

Preparation Date: 01/01/2019

Revision Date: N/A

Revision Number: N/A

1. IDENTIFICATION**Product identifier**

Product code: C3585
Product Name: DIMETHYL SULFOXIDE, REAGENT, ACS

Other means of identification

Synonyms: Dimethyl sulphoxide
DMSO
Methane, sulfinylbis-
Methylsulfinylmethane
Methyl Sulfoxide
Sulfinylbis(methane)
Diméthylsulfoxyde (French)
Sulfoxyde diméthylrique (French)
Dimetil sulfóxido (Spanish)

CAS #: 67-68-5
RTECS # PV6210000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: Solvent. Paint remover. In industrial cleaners. In organic reactions. Analytical reagent.

Uses advised against No information available

Supplier: **Dawn Scientific Inc**
121 Liberty Street, Metuchen, NJ, 08840
Tel : 732-902-6300 | Fax : 973-802-1005
sales@dawnscientific.com | www.dawnscientific.com

Emergency telephone number Chemtrec 1-800-424-9300

2. HAZARDS IDENTIFICATION**Classification**

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Serious eye damage/eye irritation	Category 2B
Flammable liquids	Category 4

Label elements

Warning**Hazard statements**

Causes eye irritation
Combustible liquid

Hazards not otherwise classified (HNOC)

Not Applicable

Other hazards

Not available

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Wear protective gloves
Wear eye/face protection

In case of fire: Use CO₂, dry chemical, or foam to extinguish.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Precautionary Statements - Storage

Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
Dimethyl Sulfoxide	67-68-5	100

4. FIRST AID MEASURES**First aid measures****General Advice:**

National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222.

Skin Contact:

Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention.

Eye Contact:

Flush eyes with water for 15 minutes. Get medical attention.

Inhalation:

Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

Most important symptoms and effects, both acute and delayed**Symptoms**

Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea
May cause constipation
May cause anorexia
Central nervous system effects
May cause headache

Dizziness
 Ataxia
 May affect behavior/central nervous system (tremor, convulsions)
 Analgesia
 May cause cardiovascular effects
 It may cause transient photophobia and disturbances of vision
 May affect respiration
 May cause cyanosis
 May affect the liver
 It may affect the kidneys
 May cause hypoglycemia

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically.

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media:

Dry chemical. Carbon dioxide (CO₂). Water spray mist or foam.

Unsuitable Extinguishing Media:

High volume water jet. Do not use a solid (straight) water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Hazardous Combustion Products:

Carbon Monoxide, Carbon Dioxide. Sulfur Oxides. Formaldehyde. Methyl mercaptan.

Specific hazards:

Combustible material. May be ignited by heat, sparks or flames. Container explosion may occur under fire conditions or when heated. Vapors may form explosive mixtures with air. Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks). Fire may produce irritating, corrosive and/or toxic gases.

Special Protective Actions for Firefighters

Specific Methods:

Water mist may be used to cool closed containers. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out.

Special Protective Equipment for Firefighters:

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions:	Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protective equipment. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. All equipment used when handling the product must be grounded.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment	Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth). In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.
Methods for cleaning up	Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Use clean non-sparking tools to collect absorbed material. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:

Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Do not ingest. Do not breathe vapors or spray mist. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Hygroscopic. Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Keep away from heat and sources of ignition. Store in a segregated and approved area. Store away from incompatible materials.

Incompatible Materials:

Oxidizing agents

Acids

Bases

Alkali Metals

Acid chlorides

Acid anhydrides

Potassium t-butoxide

boron compounds

Sodium isopropoxide

Dinitrogen tetraoxide

Carbonyl diisothiocyanate

Acetanilide

Many acyl, aryl, and nonmetal halides (eg acetyl chloride, benzenesulfonyl chloride, bromobenzoyl actanilide, cyanuric chloride, iodine pentafluoride, $\text{Mg}(\text{ClO}_4)_2$, CH_3Br , NiO_4 , oxalyl chloride, P_2O_3 , phosphorus trichloride,

phosphoryl chloride, silver fluoride, silver difluoride, sodium hydride, sulfur dichloride, disulfur dichloride, sulfurylchloride, tetrachlorosilane, and thionyl chloride)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

Components	CAS-No.	OSHA	NIOSH	ACGIH	AIHA WEEL
Dimethyl Sulfoxide	67-68-5	None	None	None	250 ppm TWA

Canada

Components	CAS-No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
Dimethyl Sulfoxide	67-68-5	None	None	None	None

Australia and Mexico

Components	CAS-No.	Australia	Mexico
Dimethyl Sulfoxide	67-68-5	None	None

Appropriate engineering controls

Engineering measures to reduce exposure:

Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles

Skin and body protection: Long sleeved clothing
Chemical resistant apron
Gloves

Respiratory protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Respiratory protection is not necessary for normal handling. Good room ventilation or use of local exhaust (fume hood) is sufficient. Use a vapor respirator under conditions where exposure to the substance is apparent (e.g. generation of high concentrations of mist or vapor, inadequate ventilation, development of respiratory tract irritation), and engineering controls are not feasible. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid	Appearance: No information available.	Color: Clear. Colorless.
Odor: Slight. Sulfurous. Distinctive garlic or oyster-like.	Taste Slightly bitter with a sweet after-taste.	Formula: C2-H6-O-S
Molecular/Formula weight (g/mole): 78.13	Flammability: No information available	Flash point (°C): 89
Flashpoint (°C/°F): 89 °C/192.2 °F 95 °C/203 °F	Flash Point Tested according to: Closed cup Open cup	Autoignition Temperature (°C/°F): 215 °C/419 °F
Lower Explosion Limit (%): 2.6%	Upper Explosion Limit (%): 42%	Melting point/range(°C/°F): 18.45 °C/65.2 °F
Decomposition temperature(°C/°F): No information available	Boiling point/range(°C/°F): 189 °C/372.2 °F	Bulk density: No information available
Density (g/cm3): No information available	Specific gravity: 1.100	pH: No information available
Vapor pressure @ 20°C (kPa): 0.055	Evaporation rate: No information available	Vapor density: No information available
VOC content (g/L): 1100	Odor threshold (ppm): No information available	Partition coefficient (n-octanol/water): -1.35
Viscosity: No information available	Miscibility: Miscible with water	Solubility: Soluble in Ethanol Soluble in Ether Soluble in Acetone Soluble in Chloroform Soluble in Benzene

10. STABILITY AND REACTIVITY

Reactivity

No information available

Chemical stability

Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Ignition sources. Exposure to moisture. Exposure to moist air. Incompatible materials.

Incompatible Materials:

- Oxidizing agents
- Acids
- Bases
- Alkali Metals
- Acid chlorides
- Acid anhydrides
- Potassium t-butoxide
- boron compounds
- Sodium isopropoxide

Dinitrogen tetroxide
Carbonyl diisothiocyanate
Acetanilide

Many acyl, aryl, and nonmetal halides (eg acetyl chloride, benzenesulfonyl chloride, bromobenzoyl actanilide, cyanuric chloride, iodine pentafluoride, Mg(ClO₄)₂, CH₃Br, NiO₄, oxalyl chloride, P₂O₃, phosphorus trichloride, phosphoryl chloride, silver fluoride, silver difluoride, sodium hydride, sulfur dichloride, disulfur dichloride, sulfurylchloride, tetrachlorosilane, and thionyl chloride)

Hazardous decomposition products:

When heated to decomposition it emits toxic fumes. Carbon monoxide. Carbon dioxide. Sulfur oxides. Formaldehyde. Methyl mercaptan. Dimethyl sulfide.

Other Information

Corrosivity:

No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:

Skin. Ingestion. Eyes.

Acute Toxicity

Component Information

Dimethyl Sulfoxide

CAS-No. 67-68-5

LD50/oral/rat = 28300 mg/kg Oral LD50 Rat; 14500 mg/kg Oral LD50 Rat

LD50/oral/mouse = 7920-21400 mg/kg

LD50/dermal/rabbit = No information available

LD50/dermal/rat = 40 g/kg Dermal LD50

LC50/inhalation/rat = >1600 mg/m³ 4 h; > 5.33 mg/L 4 h

LC50/inhalation/mouse = No information available

Other LD50 or LC50 information = 17400 mg/kg LD50 oral Rat
28300 mg/kg LD50 oral Rat

Product Information

LD50/oral/rat =

VALUE- Acute Tox Oral = 14500 mg/kg

LD50/oral/mouse =

Value - Acute Tox Oral = 7920 mg/kg

LD50/dermal/rabbit

VALUE-Acute Tox Dermal = No information available

LD50/dermal/rat

VALUE -Acute Tox Dermal = 40000 mg/kg

LC50/inhalation/rat

VALUE-Vapor = No information available

VALUE-Gas = No information available
VALUE-Dust/Mist = > 1600 mg/m³ (4-hr.)

LC50/Inhalation/mouse

VALUE-Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact:	May cause skin irritation. Mild skin irritation. May cause burning or stinging sensation, redness of the skin, inflammation of the skin. May cause itching. May cause urticaria (hives). Dimethyl Sulfoxide readily penetrates the skin and may carry other dissolved chemicals into the body. Skin absorption of DMSO may result in garlic-like breath and body odor. If absorbed through skin it may cause systemic effects with symptoms similar to those of ingestion. May cause dyspnea (shortness of breath and difficulty breathing) and cyanosis.
Eye Contact:	May cause eye irritation. Mild eye irritation. May cause temporary burning sensation and vasodilation. May cause conjunctivitis. May cause conjunctival redness. May cause cataracts. May cause corneal opacity. It may cause transient photophobia and disturbances of vision.
Inhalation	May cause irritation of respiratory tract. Inhalation of a high concentration of vapors may cause headache, dizziness, and sedation.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause constipation. May cause abdominal pain. May cause decreased appetite or anorexia. May affect respiration (difficult or labored breathing resulting in shortness of breath). May affect respiration (respiratory depression). May affect urinary system (kidneys). May cause increase in urine volume. May affect blood (changes in serum composition). It may affect the blood (anemia, eosinophilia). It may affect the brain. May affect the cardiovascular system (vasodilation, hypotension, tachycardia, chest pain). May affect behavior/central nervous system (ataxia). May affect behavior/central nervous system (muscle weakness, convulsions). May affect behavior/central nervous system (dizziness, headache). May affect behavior/central nervous system (fatigue, sedation, tremor). May cause hypoglycemia (low blood sugar), which is characterized by symptoms such as blurred vision, chills, cold sweat, dizziness, drowsiness, shaking, rapid heart rate, confusion, weakness, headache, fainting, hunger, tingling of the hands or feet. May affect liver.
Aspiration hazard	No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity	Prolonged or repeated ingestion may cause nausea, vomiting, loss of appetite. Prolonged or repeated ingestion may affect the blood (changes in red blood cell count). Prolonged or repeated ingestion may affect the blood (normocytic anemia). Prolonged or repeated ingestion may affect the kidneys (polyuria (increase in urine volume, hematuria (blood in the urine), tubular necrosis). Prolonged skin contact may cause skin irritation and/or dermatitis. Chronic exposure may cause drying and scaling of the skin.
Sensitization:	No information available.
Mutagenic Effects:	May affect genetic material Mutations in microorganisms

Experiments with bacteria and/or yeast have shown mutagenic effects
Mutagenic effects in mammalian somatic cells

Carcinogenic effects: Equivocal tumorigenic agent by Registry of Toxic Effects of Chemical Substances (RTECS) criteria.

Components	CAS-No.	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
Dimethyl Sulfoxide	67-68-5	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity No data is available

Reproductive Effects: No information available

Developmental Effects: No information available

Teratogenic Effects: Showed teratogenic effects in animal experiments
Dimethyl Sulfoxide (DMSO) has been associated with teratogenic and/or embryotoxic effects in animals (hamster, mouse, rat), particularly when administered parenterally (intraperitoneal or intravenous routes). DMSO has not been shown to be teratogenic or embryotoxic via oral or dermal routes at dose levels that do not produce overt maternal toxicity
No data in humans was available to evaluate the effects of exposure on development

Specific Target Organ Toxicity

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Target Organs: Kidneys. Skin. Central nervous system.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Dimethyl Sulfoxide - 67-68-5

Freshwater Algae Data: 12350 - 25500 mg/L EC50 *Skeletonema costatum* 96 h

Freshwater Fish Species Data: 34000 mg/L LC50 *Pimephales promelas* 96 h 1 33 - 37 g/L LC50 *Oncorhynchus mykiss* 96 h static 1 40 g/L LC50 *Lepomis macrochirus* 96 h static 1 41.7 g/L LC50 *Cyprinus carpio* 96 h 1

Water Flea Data: 7000 mg/L EC50 *Daphnia* species 24 h

Persistence and degradability: Readily biodegradable

Bioaccumulative potential: Potential for bioconcentration in aquatic organisms is low.

Mobility: It is expected to have very high mobility based on estimated Koc.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:

Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:

Empty containers should be taken for local recycling, recovery or waste disposal

Components	CAS-No.	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Dimethyl Sulfoxide	67-68-5	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No:	Not Regulated
Proper Shipping Name:	No information available
Hazard Class:	No information available
Subsidiary Class	No information available
Packing group:	No information available
Emergency Response Guide Number	No information available
Marine Pollutant	No data available
DOT RQ (lbs):	No information available
Special Provisions	No Information available
Symbol(s):	No information available
Description:	No information available

TDG (Canada)

UN-No:	Not Regulated
Proper Shipping Name:	No information available
Hazard Class:	No information available
Subsidiary Risk:	No information available
Packing Group:	No information available
Marine Pollutant	No Information available
Description:	No information available

ADR

UN-No:	Not Regulated
Proper Shipping Name:	No information available
Hazard Class:	No information available
Packing Group:	No information available
Subsidiary Risk:	No information available

IMO / IMDG

UN-No:	Not Regulated
Proper Shipping Name:	No information available
Hazard Class:	No information available
Subsidiary Risk:	No information available
Packing Group:	No information available
Marine Pollutant	No information available

RID

UN-No:	Not Regulated
Proper Shipping Name:	No information available
Hazard Class:	No information available
Subsidiary Risk:	No information available
Packing Group:	No information available

ICAO

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available

IATA

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
ERG Code: No information available
Special Provisions No information available

15. REGULATORY INFORMATION

International Inventories

Components	CAS-No.	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Dimethyl Sulfoxide	67-68-5	PresentACTIVE	Present KE-32367	Present	Present (2)-1553	Present	Present	Present 200-664-3

U.S. Regulations*Dimethyl Sulfoxide*

New Jersey RTK Hazardous Substance List: 4145

FDA - Direct Food Additives 21 CFR 172.869 (residual)

FDA - 21 CFR - Total Food Additives 172.859, 177.1655, 177.2440

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.**Chemicals Known to the State of California to Cause Cancer:**

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	CAS-No.	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Dimethyl Sulfoxide	67-68-5	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CAS-No.	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
Dimethyl Sulfoxide	67-68-5	None	None	None	None	None

U.S. TSCA

Components	CAS-No.	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Dimethyl Sulfoxide	67-68-5	Not Applicable	Not Applicable

Canada

WHMIS 2015 - GHS Classifications

WHMIS 2015 Hazard Classification
Information:

Component
Dimethyl Sulfoxide
67-68-5 (100)

WHMIS 2015 Hazard Classification
Flammable liquids - Category 4: H227 Combustible liquid.

Canada Hazardous Products Regulation This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR

Components	WHMIS Ingredient Disclosure List -
Dimethyl Sulfoxide	1 %

Inventory

Components	CAS-No.	Canada (DSL)	Canada (NDSL)
Dimethyl Sulfoxide	67-68-5	Present	Not Listed

Components	CAS-No.	CEPA Schedule I - Toxic Substances
Dimethyl Sulfoxide	67-68-5	Not listed
Components	CAS-No.	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Dimethyl Sulfoxide	67-68-5	Not listed

EU Classification

EU GHS - SV - CLP 1272/2008

Components	CAS-No.	EU GHS - SV - CLP (1272/2008)
Dimethyl Sulfoxide	67-68-5	No information

EU - CLP (1272/2008)

R-phrases(s)
Not determined

S -phrase(s)
none

Components	CAS-No.	Classification	Concentration Limits:	Safety Phrases
Dimethyl Sulfoxide	67-68-5		No information	

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
not determined

16. OTHER INFORMATION

Preparation Date: 01/01/2019

Revision Date: N/A

Prepared by: -

Disclaimer: All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Dawn Scientific Inc Chemicals & Laboratory Products, assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Dawn Scientific Inc assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet