

Common Name: **DIMETHYL SULFATE**

Synonyms: DMS; Methyl Sulfate; Sulfuric Acid, Dimethyl Ester

CAS No: 77-78-1

Molecular Formula: C₂H₆O₄S

RTK Substance No: 0768

Description: Colorless, oily liquid with a faint onion-like odor

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
<p>4 - Health</p> <p>2 - Fire</p> <p>1 - Reactivity</p> <p>DOT#: UN 1595</p> <p>ERG Guide #: 156</p> <p>Hazard Class: 6.1 (Poison)</p>	<p>Dimethyl Sulfate is a COMBUSTIBLE LIQUID. Use dry chemical, CO₂, water spray or foam as extinguishing agents.</p> <p>POISONOUS GASES ARE PRODUCED IN FIRE, including <i>Sulfur Oxides</i>.</p> <p>Use water spray to keep fire-exposed containers cool and to reduce vapors.</p> <p>Dimethyl Sulfate may form an ignitable vapor/air mixture in closed tanks or containers at temperatures above 182°F (83°C).</p>	<p>Dimethyl Sulfate reacts violently with concentrated AMMONIA and ignites on contact with BARIUM CHLORIDE.</p> <p>Dimethyl Sulfate is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC); STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); and SODIUM AZIDE.</p> <p>Dimethyl Sulfate decomposes in WATER and MOIST AIR to form corrosive <i>Sulfuric Acid</i>.</p>

SPILL/LEAKS

Isolation Distance:

Small Spill: 30 meters (100 feet)

Large Spill: 60 meters (200 feet)

Fire: 800 meters (1/2 mile)

Absorb liquids in dry sand, earth, or a similar material and place into sealed containers for disposal.

Dimethyl Sulfate can be neutralized using dilute (<10%) *Ammonia*.

Dimethyl Sulfate is harmful to aquatic organisms.

PHYSICAL PROPERTIES

Odor Threshold:	Onion-like
Flash Point:	182°F (83°C)
Auto Ignition Temp:	370°F (188°C)
Vapor Density:	4.35 (air = 1)
Vapor Pressure:	0.1 to 0.5 mm Hg at 68°F (20°C)
Specific Gravity:	1.3 (water = 1)
Water Solubility:	Slightly soluble
Boiling Point:	370°F (188°C)
Freezing Point:	-25°F (-32°C)
Molecular Weight:	126.1

EXPOSURE LIMITS

OSHA: 1 ppm, 8-hr TWA

NIOSH: 0.1 ppm, 10-hr TWA

ACGIH: 0.1 ppm, 8-hr TWA

IDLH: 7 ppm

The Protective Action Criteria values are:

PAC-1 = 0.024 ppm; PAC-2 = 0.12 ppm;

PAC-3 = 1.6 ppm

PROTECTIVE EQUIPMENT

Gloves:	Neoprene, Viton/Butyl and SilverShield®/4H® (>4-hr breakthrough)
Coveralls:	Tychem® SL, C3, TF, BR, TK, and Responder (>8-hr breakthrough)
Respirator:	>0.1 ppm – Pressure demand supplied air >7 ppm – Pressure demand SCBA

HEALTH EFFECTS

Eyes:	Severe irritation and burns
Skin:	Irritation, burns, itching and ulcers (skin absorbable)
Inhalation:	Nose, throat and lung irritation, with coughing and severe shortness of breath (pulmonary edema) Headache, dizziness, nausea, vomiting and coma
Chronic:	Cancer (nasal cavity and brain) in animals

FIRST AID AND DECONTAMINATION

Remove the person from exposure.
Flush eyes with large amounts of water for at least 30 minutes. Remove contact lenses if worn. Seek medical attention immediately.
Quickly remove contaminated clothing and wash contaminated skin with large amounts of soap and water. Seek medical attention.
Begin artificial respiration if breathing has stopped and CPR if necessary.
Transfer promptly to a medical facility.
Medical observation is recommended as symptoms may be delayed.