

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations Revision date: 06/09/2018 Date of issue: 01/06/2011 Supersedes: 01/06/2011

DLM-6785

Version: 2.0

<b>SECTION 1: Identif</b>	ication of the substa	ance/mixture and of the company/undertaking
1.1. Product identi		
Product form	:	Substance
Substance name	:	1,2-ETHANEDITHIOL (1,1,2,2-D4, 98%)
EC-No.		208-752-3 (Unlabeled)
CAS-No.	:	100189-81-9
Product code	:	DLM-6785
Formula	:	HSCD2CD2SH
Synonyms	:	1,2-Dimercaptoethane / Ethylene mercaptan / Dithioglycol
1.2. Relevant iden	tified uses of the substar	nce or mixture and uses advised against
1.2.1. Relevant ident	tified uses	
Main use category	:	Professional use
Industrial/Professional us	e spec :	For professional use only
1.2.2. Uses advised	against	
No additional information	•	
1.3. Details of the	supplier of the safety dat	a sheet
Cambridge Isotope Labor 50 Frontage Road Andover, MA 01810		
USA: 1-800-322-1174 I cilsales@isotope.com	nt: 1-978-749-8000 www.isotope.com	
Emergency te	ephone number	
Emergency numbers:		
Chemtrec: 1-800-424-93 International: 1-703-741-		
<b>SECTION 2: Hazard</b>	ds identification	
2.1. Classification	of the substance or mixt	ure
Classification according	g to Regulation (EC) No.	1272/2008 [CLP]
Flam. Liq. 3	H226	
Acute Tox. 4 (Oral)	H302	
Acute Tox. 4 (Dermal)	H312	
Acute Tox. 1 (Inhalation)		
Eye Irrit. 2	H319	
Full text of hazard classes and H-statements : see section 16		
Classification according	n to Directive 67/5/18/EEC	[DSD] or 1999/45/EC [DPD]
Xn; R21/22 Xi; R36 T+; R26 F; R10		
Full text of R-phrases: se	e section 16	
GHS-US classification	H226	

Flam. Liq. 3 H226 H302 Acute Tox. 4 (Oral) Acute Tox. 4 (Dermal) H312 Acute Tox. 1 (Inhalation) H330 Eye Irrit. 2 H319

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

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2.2. Label elements	
Labeling according to Regulation (EC) N	o. 1272/2008 [CLP]
Hazard pictograms (CLP)	
	GHS02 GHS06
Signal word (CLP)	: Danger
Hazard statements (CLP)	<ul> <li>H226 - Flammable liquid and vapour</li> <li>H302+H312 - Harmful if swallowed or in contact with skin</li> </ul>
	H319 - Causes serious eye irritation
Pressutionary statements (CLD)	H330 - Fatal if inhaled
Precautionary statements (CLP)	<ul> <li>P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.</li> </ul>
	P233 - Keep container tightly closed.
	P240 - Ground/bond container and receiving equipment. P241 - Use explosion-proof electrical, lighting, ventilating equipment
	P260 - Do not breathe dust, fume, gas, mist, spray, vapors.
	P264 - Wash hands, forearms and face thoroughly after handling. P270 - Do not eat, drink or smoke when using this product.
	P271 - Use only outdoors or in a well-ventilated area.
GHS-US labeling	
Hazard pictograms (GHS-US)	
	GHS02 GHS06
Signal word (GHS-US)	: Danger
Hazard statements (GHS-US)	: H226 - Flammable liquid and vapour
	H302+H312 - Harmful if swallowed or in contact with skin H319 - Causes serious eye irritation
	H330 - Fatal if inhaled
Precautionary statements (GHS-US)	: P210 - Keep away from heat, hot surfaces, open flames, sparks No smoking.
	P233 - Keep container tightly closed. P240 - Ground/Bond container and receiving equipment
	P241 - Use explosion-proof electrical, lighting, ventilating equipment
	P242 - Use only non-sparking tools. P243 - Take precautionary measures against static discharge.
	P260 - Do not breathe dust, fume, gas, mist, spray, vapors.
	P264 - Wash hands, forearms and face thoroughly after handling. P270 - Do not eat, drink or smoke when using this product.
	P271 - Use only outdoors or in a well-ventilated area.
	P280 - Wear protective gloves/protective clothing/eye protection/face protection. P284 - [In case of inadequate ventilation] wear - Respiratory protection.
	P301+P312 - If swallowed: Call a doctor if you feel unwell
	P302+P352 - If on skin: Wash with plenty of water
	P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
	P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
	P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
	P310 - Immediately call a doctor
	P312 - Call a doctor if you feel unwell P320 - Specific treatment is urgent (see Hazardous component(s) for labeling on this label)
	P320 - Specific treatment is digen (see hazardous component(s) to habeing on this laber) P322 - Specific treatment (see supplemental first aid instruction on this label)
	P330 - Rinse mouth. P337+P313 - If eve irritation persists: Get medical advice/attention
	P337+P313 - If eye irritation persists: Get medical advice/attention. P362+P364 - Take off contaminated clothing and wash it before reuse.
	P370+P378 - In case of fire: Use dry sand, alcohol resistant foam to extinguish.
	P403+P233 - Store in a well-ventilated place. Keep container tightly closed. P403+P235 - Store in a well-ventilated place. Keep cool.
	P405 - Store locked up.
	P501 - Dispose of contents/container to hazardous or special waste collection point, in

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### 23 **Other hazards**

## No additional information available

## SECTION 3: Composition/Information on ingredients 3.1. **Substances**

Name	Product identifier	%	Classification according to Directive 67/548/EEC
1,2-ETHANEDITHIOL (1,1,2,2-D4, 98%)	(CAS-No.) 100189-81-9 (EC-No.) 208-752-3 (Unlabeled) (EC Index-No.)	100	Xn; R21/22 Xi; R36 T+; R26 F; R10
Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
1,2-ETHANEDITHIOL (1,1,2,2-D4, 98%)	(CAS-No.) 100189-81-9 (EC-No.) 208-752-3 (Unlabeled) (EC Index-No.)	100	Flam. Liq. 3, H226 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 1 (Inhalation), H330 Eye Irrit. 2, H319

## Full text of R- and H- phrases: see section 16

Name	Product identifier	%	GHS-US classification
1,2-ETHANEDITHIOL (1,1,2,2-D4, 98%) (Main constituent)	(CAS-No.) 100189-81-9	100	Flam. Liq. 3, H226 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 1 (Inhalation), H330 Eye Irrit. 2, H319

## Full text of H-phrases: see section 16

### 3.2. **Mixtures** Not applicable SECTION 4: First aid measures 4.1. **Description of first aid measures** First-aid measures general : If you feel unwell, seek medical advice (show the label where possible). Evacuate danger area. First-aid measures after inhalation When symptoms occur: go into open air and ventilate suspected area. If not breathing, give artificial respiration. Get medical advice/attention. First-aid measures after skin contact : Wash with plenty of soap and water. Get immediate medical advice/attention. Rinse cautiously with water for several minutes. First-aid measures after eve contact First-aid measures after ingestion Never give anything by mouth to an unconscious person. Rinse mouth out with water. Get medical advice/attention. 42 Most important symptoms and effects, both acute and delayed Symptoms/effects after inhalation : Fatal if inhaled. Symptoms/effects after skin contact : Harmful in contact with skin. Symptoms/effects after eye contact : Causes serious eye irritation. Symptoms/effects after ingestion : Harmful if swallowed. 4.3. Indication of any immediate medical attention and special treatment needed No additional information available SECTION 5: Firefighting measures 5.1. **Extinguishing media** Suitable extinguishing media : Water spray, dry chemical powder, alcohol-resistant foam, carbon dioxide (CO2). 5.2. Special hazards arising from the substance or mixture Carbon oxides (CO, CO2), sulphur oxides. 5.3. Advice for firefighters **Firefighting instructions** : Fight fire with normal precautions from a reasonable distance. Wear a self contained breathing apparatus. Do not enter fire area without proper protective equipment, including respiratory protection. : Do not enter fire area without proper protective equipment, including respiratory protection. Protection during firefighting Wear recommended personal protective equipment.

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SECTIO	ON 6: Accidental release mea	sures
6.1. Personal precautions, protective equipment and emergency procedures		
6.1.1.	For non-emergency personnel	
Emergen	ncy procedures	: Avoid breathing vapors, mist, gas. Avoid dust formation.
6.1.2.	For emergency responders	
Protectiv	e equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
6.2.	Environmental precautions	
Prevent e	entry to sewers and public waters. Do	ot allow to enter drains or water courses. Avoid release to the environment.
6.3.	Methods and material for containm	ent and cleaning up
For containment : Clean up any spills as soon as possible, using an absorbent material to collect it. Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal. For large spills, confine the spill in a dike and charge it with wet sar earth for subsequent safe disposal.		
Methods	for cleaning up	: This material and its container must be disposed of in a safe way, and as per local legislation.
6.4.	Reference to other sections	
For furthe	er information refer to section 13.	
SECTIO	ON 7: Handling and storage	
7.1.	Precautions for safe handling	
Precautio	ons for safe handling	: Provide adequate ventilation to minimize dust and/or vapor concentrations.
Hygiene	measures	: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Handle in accordance with good industrial hygiene and safe practice.
7.2.	Conditions for safe storage, includ	ng any incompatibilities
Technica	al measures	: Store in a well-ventilated place. Keep container tightly closed.
Storage of	conditions	: Store at room temperature away from light and moisture.
7.3.	Specific end use(s)	
No additi	ional information available	
SECTIO	ON 8: Exposure controls/pers	onal protection
8.1.	Control parameters	
No additi	ional information available	
8.2.	Exposure controls	
	ate engineering controls	: Wash hands and other exposed areas with mild soap and water before eating, drinking or
		smoking and when leaving work.
Personal	protective equipment	: Gloves. Protective clothing. Protective goggles. Self-contained breathing apparatus.
Materials	s for protective clothing	: Wear suitable protective clothing and gloves.
Hand pro		: Wear suitable protective clothing and gloves.
Eye prote		: Wear eye protection. Chemical goggles or face shield with safety glasses.
• •	body protection	: Wear suitable protective clothing, gloves and eye/face protection.
	ory protection	: In case of inadequate ventilation wear respiratory protection. Approved supplied air respirator
Environm	nental exposure controls	: Avoid release to the environment.
SECT	ON 9: Physical and chemical	properties
9.1.	Information on basic physical and	
9.1. Physical		: Liquid
Appeara		: Colorless liquid
Molecula		: 98.22 g/mol (Labeled)

: No data available

: Colorless

: Stench

Odor threshold

Color

Odor

pН

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Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: -41 °C (-42 °F)
Freezing point	: No data available
Boiling point	: 144 - 146 °C (291 - 295 °F)
Flash point	: 44 °C (111 °F) - closed cup
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: 6.4 hPa (4.8 mmHg) at 20 °C (68 °F)
Relative vapor density at 20 °C	: 3.77
Relative density	: No data available
Specific gravity / density	: 1.123 g/ml at 25 °C (77 °F)
Solubility	: No data available
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosion limits	: No data available

### 9.2. **Other information**

No additional information available

SECTION 10: Stability and reactivity			
10.1. Reactivity			
No additional information available.			
10.2. Chemical stability	.2. Chemical stability		
Stable if stored under recommended conditions.			
10.3. Possibility of hazardous reactions			
No additional information available.			
10.4. Conditions to avoid			
Heat, sparks and flame.			
10.5. Incompatible materials			
Alkali metals			
10.6. Hazardous decomposition products			
Carbon oxides (CO, CO2), sulphur oxides.			
<b>SECTION 11: Toxicological informatio</b>	n		
11.1. Information on toxicological effects			
Acute toxicity :	Oral: Harmful if swallowed. Dermal: Harmful in contact with skin. Inhalation: Fatal if inhaled.		
1,2-ETHANEDITHIOL (1,1,2,2-D4, 98%) (100189-81-9)			
LD50 oral rat	143.88 mg/kg		

LD50 oral rat	143.88 mg/kg
LD50 dermal rabbit	197 mg/kg
LC50 inhalation rat (mg/l)	1.17 mg/l - 4h
ATE CLP (oral)	500.000 mg/kg body weight
ATE CLP (dermal)	1100.000 mg/kg body weight
ATE CLP (gases)	10.000 ppmV/4h
ATE CLP (vapors)	0.050 mg/l/4h
ATE CLP (dust, mist)	0.005 mg/l/4h

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Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Eyes – Rabbit - Moderate eye irritation.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity – single exposure	: Not classified
Specific target organ toxicity – repeated exposure	: Not classified
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.
	Nausea, Headache, Vomiting.
Symptoms/effects after inhalation	: Fatal if inhaled.
Symptoms/effects after skin contact	: Harmful in contact with skin.
Symptoms/effects after eye contact	: Causes serious eye irritation.
Symptoms/effects after ingestion	: Harmful if swallowed.

OFOTION 40. Feels visel information	
SECTION 12: Ecological information	
12.1. Toxicity	
Ecology - general	: The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.
12.2. Persistence and degradability	
No additional information available	
12.3. Bioaccumulative potential	
No additional information available	
12.4. Mobility in soil	
No additional information available	
12.5. Results of PBT and vPvB assessme	ent
No additional information available	
12.6. Other adverse effects	
No additional information available	
SECTION 13: Disposal consideration	ns
13.1. Waste treatment methods	
Regional legislation (waste)	: Waste materials should be disposed of under conditions which meet Federal, State, and local environmental control regulations.
Product/Packaging disposal recommendations	: Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
Ecology - waste materials	: Dispose of as unused product.
SECTION 14: Transport information	

CECTION 14. Transport information	
In accordance with ADR / RID / IMDG / IATA /	ADN
14.1. UN number	
UN-No.(DOT)	: 3071
DOT NA no.	UN3071
14.2. UN proper shipping name	
Proper Shipping Name (DOT)	: Mercaptans, liquid, toxic, flammable, n.o.s.
Class (DOT)	: 6.1 - Class 6.1 - Poisonous materials 49 CFR 173.132

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Hazard labels (DOT)	: 6.1 - Poison 3 - Flammable liquid
	POISON
Packing group (DOT)	: II - Medium Danger
DOT Special Provisions (49 CFR 172.102)	<ul> <li>A6 - For combination packaging, if plastic inner packaging are used, they must be packed in tightly closed metal receptacles before packing in outer packaging.</li> <li>IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.</li> <li>T11 - 6 178.274(d)(2) Normal</li></ul>
DOT Packaging Exceptions (49 CFR 173.xxx)	. 153
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 202
DOT Packaging Bulk (49 CFR 173.xxx)	: 243
DOT Fackaging Burk (49 CFR 173.200)	. 245
14.3. Additional information	
Emergency Response Guide (ERG) Number	: 131
Other information	: No supplementary information available.
Special transport precautions	: Not dangerous.
Overland transport	
Packing group (ADR)	: 11
Class (ADR)	: 6.1 - Toxic substances
Hazard identification number (Kemler No.)	: 63
Classification code (ADR)	: TF1
Hazard labels (ADR)	: 6.1 - Toxic substances
	3 - Flammable liquids
Orange plates	
	63
	3071
Tunnel restriction code (ADR)	: D/E
Limited quantities (ADR)	100ml
Excepted quantities (ADR)	: E4
Transport by sea	
DOT Vessel Stowage Location	: C - The material must be stowed "on deck only" on a cargo vessel and on a passenger vessel.
DOT Vessel Stowage Other	: 40 - Stow "clear of living quarters",102 - Stow "separated from" all odor absorbing cargoes,121 - Packaging group III when the flash point of the flammable liquid is 23 °C (73 °F) or above
MFAG-No	: 131

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Air transport	
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 5L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 60 L
Civil Aeronautics Law	: Toxic and infectious substances/Toxic substances
44.4 Englisher and all because	
14.4. Environmental hazards	
Other information	: No supplementary information available.
14.5. Special precautions for user	
Special transport precautions	: Not dangerous.

## 14.6. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information		
15.1. US Federal regulations		
1,2-ETHANEDITHIOL (1,1,2,2-D4, 98%) (100189-81-9)		
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.	
SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard	
SARA Section 313 - Emission Reporting	Not subject to reporting requirements of the United States SARA Section 313.	

## 15.2. International regulations

## CANADA

1,2-ETHANEDITHIOL (1,1,2,2-D4, 98%) (100189-81-9)	
Listed on the Canadian DSL (Domestic Substances List)	

## 15.2.1. National regulations

No additional information available

## 15.3. US State regulations

1,2-ETHANEDITHIOL (1,1,2,2-D4, 98%)(100189-81-9)		
U.S California - Proposition 65 - Carcinogens List	No	
U.S California - Proposition 65 - Developmental Toxicity	No	
U.S California - Proposition 65 - Reproductive Toxicity - Female	No	
U.S California - Proposition 65 - Reproductive Toxicity - Male	No	
State or local regulations	U.S Pennsylvania - RTK (Right to Know) List U.S New Jersey - Right to Know Hazardous Substance List	

## **SECTION 16: Other information**

Other information

: This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

## Full text of R-, H- and EUH-phrases:

Acute Tox. 1 (Inhalation)	Acute toxicity (inhalation) Category 1	
Acute Tox. 4 (Dermal)	Acute toxicity (dermal) Category 4	
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4	
Eye Irrit. 2	Serious eye damage/eye irritation Category 2	
Flam. Liq. 3	Flammable liquids Category 3	

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H226	Flammable liquid and vapour
H302	Harmful if swallowed
H312	Harmful in contact with skin
H319	Causes serious eye irritation
H330	Fatal if inhaled
R11	Highly flammable
R21/22	Harmful in contact with skin and if swallowed
R26	Very toxic by inhalation
R36	Irritating to eyes
F	Highly flammable
T+	Very toxic
Xi	Irritant
Xn	Harmful

NFPA health hazard	: 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.
NFPA fire hazard	<ul> <li>2 - Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur.</li> </ul>
NFPA reactivity	: 0 - Material that in themselves are normally stable, even under fire conditions.
Hazard Rating	
Health	: 2 Moderate Hazard - Temporary or minor injury may occur
Flammability	: 2 Moderate Hazard
Physical	: 0 Minimal Hazard

CIL Substance SDS

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product