

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

Date of issue: 28/12/2010 Revision date: 20/03/2017 Supersedes: 02/08/2012 Version: 3.0

DLM-345

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance

Substance name : ETHANOL (1,1-D2, 98%) (<6% H2O)

EC Index No : 603-002-00-5 (Unlabeled) EC No : 200-578-6 (Unlabeled)

 CAS No
 : 1859-09-2

 Product code
 : DLM-345

 Formula
 : CH3CD2OH

 Synonyms
 : Absolute alcohol

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Main use category : Professional use

Industrial/Professional use spec : For professional use only

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Cambridge Isotope Laboratories, Inc.

50 Frontage Road Andover, MA 01810

USA

USA: 1-800-322-1174 Int: 1-978-749-8000 cilsales@isotope.com www.isotope.com

Emergency telephone number

Emergency numbers:

Chemtrec: 1-800-424-9300 (24 hours) International: 1-703-741-5970 (24 hours)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Liq. 2 H225 Skin Irrit. 2 H315 Eye Irrit. 2 H319 STOT SE 3 H335

Full text of hazard classes and H-statements : see section 16

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

F; R11 Xi; R36/37/38

Full text of R-phrases: see section 16

GHS-US classification

Flam. Liq. 2 H225 Skin Irrit. 2 H315 Eye Irrit. 2 H319 STOT SF 3 H335

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

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Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)





Signal word (CLP) : Danger

Hazard statements (CLP) : H225 - Highly flammable liquid and vapour

H315 - Causes skin irritation H319 - Causes serious eye irritation H335 - May cause respiratory irritation

Precautionary statements (CLP) : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No

smoking

P233 - Keep container tightly closed

P240 - Ground/bond container and receiving equipment P241 - Use explosion-proof electrical equipment P261 - Avoid breathing gas, mist, spray, vapours P264 - Wash hands thoroughly after handling P271 - Use only outdoors or in a well-ventilated area P280 - Wear protective clothing, protective gloves

GHS-US labelling

Hazard pictograms (GHS-US)





GHS07

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H225 - Highly flammable liquid and vapour

H315 - Causes skin irritation H319 - Causes serious eye irritation

H335 - May cause respiratory irritation

P210 - Keep away from sparks, open flames, hot surfaces, heat. - No smoking Precautionary statements (GHS-US)

P233 - Keep container tightly closed

P240 - Ground/Bond container and receiving equipment

P241 - Use explosion-proof electrical equipment

P242 - Use only non-sparking tools

P243 - Take precautionary measures against static discharge

P261 - Avoid breathing vapours, spray, mist, gas P264 - Wash hands thoroughly after handling P271 - Use only outdoors or in a well-ventilated area P280 - Wear protective gloves, protective clothing

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

P312 - Call a doctor if you feel unwell

P321 - Specific treatment (see Hazardous component(s) for labelling on this label)

P332+P313 - If skin irritation occurs: 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 carbon dioxide (CO2), D-powder, alcohol resistant foam to

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

accordance with local, regional, national and/or international regulation

Other hazards

No additional information available

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SECTION 3: Composition/information on ingredients

Substances

Name	Product identifier	%	Classification according to Directive 67/548/EEC
ETHANOL (1,1-D2, 98%) (<6% H2O)	(CAS No) 1859-09-2 (EC No) 200-578-6 (Unlabeled) (EC Index No) 603-002-00-5 (Unlabeled)	100	F; R11 Xi; R36/37/38
Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
ETHANOL (1,1-D2, 98%) (<6% H2O)	(CAS No) 1859-09-2 (EC No) 200-578-6 (Unlabeled) (EC Index No) 603-002-00-5 (Unlabeled)	100	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335

Full text of R- and H-statements; see section 16

Name	Product identifier	%	GHS-US classification
ETHANOL (1,1-D2, 98%) (<6% H2O) (Main constituent)	(CAS No) 1859-09-2	100	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335

Full text of H-statements: see section 16

Mixtures

Not applicable

SECTION 4: First aid measures

Description of first aid measures

First-aid measures general

First-aid measures after inhalation

- : If you feel unwell, seek medical advice (show the label where possible). Evacuate danger area.
- When symptoms occur: go into open air and ventilate suspected area. If not breathing, give artificial respiration. Get medical advice/attention. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

First-aid measures after skin contact

: Wash with plenty of soap and water. Get immediate medical advice/attention. Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation occurs: Wash skin with plenty of water. Get medical advice/attention. Specific treatment (see Hazard pictograms (CLP) on this label).

First-aid measures after eye contact

Rinse cautiously with water for several minutes.

First-aid measures after ingestion

Never give anything by mouth to an unconscious person. Rinse mouth out with water. Get medical advice/attention.

Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation

: May be harmful if inhaled. May cause respiratory irritation. May cause respiratory irritation.

Symptoms/injuries after skin contact

: May be harmful in contact with skin. Causes skin irritation.

Symptoms/injuries after eye contact Symptoms/injuries after ingestion

: Causes serious eye irritation. : May be harmful if swallowed.

Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Water spray. dry chemical powder, alcohol-resistant foam, carbon dioxide (CO2).

Special hazards arising from the substance or mixture

Fire hazard : Highly flammable liquid and vapour.

: May form flammable/explosive vapour-air mixture. Explosion hazard

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.

Protection during firefighting Do not enter fire area without proper protective equipment, including respiratory protection.

Wear recommended personal protective equipment.

Other information : Use water spray to cool unopened containers.

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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures

: Remove ignition sources. Use special care to avoid static electric charges. No open flames. No smoking.

6.1.1. For non-emergency personnel

Emergency procedures

: Avoid breathing vapours, mist, gas. Avoid dust formation.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent entry to sewers and public waters. Do not allow to enter drains or water courses. Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment

: Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal. Comply with local regulations for disposal. Stop leak without risks if possible. Contain large spillage with sand or earth.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed

: Handle empty containers with care because residual vapours are flammable.

Precautions for safe handling

: Provide adequate ventilation to minimize dust and/or vapour concentrations. No open flames. No smoking. Use only non-sparking tools. Avoid breathing fume, gas, mist, spray, vapours. Use only outdoors or in a well-ventilated area.

Hygiene measures

: Wash hands, forearms and face thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures

: Store in a well-ventilated place. Keep container tightly closed. Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof ventilating equipment.

Storage conditions

: Store at room temperature away from light and moisture.

Incompatible materials : Heat sources.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

ETHANOL (1,1-D2, 98%) (<6% H2O) (1859-09-2)		
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	1000.00000000 ppm Remarks:Upper Respiratory Tract irritation Confirmed animal carcinogen with unknown relevance to humans; USA. ACGIH Threshold Limit Values (TLV)
Italy - Portugal - USA ACGIH	ACGIH STEL (ppm)	1000 ppm Remarks: Upper Respiratory Tract irritation, Confirmed animal carcinogen with unknown relevance to humans; USA. ACGIH Threshold Limit Values (TLV)
USA NIOSH	NIOSH REL (TWA) (mg/m³)	1900 USA. NIOSH Recommended Exposure Limits
USA NIOSH	NIOSH REL (TWA) (ppm)	1000 ppm USA. NIOSH Recommended Exposure Limits
USA OSHA	OSHA PEL (TWA) (mg/m³)	1900 mg/m³ The value in mg/m³ is approximate ;USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
USA OSHA	OSHA PEL (TWA) (ppm)	1000 ppm USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants

8.2. Exposure controls

Appropriate engineering controls

: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

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Personal protective equipment : Gloves. Protective clothing. Protective goggles. Self-contained breathing apparatus.









Materials for protective clothing : Wear suitable protective clothing and gloves. Hand protection : Wear suitable protective clothing and gloves.

Eye protection Wear eye protection. Chemical goggles or face shield with safety glasses.

Skin and body protection Wear suitable protective clothing, gloves and eye/face protection. Wear suitable protective

clothing.

: In case of inadequate ventilation wear respiratory protection. Approved supplied air respirator. Respiratory protection

Environmental exposure controls : Avoid release to the environment.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state : Liquid Appearance : Liquid.

Molecular mass : 48.08 g/mol (Labeled)

Colour : Colourless.

No data available. Odour Odour threshold No data available pΗ No data available Relative evaporation rate (butylacetate=1) : No data available Melting point : -143.99 °C (-227.18 °F) Freezing point : No data available

Boiling point : 78 - 80 °C (172.4 - 176.0 °F) Flash point : 14 °C (57.2 °F) - closed cup

: 363 °C (685.4 °F) Auto-ignition temperature Decomposition temperature : No data available

Flammability (solid, gas) : Highly flammable liquid and vapour

Vapour pressure : 59.5 hPa (44.6 mmHg) at 20.0 °C (68.0 °F)

Relative vapour density at 20 °C : No data available Relative density : No data available Density : 0.7974 g/ml

Solubility : Water: completely soluble : -0.349 at 24 °C (75 °F) Log Pow Log Kow No data available : No data available Viscosity, kinematic Viscosity, dynamic : No data available : No data available Explosive properties Oxidising properties : No data available Explosive limits : 3.3 - 19 vol %

Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

Chemical stability

Stable if stored under recommended conditions.

Possibility of hazardous reactions

Vapours may form explosive mixture with air.

Conditions to avoid

Open flame. Direct sunlight. Heat. Sparks.

Incompatible materials

Strong oxidizing agents. Alkali metals. Peroxides.

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10.6. Hazardous decomposition products

Carbon oxides (CO, CO2). May release flammable gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

ETHANOL (1,1-D2, 98%) (<6% H2O) (1859-09	9-2)
LD50 oral rat	10470 mg/kg
LD50 dermal rabbit	15800 mg/kg
LC50 inhalation rat (mg/l)	30000 mg/l/4h
Skin corrosion/irritation	: Skin. rabbit. No skin irritation. 24 Hours. (OECD 404 method)

Serious eye damage/irritation : Eyes. rabbit. moderate eye irritation. (OECD 405 method)
Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified : Not classified : Carcinogenicity : Carcinogenicity mouse. oral. Tumorigenic: Carcinogenic by RTECS criteria. Liver: Tumors.

Reproductive toxicity : Reproductive toxicity - Human - female - Oral Effects on Newborn:

Apgar score (human only). Effects on Newborn: Other neonatal measures or effects. Effects on Newborn: Drug dependence.

STOT-single exposure : May cause respiratory irritation.

STOT-repeated exposure : Not classified
Aspiration hazard : Not classified

Potential adverse human health effects and

symptoms

CNS depression. Narcosis. Damage to heart. Stomach - Irregularities - Based on Human Evidence. 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.

Symptoms/injuries after inhalation : May be harmful if inhaled. May cause respiratory irritation. May cause respiratory irritation.

Symptoms/injuries after skin contact : May be harmful in contact with skin. Causes skin irritation.

blood

Symptoms/injuries after eye contact : Causes serious eye irritation. Symptoms/injuries after ingestion : May be harmful if swallowed.

SECTION 12: Ecological information

12.1. Toxicity

ETHANOL (1,1-D2, 98%) (<6% H2O) (1859-09-2)		
LC50 fish 1	14200 mg/l - Pimephales promelas (fathead minnow) - 96 h	
LC50 other aquatic organisms 1	5012 mg/l - Ceriodaphnia dubia (water flea) - 48 h	
ErC50 (algae)	275 mg/l - Chlorella vulgaris (Fresh water algae) - 72 h (OECD Test Guideline 201)	
NOEC (chronic)	9.6 mg/l - Daphnia magna (Water flea) - 9 d	

12.2. Persistence and degradability

ETHANOL (1,1-D2, 98%) (<6% H2O) (1859-09-2	2)
Biodegradation	95 % Result: - Readily biodegradable

12.3. Bioaccumulative potential

ETHANOL (1,1-D2, 98%) (<6% H2O) (1859-09-2	2)
Log Pow	-0.349 at 24 °C (75 °F)
Bioaccumulative potential	Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

Other adverse effects : Toxic to aquatic life with long lasting effects. Avoid release to the environment.

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SECTION 13: Disposal considerations

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

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

UN-No.(DOT) : 1170 DOT NA no. UN1170

14.2. UN proper shipping name

Proper Shipping Name (DOT) : Ethyl alcohol solutions

Class (DOT) : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120

Hazard labels (DOT) : 3 - Flammable liquid



Packing group (DOT) : II - Medium Danger

DOT Special Provisions (49 CFR 172.102) : 24 - Alcoholic beverages containing more than 70 percent alcohol by volume must be

transported as materials in Packing Group II. Alcoholic beverages containing more than 24 percent but not more than 70 percent alcohol by volume must be transported as materials in

Packing Group III.

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.

T4 - 2.65 178.274(d)(2) Normal................. 178.275(d)(3)

TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = 97 / (1 + a (tr - tf)) Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during

filling.

DOT Packaging Exceptions (49 CFR 173.xxx) : 4b;150
DOT Packaging Non Bulk (49 CFR 173.xxx) : 202
DOT Packaging Bulk (49 CFR 173.xxx) : 242

14.3. Additional information

Emergency Response Guide (ERG) Number : 127

Other information : No supplementary information available.

Special transport precautions : Not classified as dangerous in the meaning of transport regulations.

Overland transport

Packing group (ADR) : II

Class (ADR) : 3 - Flammable liquid

Hazard identification number (Kemler No.) : 33 Classification code (ADR) : F1

Danger labels (ADR) : 3 - Flammable liquids



Orange plates :

33 1170

Tunnel restriction code (ADR) : D/E

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Limited quantities (ADR) 11
Excepted quantities (ADR) : E2

Transport by sea

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a

passenger vessel.

MFAG-No : 127

Air transport

DOT Quantity Limitations Passenger aircraft/rail : 5 L

(49 CFR 173.27)

DOT Quantity Limitations Cargo aircraft only (49 : 60 L

CFR 175.75)

Civil Aeronautics Law : Flammable liquids

14.4. Environmental hazards

Other information : No supplementary information available.

14.5. Special precautions for user

Special transport precautions : Not classified as dangerous in the meaning of transport regulations.

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

ETHANOL (1,1-D2, 98%) (<6% H2O) (1859-09-2	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporing requirements of the United States SARA Section 302.
SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard Delayed (chronic) health hazard
SARA Section 313 - Emission Reporting	Not subject to reporing requirements of the United States SARA Section 313.

15.2. International regulations

CANADA

ETHANOL (1,1-D2, 98%) (<6% H2O) (1859-09-2)

Listed on the Canadian DSL (Domestic Substances List)

15.2.1. National regulations

No additional information available

15.3. US State regulations

ETHANOL (1,1-D2, 98%) (<6% H2O)(1859-09-2)	
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 Massachusetts - Right To Know List U.S New Jersey - Right to Know Hazardous Substance List U.S Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

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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-statements:

Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Flam. Liq. 2	Flammable liquids, Category 2
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H225	Highly flammable liquid and vapour
H315	Causes skin irritation
H319	Causes serious eye irritation
H335	May cause respiratory irritation
R11	Highly flammable
R36/37/38	Irritating to eyes, respiratory system and skin
F	Highly flammable
Xi	Irritant

NFPA health hazard : 2 - Materials that, under emergency conditions, can cause

temporary incapacitation or residual injury.

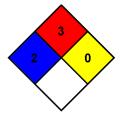
NFPA fire hazard : 3 - Liquids and solids (including finely divided suspended

solids) that can be ignited under almost all ambient

temperature conditions.

NFPA reactivity : 0 - Material that in themselves are normally stable, even

under fire conditions.



HMIS III Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur

Flammability : 3 Serious Hazard Physical : 0 Minimal Hazard

CIL Multi-Solvent Mixture 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

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