# Material Safety Data Sheet

Dithiothreitol

ACC# 13313

## Section 1 - Chemical Product and Company Identification

**MSDS Name:** Dithiothreitol
**Catalog Numbers:** AC165680000, AC165681000, AC327190000, AC327190010, AC327190500, AC409190000, AC409190010, AC409190050, 16568-0010, 16568-0050, 16568-0250, 32719-0100, BP172-25, BP172-5, EK1346774, EK1346782
**Synonyms:** DL-1,4-Dithiothreitol; Cleland's reagent; DTT; DL-1,4-Dimercapto-2,3-dihydroxybutane; threo-2,3-Dihydroxy-1,4-dithiolbutane; 2,3-Butanediol, 1,4-dimercapto-, (2R,3R)-rel-; (R*,R*)-1,4-dimercaptobutane-2,3-diol.
**Company Identification:**

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100
**Emergency Number:** 201-796-7100
**For CHEMTREC assistance, call:** 800-424-9300
**For International CHEMTREC assistance, call:** 703-527-3887

## Section 2 - Composition, Information on Ingredients

| CAS# | Chemical Name | Percent | EINECS/ELINCS |
|---|---|---|---|
| 3483-12-3 | Dithiothreitol | >98 | 222-468-7 |

## Section 3 - Hazards Identification

### EMERGENCY OVERVIEW

Appearance: white crystalline powder.
**Warning!** Causes eye, skin, and respiratory tract irritation. Harmful if swallowed. Stench. Refrigerate upon arrival below 4°C/39°F.
**Target Organs:** Respiratory system, eyes, skin.

**Potential Health Effects**
**Eye:** Causes eye irritation.
**Skin:** Causes skin irritation. May be harmful if absorbed through the skin.

**Ingestion:** Harmful if swallowed. May cause irritation of the digestive tract. May cause central nervous system depression.
**Inhalation:** Causes respiratory tract irritation. May be harmful if inhaled.
**Chronic:** No information found.

## Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid.
**Skin:** In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.
**Ingestion:** If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.
**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Dusts at sufficient concentrations can form explosive mixtures with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or appropriate foam.
**Flash Point:** > 110 deg C (> 230.00 deg F)
**Autoignition Temperature:** Not available.
**Explosion Limits, Lower:**Not available.
**Upper:** Not available.
**NFPA Rating:** (estimated) Health: 2; Flammability: 1; Instability: 1

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.
**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation. Approach spill from upwind.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Avoid use in confined spaces.
**Storage:** Storage under a nitrogen blanket has been recommended. Store in air tight containers. Refrigerate upon arrival below 4°C/39°F. Supplier recommends temperatures below -20°C for long-term storage.

## 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 |
|---|---|---|---|
| Dithiothreitol | none listed | none listed | none listed |
| Deleted Registry Number. Use CAS 3483-12-3. | none listed | none listed | none listed |

**OSHA Vacated PELs:** Dithiothreitol: No OSHA Vacated PELs are listed for this chemical. Deleted Registry Number. Use CAS 3483-12-3.: No OSHA Vacated PELs are listed for this chemical.
**Personal Protective Equipment**
**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
**Skin:** Wear appropriate protective gloves to prevent skin exposure.
**Clothing:** Wear appropriate protective clothing to prevent skin exposure.
**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

## Section 9 - Physical and Chemical Properties

**Physical State:** Crystalline powder
**Appearance:** white
**Odor:** stench
**pH:** 5.1 (10g/l H2O)
**Vapor Pressure:** Not available.

**Vapor Density:** Not available.
**Evaporation Rate:**Not available.
**Viscosity:** Not available.
**Boiling Point:** Not available.
**Freezing/Melting Point:**38 - 43 deg C
**Decomposition Temperature:**Not available.
**Solubility:** Freely Soluble.
**Specific Gravity/Density:**Not available.
**Molecular Formula:**C4H10O2S2
**Molecular Weight:**154.25

## Section 10 - Stability and Reactivity

**Chemical Stability:** Oxidizes when exposed to air. Material is only slightly hygroscopic. When stored at room temperature, DTT rapidly loses its reducing capability. DTT is not stable when stored in a solution form.
**Conditions to Avoid:** Light, dust generation, exposure to air, heat.
**Incompatibilities with Other Materials:** Strong oxidizing agents.
**Hazardous Decomposition Products:** Carbon monoxide, oxides of sulfur, carbon dioxide.
**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:**
**CAS#** 3483-12-3: EK1610000
**CAS#** 27565-41-9: XO8576500
**LD50/LC50:**
Not available.
Not available.
Oral, rat: LD50 = 400 mg/kg. (Merck)
**Carcinogenicity:**
CAS# 3483-12-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 27565-41-9: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found
**Teratogenicity:** No information found
**Reproductive Effects:** No information found
**Mutagenicity:** No information found
**Neurotoxicity:** No information found
**Other Studies:**

## Section 12 - Ecological Information

No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
**RCRA P-Series:** None listed.
**RCRA U-Series:** None listed.

## Section 14 - Transport Information

| | US DOT | Canada TDG |
|---|---|---|
| **Shipping Name:** | Aviation Regulated Solid, N.O.S. | Aviation Regulated Solid, N.O.S. |
| **Hazard Class:** | 9 | 9 |
| **UN Number:** | UN3335 | UN3335 |
| **Packing Group:** | | |

## Section 15 - Regulatory Information

### US FEDERAL

**TSCA**
CAS# 3483-12-3 is listed on the TSCA inventory.
CAS# 27565-41-9 is not listed on the TSCA inventory. It is for research and development use only.
**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**
None of the chemicals in this material have an RQ.
**SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

**SARA Codes**

CAS # 3483-12-3: immediate.

**Section 313** No chemicals are reportable under Section 313.

**Clean Air Act:**

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

**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# 3483-12-3 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
CAS# 27565-41-9 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

**California Prop 65**

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:**

XN

**Risk Phrases:**

R 22 Harmful if swallowed.
R 36/37/38 Irritating to eyes, respiratory system and skin.

**Safety Phrases:**

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 37/39 Wear suitable gloves and eye/face protection.

**WGK (Water Danger/Protection)**

CAS# 3483-12-3: No information available.
CAS# 27565-41-9: No information available.

**Canada - DSL/NDSL**

CAS# 3483-12-3 is listed on Canada's DSL List.
CAS# 27565-41-9 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of D2B, D1B.

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**

# Section 16 - Additional Information

**MSDS Creation Date:** 8/18/1998
**Revision #8 Date:** 7/29/2008

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.*