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# Material Safety Data Sheet

## Diethyl sulfate MSDS

### Section 1: Chemical Product and Company Identification

<b>Product Name:</b> Diethyl sulfate <b>Catalog Codes:</b> 10585 <b>CAS#:</b> 64-67-5 <b>RTECS:</b> WS7875000 <b>TSCA:</b> Not applicable <b>Synonym:</b> Diethyl sulphate; DS; Dialkyl sulfates <b>Chemical Formula:</b> C4H10O4S	<b>Contact Information:</b> <b>FinarLimited</b> 184-186/P, Chacharwadi Vasna, Sarkhej-Bavla Highway, Ta.: Sanand, Dist.: Ahmedabad, Email: info@finarchemicals.com Web: www.finarchemicals.com
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### Section 2: Composition and Information on Ingredients

Composition: Name	CAS #	%
Diethyl sulfate	64-67-5	99%

### Section 3: Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: colorless oil.

**Danger!** Causes eye and skin burns. Causes digestive and respiratory tract burns. Harmful if absorbed through the skin. May be harmful if swallowed or inhaled. Cancer suspect agent. May cause heritable genetic damage. Moisture sensitive.

**Target Organs:** Lungs, eyes, skin, mucous membranes.

#### Potential Health Effects

##### Eye:

Causes eye burns.

##### Skin:

Harmful if absorbed through the skin. Causes skin burns.

##### Ingestion:

Causes gastrointestinal tract burns. May cause systemic effects.

##### Inhalation:

Causes chemical burns to the respiratory tract. May be harmful if inhaled.

##### Chronic:

May cause fetal effects. May cause cancer in humans. Effects may be delayed. Chronic exposure may cause lung damage. Laboratory experiments have resulted in mutagenic effects. Prolonged exposure may cause corneal erosion, conjunctivitis, and possible blindness.

### Section 4: First Aid Measures

#### Eyes:

Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).

#### Skin:

Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing

contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

**Ingestion:**

Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

**Inhalation:**

Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

**Notes to Physician:**

Persons with asthma, chronic respiratory disease, skin disorders, eye problems or allergies may be at increased risk from exposure to this substance. Treat symptomatically and supportively.

### Section 5: Fire and Explosion Data

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.

**Extinguishing Media:** In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam.

**Flash Point:** 104 deg C ( 219.20 deg F)

**Autoignition Temperature:** 436 deg C ( 816.80 deg F)

**Explosion Limits, Lower:**4.1 vol %

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 3; Flammability: 1; Instability: 1

### Section 6: Accidental Release Measures

**General Information:**

Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:**

Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

### Section 7: Handling and Storage

**Handling:**

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale. Discard contaminated shoes.

**Storage:**

Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep refrigerated. (Store below 4°C/39°F.) Material darkens in color during storage. Store protected from moisture.

### Section 8: Exposure Controls/Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

**Exposure Limits**

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Diethyl sulfate	none listed	none listed	none listed

**OSHA Vacated PELs:** Diethyl sulfate: No OSHA Vacated PELs are listed for this chemical.

**Personal Protective Equipment**

**Eyes:** Wear chemical splash goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

### Section 9: Physical and Chemical Properties

**Physical State:** Oil

**Appearance:** colorless  
**Odor:** peppermint odor - ethereal odor  
**pH:** Not available.  
**Vapor Pressure:** 0.29 mm Hg @ 25 deg C  
**Vapor Density:** 5.3 (air=1)  
**Evaporation Rate:** Not available.  
**Viscosity:** 1.79 cP @ 20 deg C  
**Boiling Point:** 208 deg C  
**Freezing/Melting Point:** -24 deg C  
**Decomposition Temperature:** Not available.  
**Solubility:** 0.7% @20°C. Dec in hot water.  
**Specific Gravity/Density:** 1.1795  
**Molecular Formula:** C<sub>4</sub>H<sub>10</sub>O<sub>4</sub>S  
**Molecular Weight:** 154.19

### Section 10: Stability and Reactivity Data

**Chemical Stability:** Stable under normal temperatures and pressures. Decomposed by hot water into monoethyl sulfate (corrosive) and ethanol (flammable).  
**Conditions to Avoid:** Moisture, excess heat.  
**Incompatibilities with Other Materials:** Strong oxidizing agents, strong acids, strong bases.  
**Hazardous Decomposition Products:** Carbon monoxide, oxides of sulfur, carbon dioxide, ethyl alcohol.  
**Hazardous Polymerization:** Has not been reported.

### Section 11: Toxicological Information

**RTECS#:**  
**CAS#** 64-67-5: WS7875000  
**LD50/LC50:**  
CAS# 64-67-5:  
Oral, mouse: LD50 = 647 mg/kg;  
Oral, rat: LD50 = 880 mg/kg;  
Skin, rabbit: LD50 = 600 uL/kg;  
Inhalation LC50 rat: >250 ppm/4H, 0/6 killed.; Inhalation LC50 rat: < 500 ppm /4H, 6/6 killed (Union Carbide).  
**Carcinogenicity:**  
CAS# 64-67-5:  

- **ACGIH:** Not listed.
- **California:** carcinogen, initial date 1/1/88
- **NTP:** Suspect carcinogen
- **IARC:** Group 2A carcinogen

  
**Epidemiology:** No data available.  
**Teratogenicity:** No data available.  
**Reproductive Effects:** No information found  
**Mutagenicity:** DNA Damage: Human, HeLa cell = 20 mg.; DNA Inhibition: Human, HeLa cell = 600 umol/L.; Cytogenetic Analysis: Human, Lymphocyte = 300 umol/L.; Sex Chromosome Loss and Nondisjunction = Human, Lymphocyte = 100 umol/L.  
**Neurotoxicity:** No information found  
**Other Studies:**

### Section 12: Ecological Information

**Ecotoxicity:**  
No data available. If released to soil, estimated soil adsorption coefficients ranging from 33 to 99 indicate that it may display high to very high mobility in soil; however, diethylsulfate is known to rapidly hydrolyze in water under neutral, basic and acidic conditions and this reaction is expected to dominate its fate in soil. If released to water diethylsulfate is expected to hydrolyze with an experimental half-life of 1.7 hrs at neutral pH. This reaction is catalyzed by both acids and bases.  
**Environmental:**  
Diethylsulfate is not expected to bioconcentrate in fish and aquatic organisms nor is it expected to adsorb to sediment

and suspended organic matter. If released to the atmosphere, diethylsulfate is expected to undergo a gas-phase reaction with water vapor with an experimental half-life of <1 day. It may also undergo atmospheric removal by wet deposition during a rain event.

**Physical:** No information available.

**Other:** No information available.

### Section 13: Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

### Section 14: Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	DIETHYL SULFATE	DIETHYL SULFATE
<b>Hazard Class:</b>	6.1	6.1
<b>UN Number:</b>	UN1594	UN1594
<b>Packing Group:</b>	II	II

### Section 15: Other Regulatory Information

#### US FEDERAL

#### TSCA

CAS# 64-67-5 is listed on the TSCA inventory.

#### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

#### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### CERCLA Hazardous Substances and corresponding RQs

CAS# 64-67-5: 10 lb final RQ; 4.54 kg final RQ

#### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

#### SARA Codes

CAS # 64-67-5: immediate, delayed, fire.

#### Section 313

This material contains Diethyl sulfate (CAS# 64-67-5, 99%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

#### Clean Air Act:

CAS# 64-67-5 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

#### Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

#### STATE

CAS# 64-67-5 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

#### California Prop 65

**The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:**

WARNING: This product contains Diethyl sulfate, a chemical known to the state of California to cause cancer.

California No Significant Risk Level: None of the chemicals in this product are listed.

## European/International Regulations

### European Labeling in Accordance with EC Directives

#### Hazard Symbols:

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#### Risk Phrases:

R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

R 34 Causes burns.

R 45 May cause cancer.

R 46 May cause heritable genetic damage.

#### Safety Phrases:

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 53 Avoid exposure - obtain special instructions before use.

#### WGK (Water Danger/Protection)

CAS# 64-67-5: 2

#### Canada - DSL/NDSL

CAS# 64-67-5 is listed on Canada's DSL List.

#### Canada - WHMIS

This product has a WHMIS classification of D2A, D1B, E.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

#### Canadian Ingredient Disclosure List

CAS# 64-67-5 is listed on the Canadian Ingredient Disclosure List.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/06/2010

**Last Updated:** 24/11/2012

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