
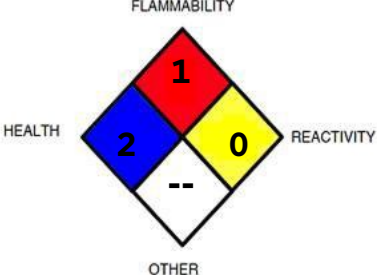
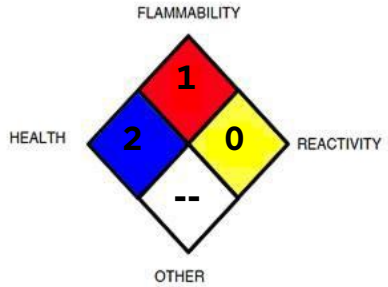


## Safety Data Sheet

Section 1: Product & Company Identification	
<b>Product Name:</b>	Dithiothreitol (DTT)
<b>Product #:</b>	C-1029
<b>Synonyms:</b>	DTT; DL-Dithiothreitol; Cleland's reagent; 1,4-Dithio-DL-threitol; threo-1,4-Dimercapto-2,3-butanediol; 1,4-bis(sulfanyl)butane-2,3-diol
<b>Supplier:</b>	AG Scientific Holdings, LLC 9950 Scripps Lake Drive, Suite 104 San Diego, CA 92131 Tele# + 858-452-9925
<b>Emergency Tele#:</b>	ChemTel, Tele# in USA 1-800-255-3924, International 1-813-248-0585

Section 2: Composition / Information on Ingredients			
Component	CAS#	EC #	% Composition
Dithiothreitol	3483-12-3	222-468-7	100

Section 3: Hazards Identification	
<b>Symbols</b>	
<b>HMIS Classification</b>	<p style="text-align: center;">FLAMMABILITY</p>  <p style="text-align: center;">OTHER</p>

<b>NFPA Classification</b>	
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## Section 4: First Aid Measures

<b>General Overview:</b>	Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
<b>Inhalation:</b>	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
<b>Skin:</b>	Wash off with soap and plenty of water. Consult a physician.
<b>Eyes:</b>	Flush eyes with water as a precaution.
<b>Ingestion:</b>	Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
	See section 11 for more detailed information on health effects & symptoms.

## SECTION 5: Fire Fighting Measures

<b>Flammability of the product:</b>	Combustible
<b>Extinguishing Media:</b>	Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.
<b>Hazardous thermal (de)composition products:</b>	Carbon oxides, Sulphur oxides
<b>Special Fire Fighting Procedures:</b>	Wear self-contained breathing apparatus for firefighting if necessary.
<b>Flash Point:</b>	No data available




## Section 6: Accidental Release Measures


<b>Personal Precautions:</b>	Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Avoid breathing dust.
<b>Environmental Precautions:</b>	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
<b>Methods for Clean-up:</b>	Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

## SECTION 7: Handling & Storage

<b>Storage:</b>	Keep container tightly closed in a dry and well-ventilated place. Keep dry. Recommended storage temperature 2 - 8°C.
<b>Handling:</b>	Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed.

## SECTION 8: Exposure controls / Personal Protection

<b>Respiratory Protection:</b>	 <p>For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).</p>
<b>Skin and Body:</b>	  <p>Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.</p> <p>Full contact  Material: Nitrile rubber  Minimum layer thickness: 0.11 mm  Break through time: 480 min  Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)</p>

	<p>Splash contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)</p> <p>Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.</p>
<b>Eyes:</b>	 <p>Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).</p>
<b>Ventilation/Engineering Measures:</b>	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
<b>Hygiene:</b>	Handle in accordance with good industrial hygiene and safety practice.
<b>Other:</b>	Contains no substances with occupational exposure limit values.

## SECTION 9: Physical and Chemical Properties

<b>Appearance &amp; Odor:</b>	White, crystalline powder. Unpleasant sulfur odor.
<b>Formula</b>	C <sub>4</sub> H <sub>10</sub> O <sub>2</sub> S <sub>2</sub>
<b>Molecular Wt.</b>	154.25
<b>Melting Pt.</b>	41 - 44°C (106 - 111°F)
<b>Boiling Pt.</b>	No data available
<b>Density:</b>	No data available
<b>Vapor Pressure:</b>	No data available
<b>Evaporation Rate:</b>	No data available
<b>Vapor Density:</b>	No data available
<b>Solubility:</b>	Soluble in water. Clear solution at 0.05 g/L.
<b>Flash Point:</b>	No data available
<b>Autoignition Temp:</b>	No data available

## SECTION 10: Stability and Reactivity

<b>Stability:</b>	May decompose on exposure to moist air or water. Stable under recommended storage conditions.
<b>Hazardous decomposition products:</b>	Carbon oxides, Sulphur oxides
<b>Materials to Avoid:</b>	Bases, Strong oxidizing agents, Reducing agents, Alkali metals
<b>Conditions to avoid:</b>	No data available

## SECTION 11: Toxicological Information

<b>RTECS#:</b>	EK1610000
<b>ACUTE Toxicity:</b>	<p>Acute toxicity, Oral (Category 4), H302 Short-term (acute) aquatic hazard (Category 3), H402</p> <p>LD50 Oral: 400 mg/kg (Rat)</p> <p>Nausea, Headache, Vomiting, Central nervous system depression, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.</p> <p>Liver - Irregularities - Based on Human Evidence Liver - Irregularities - Based on Human Evidence</p>
<b>CHRONIC Toxicity:</b>	Long-term (chronic) aquatic hazard (Category 3)
<b>Chronic Exposure:</b> <b>Carcinogen:</b> <b>Mutagen:</b> <b>Teratogen:</b> <b>Reproductive:</b>	<p>IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by IARC.</p> <p>ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as probable, potential human carcinogen by ACGIH.</p> <p>NTP: No component of this product present at levels greater than or equal to 0.1% is identified as known or anticipated human carcinogen by NTP.</p> <p>OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as known or potential human carcinogen by OSHA.</p> <p>EPA: No classification on carcinogenic data is available from EPA</p>

## SECTION 12: Ecological Information

<b>Ecotoxicity:</b>	Toxicity to daphnia and other aquatic invertebrates. LC50 - Daphnia magna (Water flea) - 27 mg/L 48 h
<b>Mobility:</b>	Likely due to water solubility

<b>Persistence and degradability:</b>	Not likely due to water solubility
<b>Bioaccumulative potential:</b>	No data available
<b>Other adverse effects:</b>	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life with long lasting effects.
<b>Corrosivity Characteristic:</b>	No data available
<b>General Notes:</b>	Do not allow undiluted product or large quantities of it to reach groundwater, water course or sewer system. Do not allow materials to be released into the environment without proper government permits.

### SECTION 13: Disposal Considerations

<b>Residue Waste or Unused product:</b>	Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
<b>Contaminated Packaging:</b>	Dispose of as unused product.

### SECTION 14: Transportation Information

<b>UN ID#:</b>	3335
<b>ADR / RID (LAND):</b>	Aviation Regulated Solid, N.O.S. Class 9
<b>DOT regulations:</b>	Aviation Regulated Solid, N.O.S. Class 9
<b>IMDG/IMO (SEA):</b>	Not shipping hazard
<b>IATA/DGR (AIR):</b>	UN number: 3335 Class: 9 Packing group: III Proper shipping name: Aviation regulated solid, n.o.s. ((R*,R*)-1,4 Dimercaptobutane-2,3-diol)
<b>Special Provisions:</b>	N/A

### SECTION 15: Regulatory Information

<b>Health Phrases:</b>	H302 Harmful if swallowed H315 Causes skin irritation H318 Causes serious eye damage H335 May cause respiratory irritation H370 Causes damage to organs H412 Harmful to aquatic life with long lasting effects
<b>Risk Phrases:</b>	N/A
<b>Safety Phrases:</b>	P264 Wash skin thoroughly after handling. P270 Do not eat, drink or smoke when using this product.

	<p>P273 Avoid release to the environment.  P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.  P501 Dispose of contents/ container to an approved waste disposal plant.</p>
<b>EU Regulations:</b>	N/A
<b>US Regulations:</b>	<p>TSCA: Not listed  California Proposition 65: Not listed</p>
<b>U.S. Federal Regulations:</b>	<p>SARA 302/304/311/312 extremely hazardous substances: No products were found  SARA 302/304 emergency planning and notification: No products were found.  SARA 302/304/311/312 hazardous chemicals: No products were found.  SARA 311/312 MSDS distribution-chemical inventory-hazard identification: No products were found.  SARA 313 toxic chemicals notification and release reporting: No products were found.</p> <p>Clean Water Act (CWA) 307: No products were found.  Clean Water Act (CWA) 311: No products were found.  Clean Air Act (CAA) 112 accidental release prevention: No products were found.  Clean Air Act (CAA) 112 regulated flammable substances: No products were found.  Clean Air Act (CAA) 112 regulated toxic substances: No products were found.  OSHA: No Products were found.</p>
<b>WHMIS (Canada):</b>	N/A

## SECTION 16: Other Information

**LIABILITY STATEMENT:** *The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. AG Scientific shall not be held liable for any damages resulting from handling or from contact with the above product. AG Scientific products are for research purposes only. Not for human use or consumption.*