

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations Issue date: 11/29/2010 Revision date: 6/15/2023 Supersedes: 4/20/2023 Version: 3.5

SECTION 1: Identification

1.1. Identification

Product form : Substance

Substance name : ETHANOL-D6 (D, 99%) ANHYDROUS
Chemical name : ETHANOL-D6 (D, 99%) ANHYDROUS

 CAS-No.
 : 64-17-5

 Product code
 : DLM-31

 Formula
 : C2H6O

Synonyms : Ethyl alcohol, Pure; Absolute alcohol

Other means of identification : Also applicable to:

DLM-31-NAT: (D, 99%) ANHYDROUS

1.2. Recommended use and restrictions on use

No additional information available

1.3. Supplier

Cambridge Isotope Laboratories, Inc.

50 Frontage Rd

01810

ANDOVER, MA, 01810

USA

T 1-800-322-1174

cilsales@isotope.com - www.isotope.com

1.4. Emergency telephone number

Emergency number : 1-703-741-5970

Chemtrec 1-800-424-9300 24 hours

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Flammable liquids Category 2 H225 Highly flammable liquid and vapor

Skin corrosion/irritation Category 2

H315

Causes skin irritation

Serious eye damage/eye irritation Category 2A

H319

Causes serious eye irritation

Specific target organ toxicity – Single exposure, Category 3,

H335

May cause respiratory irritation

Respiratory tract irritation

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US)





Signal word (GHS US) : Danger

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

H315 - Causes skin irritation

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Precautionary statements (GHS US)

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H319 - Causes serious eye irritation

H335 - May cause respiratory irritation

 P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. heat, open flames, hot surfaces, sparks

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.

P261 - Avoid breathing dust, fume, gas, mist, spray, vapors.

P264 - Wash hands, forearms and face thoroughly after handling.

P271 - Use only outdoors or in a well-ventilated area.

P280 - Wear protective clothing, protective gloves.

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, a POISON CENTER if you feel unwell.

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

 $\hbox{P332+P313-If skin irritation occurs: Get medical advice/attention}.$

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 alcohol resistant foam, carbon dioxide (CO2), dry extinguishing powder 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 accordance with local, regional, national and/or international regulation.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Name	Product identifier	%	GHS US classification
ETHANOL-D6 (D, 99%) ANHYDROUS (Main constituent)	CAS-No.: 64-17-5		Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335

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

3.2. Mixtures

Not applicable

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SECTION 4: First-aid measures

4.1. 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.

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 eye contact First-aid measures after ingestion

: Never give anything by mouth to an unconscious person. Rinse mouth out with water. Get

medical advice/attention.

4.2. Most important symptoms and effects (acute and delayed)

Potential Adverse human health effects and symptoms

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

Symptoms/effects after inhalation Symptoms/effects after skin contact Symptoms/effects after eye contact Symptoms/effects after ingestion May be harmful if inhaled. May cause respiratory irritation. Causes skin irritation.

Causes serious eye irritation.
May be harmful if swallowed.

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

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

5.2. Specific hazards arising from the chemical

Hazardous decomposition products in case of fire : Carbon oxides (CO, CO2).

5.3. Special protective equipment and precautions for fire-fighters

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 exposed surfaces.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures

: Use personal protective equipment, and ensure adequate ventilation. Avoid breathing vapors, mist, gas. Remove ignition sources, and move personnel to safe area. Vapors accumulate especially in low areas to form explosive concentrations. Avoid breathing vapors, mist, gas. Avoid dust formation. Ensure adequate air ventilation. Eliminate all ignition sources if safe to do so. Evacuate unnecessary personnel. Special attention should be given to low areas/pits where flammable vapors can accumulate.

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6.1.2. For emergency responders

Protective 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 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 : Collect spillage. 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 sand or

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.

Other information : Dispose of materials or solid residues at an authorized site.

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 : Avoid all eye and skin contact and do not breathe vapor and mist. Keep away from sources of ignition - No smoking. Take precautionary measures to prevent the formation of static electricity.

Precautions for safe handling : Provide adequate ventilation to minimize dust and/or vapor concentrations.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving

work.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Store in a well-ventilated place. Keep container tightly closed. Storage conditions : Store at room temperature away from light and moisture.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

ETHANOL-D6 (D, 99%) ANHYDROUS (64-17-5)		
USA - ACGIH - Occupational Exposure Limits		
Local name	Ethanol	
ACGIH OEL TWA [ppm]	1000 ppm	
ACGIH OEL STEL [ppm]	1000 ppm	
Remark (ACGIH)	pper Respiratory Tract irritation. Confirmed animal carcinogen with unknown relevance to humans. USA. ACGIH Threshold Limit Values (TLV)	
Regulatory reference ACGIH 2022		
USA - OSHA - Occupational Exposure Limits		
OSHA PEL TWA [1]	1900 mg/m³	
OSHA PEL TWA [2]	1000 ppm	

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ETHANOL-D6 (D, 99%) ANHYDROUS (64-17-5)		
Remark (OSHA)	The value of mg/m3 is approximate. USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000	
USA - NIOSH - Occupational Exposure Limits		
NIOSH REL TWA	1900 mg/m³	
NIOSH REL TWA [ppm]	1000 ppm	
Remark (NIOSH)	Upper Respiratory Tract irritation. Confirmed animal carcinogen with unknown relevance to humans. USA. NIOSH Recommended Exposure Limits.	

8.2. Appropriate engineering controls

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

8.3. Individual protection measures/Personal protective equipment

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

Respiratory protection:

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

Personal protective equipment symbol(s):









SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid Appearance : Liquid. Color : Colorless clear Odor : No data available Odor threshold : No data available : No data available рΗ Melting point : -114 °C (-173 °F) - lit. : No data available Freezing point Boiling point : 78 °C (172 °F)

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Flash point : 14 °C (57.2 °F) - closed cup

Relative evaporation rate (butyl acetate=1) : No data available Flammability (solid, gas) : No data available

Vapor pressure : 59.5 hPa (44.6 mmHg) at 20°C (68 °F)

Relative vapor density at 20°C : No data available Relative density : No data available

Density : 0.89 g/ml at 25°C (77 °F) (Labeled)

Molecular mass : 52.11 g/mol (Labeled)

Solubility : Water solubility. completely soluble.

Partition coefficient n-octanol/water (Log Pow) : -0.349 at 24°C (75 °F) : 363 °C (685.4 °F) Auto-ignition temperature Decomposition temperature : No data available Viscosity, kinematic : No data available Viscosity, dynamic : No data available **Explosion limits** : 3.3 – 19 % (V) Explosive properties : No data available Oxidizing properties No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Vapors may form flammable mixture with air.

10.2. Chemical stability

Stable if stored under recommended conditions.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Heat. Open flame. Sparks.

10.5. Incompatible materials

Oxidizing agent. Peroxides. Alkali metals.

10.6. Hazardous decomposition products

Carbon oxides (CO, CO2).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified Acute toxicity (dermal) : Not classified Acute toxicity (inhalation) : Not classified

ETHANOL-D6 (D, 99%) ANHYDROUS (64-17-5)	
LD50 oral rat	10470 mg/kg
LD50 dermal rabbit	15800 mg/kg

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ETHANOL-D6 (D, 99%) ANHYDROUS (64-17-5)		
LC50 Inhalation - Rat	30000 mg/l/4h	
ATE US (oral)	10470 mg/kg body weight	
ATE US (dermal)	15800 mg/kg body weight	
ATE US (vapors)	30000 mg/l/4h	
ATE US (dust, mist)	30000 mg/l/4h	
Skin corrosion/irritation	: Causes skin irritation.	
Serious eye damage/irritation	: Causes serious eye irritation.	
Respiratory or skin sensitization	: Not classified	
Germ cell mutagenicity	: Not classified	
Carcinogenicity	: Not classified	
ETHANOL-D6 (D, 99%) ANHYDROUS (64-17-5)		
IARC group	1 - Carcinogenic to humans	
Reproductive toxicity	: Not classified	
STOT-single exposure	: May cause respiratory irritation.	
STOT-repeated exposure	: Not classified	
Aspiration hazard	: Not classified	
Viscosity, kinematic	: No data available	
Potential Adverse human health effects and	: CNS depression. Narcosis. Damage to heart. 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. Stomach - Irregularities - Based on Human Evidence.

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

Symptoms/effects after skin contact : Causes skin irritation.

Symptoms/effects after eye contact : Causes serious eye irritation.

Symptoms/effects after ingestion : May be harmful if swallowed.

SECTION 12: Ecological information

12.1. Toxicity

symptoms

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

ETHANOL-D6 (D, 99%) ANHYDROUS (64-17-5)		
LC50 - Fish [1]	11200 mg/l	
EC50 - Crustacea [1]	5463 mg/l	
EC50 - Other aquatic organisms [1]	275 mg/l Chlorella vulgaris (Fresh water algae) - 72 h (OECD 201 method)	
ErC50 algae	1000 mg/l	
NOEC chronic crustacea	9.6 mg/l	
NOEC chronic algae	9.6 mg/l Daphnia magna (Water flea) - 9 d	

12.2. Persistence and degradability

ETHANOL-D6 (D, 99%) ANHYDROUS (64-17-5)	
Biodegradation	95 % Readily biodegradable.

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12.3. Bioaccumulative potential

ETHANOL-D6 (D, 99%) ANHYDROUS (64-17-5)	
Partition coefficient n-octanol/water (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

ETHANOL-D6 (D, 99%) ANHYDROUS (64-17-5)	
Ecology - soil	Not available.

12.5. Other adverse effects

Other adverse effects : Not available.

SECTION 13: Disposal considerations

13.1. Disposal 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 DOT / TDG / IMDG / IATA

14.1. UN number

DOT NA No : UN1170 UN-No. (TDG) : UN1170 UN-No. (IMDG) : 1170 UN-No. (IATA) : 1170

14.2. UN proper shipping name

Proper Shipping Name (DOT) : Ethanol Proper Shipping Name (TDG) : ETHANOL

Proper Shipping Name (IMDG) : ETHANOL (ETHYL ALCOHOL)

Proper Shipping Name (IATA) : Ethanol

14.3. Transport hazard class(es)

DOT

Transport hazard class(es) (DOT) : 3
Hazard labels (DOT) : 3



TDG

Transport hazard class(es) (TDG) : 3 Hazard labels (TDG) : 3

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IMDG

Transport hazard class(es) (IMDG) : 3
Hazard labels (IMDG) : 3



IATA

Transport hazard class(es) (IATA) : 3
Hazard labels (IATA) : 3



14.4. Packing group

Packing group (DOT) : II
Packing group (TDG) : II
Packing group (IMDG) : II
Packing group (IATA) : II

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Special precautions for user

DOT

UN-No.(DOT) : UN1170

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
DOT Quantity Limitations Passenger aircraft/rail (49 : 5 L

CFR 173.27)

DOT Quantity Limitations Cargo aircraft only (49 : 60 L

CFR 175.75)

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

passenger vessel.

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TDG

UN-No. (TDG) : UN1170

TDG Special Provisions : 150 - An approved ERAP is required for the dangerous goods referred to in paragraph 7.2(1)(f)

of Part 7 (Emergency Response Assistance Plan). SOR-2019-101

Explosive Limit and Limited Quantity Index : 1 L
Excepted quantities (TDG) : E2
Passenger Carrying Road Vehicle or Passenger : 5 L

Carrying Railway Vehicle Index

Emergency Response Guide (ERG) Number : 127

IMDG

Special provision (IMDG) : 144
Limited quantities (IMDG) : 1 L
Excepted quantities (IMDG) : E2
Packing instructions (IMDG) : P001
IBC packing instructions (IMDG) : IBC02
Tank instructions (IMDG) : T4
Tank special provisions (IMDG) : TP1

EmS-No. (Fire) : F-E - FIRE SCHEDULE Echo - NON-WATER-REACTIVE FLAMMABLE LIQUIDS

EmS-No. (Spillage) : S-D - SPILLAGE SCHEDULE Delta - FLAMMABLE LIQUIDS

Stowage category (IMDG) : A Flash point (IMDG) : '

Properties and observations (IMDG) : Colourless, volatile liquids.Pure ETHANOL: flashpoint 13°C c.c. Explosive limits: 3.3% to

19% Miscible with water.

MFAG-No : 127

IATA

PCA Excepted quantities (IATA) : E2
PCA Limited quantities (IATA) : Y341
PCA limited quantity max net quantity (IATA) : 1L
PCA packing instructions (IATA) : 353
PCA max net quantity (IATA) : 5L
CAO packing instructions (IATA) : 364
CAO max net quantity (IATA) : 60L

Special provision (IATA) : A3, A58, A180

ERG code (IATA) : 3L

14.7. 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-D6 (D, 99%) ANHYDROUS (64-17-5)	
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 Delayed (chronic) health hazard

Commercial status of components according to the United States Environmental Protection Agency's Toxic Substances Control Act (TSCA):

Name	CAS-No.	Listing	Commercial status	Flags
ETHANOL-D6 (D, 99%) ANHYDROUS	64-17-5	Present	Active	

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15.2. International regulations

CANADA

ETHANOL-D6 (D, 99%) ANHYDROUS (64-17-5)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

ETHANOL-D6 (D, 99%) ANHYDROUS (64-17-5)

Listed on IARC (International Agency for Research on Cancer)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Listed on TECI (Thailand Existing Chemicals Inventory)

15.3. US State regulations

ETHANOL-D6 (D, 99%) ANHYDROUS (64-17-5)

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 H-phra	Full text of H-phrases	
H225	Highly flammable liquid and vapor	
H315	Causes skin irritation	
H319	Causes serious eye irritation	
H335	May cause respiratory irritation	

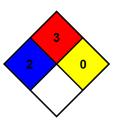
NFPA health hazard : 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

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

be ignited under almost all ambient temperature conditions.

: 0 - Material that in themselves are normally stable, even under fire

conditions.



Hazard Rating

NFPA reactivity

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

Flammability : 3 Serious Hazard - Materials capable of ignition under almost all normal temperature conditions.

Includes flammable liquids with flash points below 73 F and boiling points above 100 F. as well

as liquids with flash points between 73 F and 100 F. (Classes IB IC)

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Physical

: 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

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