



DEUTERIUM (D, 99.8%) (D2,99.6%+HD,0.4%)

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 10/03/2016

Revision date:

Version: 1.0

DLM-408DR

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

1.1. Product identifier

Product form : Substance
Substance name : DEUTERIUM (D, 99.8%) (D2,99.6%+HD,0.4%)
EC index no : 001-001-00-9 (Unlabeled)
EC no : 215-605-7 (Unlabeled)
CAS No : 7782-39-0
Product code : DLM-408DR
Formula : D2

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

1.2.1. Relevant identified uses

No additional information available

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. Gas 1 H220
Compressed gas H280

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

F+; R12
R5

Full text of R-phrases: see section 16

Classification (GHS-US)

Flam. Gas 1 H220
Liquefied gas H280

Adverse physicochemical, human health and environmental effects

No additional information available

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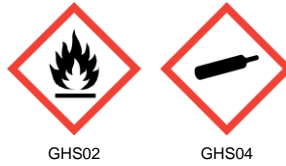
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2.2. Label elements

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

Hazard pictograms (CLP) :



Signal word (CLP) :

Danger

Hazard statements (CLP) :

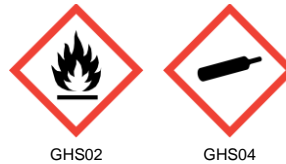
H220 - Extremely flammable gas
H280 - Contains gas under pressure; may explode if heated

Precautionary statements (CLP) :

P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely
P381 - In case of leaking gas fire, eliminate all ignition sources if safe to do so
P410+P403 - Protect from sunlight. Store in a well-ventilated place

GHS-US labeling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

H220 - Extremely flammable gas
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2.3. 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
DEUTERIUM (D, 99.8%) (D2,99.6%+HD,0.4%) (Main constituent)	(CAS No) 7782-39-0 (EC no) 215-605-7 (Unlabeled) (EC index no) 001-001-00-9 (Unlabeled)	100	F+; R12 R5
Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
DEUTERIUM (D, 99.8%) (D2,99.6%+HD,0.4%) (Main constituent)	(CAS No) 7782-39-0 (EC no) 215-605-7 (Unlabeled) (EC index no) 001-001-00-9 (Unlabeled)	100	Flam. Gas 1, H220 Compressed gas, H280

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

Name	Product identifier	%	Classification (GHS-US)
DEUTERIUM (D, 99.8%) (D2,99.6%+HD,0.4%) (Main constituent)	(CAS No) 7782-39-0	100	Flam. Gas 1, H220 Liquefied gas, H280

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 :

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

First-aid measures after inhalation :

If breathed in, move person to fresh air. If not breathing, give artificial respiration. Consult a physician.

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First-aid measures after skin contact	: Wash off with soap and plenty of water. Consult a physician.
First-aid measures after eye contact	: Flush eyes with water as a precaution.
First-aid measures after ingestion	: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation	: May be harmful if inhaled. May cause respiratory tract irritation.
Symptoms/injuries after skin contact	: May be harmful if absorbed through skin. May cause skin irritation.
Symptoms/injuries after eye contact	: May cause eye irritation.
Symptoms/injuries after ingestion	: May be 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 : Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Reactivity : Not available.

5.3. Advice for firefighters

Firefighting instructions	: Wear self contained breathing apparatus for fire fighting if necessary.
Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	: Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3. Methods and material for containment and cleaning up

No additional information available

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	: Normal measures for preventive fire protection.
Precautions for safe handling	: Avoid breathing dust, mist or spray. Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge.
Hygiene measures	: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

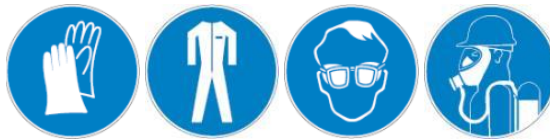
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8.2. Exposure controls

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



Hand protection : Wear suitable protective clothing and gloves.

Eye protection : Wear safety glasses with side shields (or goggles) and a face shield.

Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection : When appropriate, use NIOSH/CEN approved respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Compressed Gas.
Molecular mass	: 4.03 g/mol (Labeled)
Color	: Colourless.
Odor	: No data available
Odor threshold	: No data available
pH	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: -259.2 °C (-434.6 °F) - lit
Freezing point	: No data available
Boiling point	: -252.8 °C (-423.0 °F) - lit
Flash point	: < -149.99 °C (< -237.98 °F) - closed cup
Self ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: No data available
Relative vapor density at 20 °C	: 0.08
Relative density	: No data available
Solubility	: Water: 0.00196 g/l at 0 °C (32 °F)
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
Explosive limits	: 4 - 74.2 % (V)

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Not available.

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, flames and sparks.

10.5. Incompatible materials

Oxidizing agents.

10.6. Hazardous decomposition products

No additional information available

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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified No data available
Serious eye damage/irritation	: Not classified No data available
Respiratory or skin sensitization	: Not available No data available
Germ cell mutagenicity	: Not available
Carcinogenicity	: Not classified
Reproductive toxicity	: Not available
Specific target organ toxicity (single exposure)	: Not classified No data available
Specific target organ toxicity (repeated exposure)	: Not classified No data available
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: The chemical, physical, and toxicological properties have not been thoroughly investigated.
Symptoms/injuries after inhalation	: May be harmful if inhaled. May cause respiratory tract irritation.
Symptoms/injuries after skin contact	: May be harmful if absorbed through skin. May cause skin irritation.
Symptoms/injuries after eye contact	: May cause eye irritation.
Symptoms/injuries after ingestion	: May be harmful if swallowed.

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

DEUTERIUM (D, 99.8%) (D2,99.6%+HD,0.4%) (7782-39-0)

Persistence and degradability	Not available.
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12.3. Bioaccumulative potential

DEUTERIUM (D, 99.8%) (D2,99.6%+HD,0.4%) (7782-39-0)

Bioaccumulative potential	Not available.
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12.4. Mobility in soil

DEUTERIUM (D, 99.8%) (D2,99.6%+HD,0.4%) (7782-39-0)

Ecology - soil	Not available.
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12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

Other adverse effects : Not available.

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.
Waste 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 / ADNR / IMDG / ICAO / IATA

14.1. UN number

UN-No.(DOT)	: 1957
DOT NA no.	UN1957

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14.2. UN proper shipping name

DOT Proper Shipping Name : Deuterium, compressed
Department of Transportation (DOT) Hazard Classes : 2.1 - Class 2.1 - Flammable gas 49 CFR 173.115
Hazard labels (DOT) : 2.1 - Flammable gas



DOT Special Provisions (49 CFR 172.102) : N89 - When steel UN pressure receptacles are used, only those bearing the "H" mark are authorized.
DOT Packaging Exceptions (49 CFR 173.xxx) : 306
DOT Packaging Non Bulk (49 CFR 173.xxx) : 302
DOT Packaging Bulk (49 CFR 173.xxx) : None
Marine pollutant : No

14.3. Additional information

Other information : No supplementary information available.
Special transport precautions : IATA Passenger: Not permitted for transport.

Overland transport

Class (ADR) : 2 - Gases
Hazard identification number (Kemler No.) : 23
Classification code (ADR) : 1F
Danger labels (ADR) : 2.1 - Flammable gases



Orange plates : An orange rectangular label with a black border. It is divided into two horizontal sections. The top section contains the number '23' and the bottom section contains the number '1957'.

Tunnel restriction code : B/D
Limited quantities (ADR) : 0
EAC : 2SE
Excepted quantities (ADR) : E0

Transport by sea

DOT Vessel Stowage Location : E - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length, but is prohibited from carriage on passenger vessels in which the limiting number of passengers is exceeded.
DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"
MFAG-No : 115

Air transport

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : Forbidden
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 150 kg
Civil Aeronautics Law : Gases under pressure/Gases flammable under pressure

14.4. Environmental hazards

Other information : No supplementary information available.

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14.5. Special precautions for user

Special transport precautions : IATA Passenger: Not permitted for transport.

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

DEUTERIUM (D, 99.8%) (D2,99.6%+HD,0.4%) (7782-39-0)

SARA Section 311/312 Hazard Classes	Fire hazard Sudden release of pressure hazard
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15.2. International regulations

CANADA

DEUTERIUM (D, 99.8%) (D2,99.6%+HD,0.4%) (7782-39-0)

Listed on the Canadian DSL (Domestic Substances List) inventory.

15.2.1. National regulations

No additional information available

15.3. US State regulations

DEUTERIUM (D, 99.8%) (D2,99.6%+HD,0.4%)(7782-39-0)

State or local regulations	U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
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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.

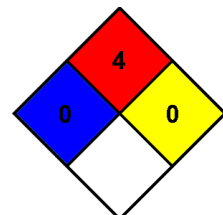
Full text of R-, H- and EUH-phrases::

Compressed gas	Gases under pressure Compressed gas
Flam. Gas 1	Flammable gases Category 1
H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated
R12	Extremely flammable
R5	Heating may cause an explosion
F+	Extremely flammable

NFPA health hazard : 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.

NFPA fire hazard : 4 - Will rapidly or completely vaporize at normal pressure and temperature, or is readily dispersed in air and will burn readily.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 0 Minimal Hazard - No significant risk to health

Flammability : 4 Severe Hazard

Physical : 0 Minimal Hazard

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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