with side shield, tight-fitting goggles or face shield.
Skin	Butyl rubber or nitrile (NBR) rubber gloves. Rubber apron and boots if splash hazard.
Engineering Controls	Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.
Other Work Practices	Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details. - [Prevention]:

9. Physical and chemical properties

Appearance	Colorless Liquid
Odor	Odorless
Odor threshold	Not Measured
pH	8.5 (50/50 in water)
Melting point / freezing point	18°C (64°F)

Initial boiling point and boiling range	189°C (372°F)
Flash Point	89°C (192°F) Closed Cup, 95°C (203°F) Open Cup
Evaporation rate (Ether = 1)	0.026 (n-butyl acetate = 1)
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	**Lower Explosive Limit:** 3.0-3.5% by volume **Upper Explosive Limit:** 42-63% by volume
Vapor pressure (Pa)	0.55 mbar (0.46 mmHg) @ 20°C (68°F)
Vapor Density	2.7
Specific Gravity	1.1 @ 20°C (68°F) (water=1)
Solubility in Water	Miscible
Partition coefficient n-octanol/water (Log K_{ow})	Not Measured
Auto-ignition temperature	300-302°C (572-575°F)
Decomposition temperature	Not Measured
Viscosity (cSt)	2.0 mPas or cP (@ 25°C/77°F)
Partition coeff. n-octanol/water (log P_{ow}):	-2.03

9.2. Other information

No other relevant information.

10. Stability and reactivity

10.1. Reactivity

Hazardous Polymerization will not occur.

10.2. Chemical stability

Stable under normal circumstances.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

Prolonged heating above 150°C (302°F) can cause rapid, exothermic decomposition.

10.5. Incompatible materials

Organic and inorganic acid chlorides, strong oxidizing agents, alkali metals, hydrobromic acid, acidic solutions of alkali bromides.

10.6. Hazardous decomposition products

Sulfur dioxide, formaldehyde, methyl mercaptan, dimethyl sulfide, dimethyl disulfide, and bis (methylthio) methane.

11. Toxicological information

Acute toxicity

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LD50, mg/L/4hr	Inhalation Dust/Mist LD50, mg/L/4hr	Inhalation Gas LD50, ppm
Methane, sulfinylbis- - (67-68-5)	14,500.00, Rat - Category: NA	5,000.00, Rabbit - Category: 5	No data available	No data available	40,250.00, Rat - Category: NA

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	2	Causes skin irritation.
Serious eye damage/irritation	2	Causes serious eye irritation.
Respiratory sensitization	---	Not Applicable
Skin sensitization	---	Not Applicable
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	---	Not Applicable
Aspiration hazard	---	Not Applicable

12. Ecological information

12.1. Toxicity

No additional information provided for this product. See Section 3 for chemical specific data.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Methane, sulfinylbis- - (67-68-5)	34,000.00, Pimephales promelas	25,000.00, Daphnia magna	12,350.00 (96 hr), Skeletonema costatum

12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

Biological Oxygen Demand:
Theoretical Oxygen Demand at 10 ppm: 123mg oxygen
Chemical Oxygen Demand at 10ppm: 107 mg/L
Biological Oxygen Demand-5 at 10 ppm: $\leq$ 1.0 mg/L

13. Disposal considerations

13.1. Waste treatment methods

Observe all federal, state and local regulations when disposing of this substance.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	NA1993	Not regulated	Not regulated
14.2. UN proper shipping name	Combustible liquid, n.o.s., (Dimethyl Sulfoxide)	Not regulated	Not regulated
14.3. Transport hazard class(es)	**DOT Hazard Class:** 3 **DOT Label:** Combustible liquid **<119 gallons:** Not regulated **>119 gallons**: Combustible	**IMDG:** Not Applicable **Sub Class:** Not Applicable	**Air Class:** Not Applicable
14.4. Packing group	III	Not Applicable	Not Applicable

14.5. Environmental hazards

IMDG Marine Pollutant: No

14.6. Special precautions for user

No further information

15. Regulatory information

Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

Toxic Substance Control Act (TSCA) All components of this material are either listed or exempt from listing on the TSCA Inventory.

WHMIS Classification B3 D2B

US EPA Tier II Hazards

Fire: Yes
Sudden Release of Pressure: No
Reactive: No
Immediate (Acute): Yes
Delayed (Chronic): No

EPCRA 311/312 Chemicals and RQs:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 302 Extremely Hazardous:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals:
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Carcinogens (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Developmental Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

N.J. RTK Substances (>1%):

Methane, sulfinylbis-

Penn RTK Substances (>1%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

H315 Causes skin irritation.

H319 Causes serious eye irritation.

Revision Log

Revision Date:	**Changes made for new revision:**
01/06/2016	**No changes to content. Annual review and updated revision number only.**

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