



# DEUTERIUM CHLORIDE (D, 99%)

## 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: 13/12/2010

Revision date: 15/06/2016

Supersedes: 05/09/2012

Version: 11.0

**DLM-458DR**

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

#### 1.1. Product identifier

Product form : Substance  
Substance name : DEUTERIUM CHLORIDE (D, 99%)  
EC index no : 017-002-00-2 (Unlabeled)  
EC no : 231-595-7 (Unlabeled)  
CAS No : 7698-05-7  
REACH registration No : 01-2119484862-27  
Product code : DLM-458DR  
Formula : DCI  
Synonyms : HCl

#### 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](mailto:cilsales@isotope.com) [www.isotope.com](http://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]

Compressed gas H280  
Acute Tox. 3 (Inhalation:gas) H331  
Skin Corr. 1A H314  
Eye Dam. 1 H318  
STOT SE 3 H335

Full text of H-phrases: see section 16

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

R5  
C; R35  
Xi; R41  
T; R23  
Xi; R37

Full text of R-phrases: see section 16

##### Classification (GHS-US)

Compressed gas H280  
Acute Tox. 3 (Inhalation) H331  
Skin Corr. 1A H314  
Eye Dam. 1 H318  
STOT SE 3 H335

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### Adverse physicochemical, human health and environmental effects

No additional information available

## 2.2. Label elements

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

Hazard pictograms (CLP) :



Signal word (CLP) :

Danger

Hazard statements (CLP) :

H280 - Contains gas under pressure; may explode if heated  
H314 - Causes severe skin burns and eye damage  
H331 - Toxic if inhaled  
H335 - May cause respiratory irritation  
H318 - Causes serious eye damage

Precautionary statements (CLP) :

P260 - Do not breathe dust, fume, mist, gas, spray, vapors  
P264 - Wash Both hands thoroughly after handling  
P271 - Use only outdoors or in a well-ventilated area  
P280 - Wear protective clothing, protective gloves  
P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting  
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

### GHS-US labeling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

H280 - Contains gas under pressure; may explode if heated  
H314 - Causes severe skin burns and eye damage  
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P280 - Wear protective clothing, protective gloves  
P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting  
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower  
P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position 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 POISON CENTER or doctor/physician  
P311 - Call a POISON CENTER or doctor/physician  
P312 - Call a POISON CENTER/doctor/physician if you feel unwell  
P321 - Specific treatment (see Hazard pictograms (CLP) on this label)  
P363 - Wash contaminated clothing before reuse  
P403+P233 - Store in a well-ventilated place. Keep container tightly closed  
P405 - Store locked up  
P410+P403 - Protect from sunlight. Store in a well-ventilated place  
P501 - Dispose of contents/container to Comply with applicable regulations.

## 2.3. Other hazards

No additional information available

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### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

Name	Product identifier	%	Classification according to Directive 67/548/EEC
DEUTERIUM CHLORIDE (D, 99%) (Main constituent)	(CAS No) 7698-05-7 (EC no) 231-595-7 (Unlabeled) (EC index no) 017-002-00-2 (Unlabeled) (REACH-no) 01-2119484862-27	100	R5 C; R35 Xi; R41 T; R23 Xi; R37
Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
DEUTERIUM CHLORIDE (D, 99%) (Main constituent)	(CAS No) 7698-05-7 (EC no) 231-595-7 (Unlabeled) (EC index no) 017-002-00-2 (Unlabeled) (REACH-no) 01-2119484862-27	100	Compressed gas, H280 Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1A, H314 Eye Dam. 1, H318 STOT SE 3, H335

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

Name	Product identifier	%	Classification (GHS-US)
DEUTERIUM CHLORIDE (D, 99%) (Main constituent)	(CAS No) 7698-05-7	100	Compressed gas, H280 Acute Tox. 3 (Inhalation), H331 Skin Corr. 1A, H314 Eye Dam. 1, H318 STOT SE 3, H335

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	: Move out of dangerous area. Consult a physician and show this safety data sheet.
First-aid measures after inhalation	: If breathed in, move person to fresh air. If not breathing, give artificial respiration. Consult a physician.
First-aid measures after skin contact	: Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
First-aid measures after eye contact	: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.
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	: Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Symptoms/injuries after skin contact	: May be harmful if absorbed through the skin. Causes skin burns.
Symptoms/injuries after eye contact	: Causes severe eye burns.
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

No additional information available

#### 5.3. Advice for firefighters

Firefighting instructions	: Wear self contained breathing apparatus for fire fighting if necessary.
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

##### 6.1.1. For non-emergency personnel

Emergency procedures : Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe 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

Methods for cleaning up : Clean up promptly by sweeping or vacuum.

#### 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 contact with skin and eyes. Avoid inhalation of vapor or mist.  
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 cool, 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

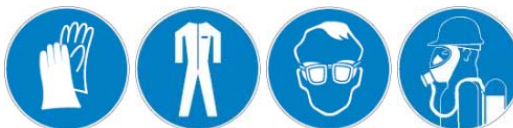
### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

DEUTERIUM CHLORIDE (D, 99%) (7698-05-7)		
Italy - Portugal - USA ACGIH	ACGIH Ceiling (ppm)	2 ppm Upper Respiratory Tract Irritation. Not classifiable as a human carcinogen.
USA NIOSH	NIOSH REL (ceiling) (mg/m3)	7 mg/m <sup>3</sup> Often used in aqueous solution.
USA NIOSH	NIOSH REL (ceiling) (ppm)	5 ppm Often used in aqueous solution.
USA NIOSH	Remark (US NIOSH)	Often used in an aqueous solution.
USA OSHA	OSHA PEL (Ceiling) (mg/m3)	7 mg/m <sup>3</sup> The value in mg/m3 is approximate. Ceiling limit is to be determined from breathing-zone air samples.
USA OSHA	OSHA PEL (Ceiling) (ppm)	5 ppm Ceiling limit is to be determined from breathing-zone air samples.
USA OSHA	Remark (US OSHA)	PEL 0.3 ppm / 0.45 mg/m3 - California permissible exposure limits for chemical contaminants. C 2 ppm - California permissible exposure limits for chemical contaminants.

#### 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

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Appearance	: Compressed Gas.
Molecular mass	: 37.47 g/mol (Labeled)
Color	: Colorless.
Odor	: No data available.
Odor threshold	: No data available
pH	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: -114 °C (-173 °F) - lit.
Freezing point	: No data available
Boiling point	: -85 °C (-121 °F) - lit.
Flash point	: No data available
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	: No data available
Relative density	: No data available
Relative gas density	: 1.2 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
Explosive 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

Stable if stored under recommended conditions.

### 10.3. Possibility of hazardous reactions

No additional information available

### 10.4. Conditions to avoid

No additional information available

### 10.5. Incompatible materials

No additional information available

### 10.6. Hazardous decomposition products

Hydrogen chloride gas.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Toxic if inhaled.

DEUTERIUM CHLORIDE (D, 99%) (7698-05-7)	
LD50 oral	900 mg/kg Rabbit
LC50 inhalation rat (ppm)	1562 ppm/4h
ATE (gases)	1562.000 ppmV/4h

Skin corrosion/irritation	: Extremely corrosive and destructive to tissue. No data available
Serious eye damage/irritation	: Causes serious eye damage. No data available
Respiratory or skin sensitization	: Not available No data available

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Germ cell mutagenicity	: Not available
Carcinogenicity	: Not classified
Reproductive toxicity	: Not available
Specific target organ toxicity (single exposure)	: May cause respiratory irritation. 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	: Burning sensation. Cough. Laryngitis. Shortness of breath. Spasm, inflammation and edema of the larynx. Spasm, inflammation, and edema of the bronchi. Pulmonary edema. Pneumonitis. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Symptoms/injuries after inhalation	: Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Symptoms/injuries after skin contact	: May be harmful if absorbed through the skin. Causes skin burns.
Symptoms/injuries after eye contact	: Causes severe eye burns.
Symptoms/injuries after ingestion	: May be harmful if swallowed.

## SECTION 12: Ecological information

### 12.1. Toxicity

<b>DEUTERIUM CHLORIDE (D, 99%) (7698-05-7)</b>	
LC50 fish 1	282 mg/l <i>Gambusia affinis</i> (Mosquito fish) - 96 h

### 12.2. Persistence and degradability

<b>DEUTERIUM CHLORIDE (D, 99%) (7698-05-7)</b>	
Persistence and degradability	Not available.

### 12.3. Bioaccumulative potential

<b>DEUTERIUM CHLORIDE (D, 99%) (7698-05-7)</b>	
Bioaccumulative potential	Not available.

### 12.4. Mobility in soil

<b>DEUTERIUM CHLORIDE (D, 99%) (7698-05-7)</b>	
Ecology - soil	Not available.

### 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 / ADN / IMDG / ICAO / IATA

### 14.1. UN number

UN-No.(DOT)	: 1050
DOT NA no.	UN1050

### 14.2. UN proper shipping name

DOT Proper Shipping Name	: Hydrogen chloride, anhydrous
Department of Transportation (DOT) Hazard Classes	: 2.3 - Class 2.3 - Poisonous gas 49 CFR 173.115

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Hazard labels (DOT) : 2.3 - Poison gas  
8 - Corrosive



DOT Special Provisions (49 CFR 172.102) : 3 - This material is poisonous by inhalation (see 171.8 of this subchapter) in Hazard Zone C (see 173.116(a) of this subchapter), and must be described as an inhalation hazard under the provisions of this subchapter.  
N86 - UN pressure receptacles made of aluminum alloy are not authorized.  
N89 - When steel UN pressure receptacles are used, only those bearing the "H" mark are authorized.

DOT Packaging Exceptions (49 CFR 173.xxx) : None  
DOT Packaging Non Bulk (49 CFR 173.xxx) : 304  
DOT Packaging Bulk (49 CFR 173.xxx) : None  
DOT RQ : 5000 lbs  
Marine pollutant : No

### 14.3. Additional information

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

#### Overland transport

Class (ADR) : 2 - Gases  
Hazard identification number (Kemler No.) : 268  
Classification code (ADR) : 2TC  
Danger labels (ADR) : 2.3 - Toxic gases  
8 - Corrosive substances



Orange plates : 

Tunnel restriction code : C/D  
Limited quantities (ADR) : 0  
EAC : 2RE  
APP : A(c)  
Excepted quantities (ADR) : E0

#### Transport by sea

DOT Vessel Stowage Location : D - The material must be stowed "on deck only" 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 the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded.  
DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"  
MFAG-No : 125

#### Air transport

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : Forbidden  
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : Forbidden  
Civil Aeronautics Law : Gases under pressure/Gases toxic 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/Cargo: 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 CHLORIDE (D, 99%) (7698-05-7)

Listed on SARA Section 302 (Specific toxic chemical listings)

Listed on SARA Section 313 (Specific toxic chemical listings)

SARA Section 311/312 Hazard Classes

Sudden release of pressure hazard

### 15.2. International regulations

#### CANADA

No additional information available

#### 15.2.1. National regulations

No additional information available

### 15.3. US State regulations

#### DEUTERIUM CHLORIDE (D, 99%)(7698-05-7)

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.

## 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. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Compressed gas	Gases under pressure Compressed gas
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Skin Corr. 1A	skin corrosion/irritation Category 1A
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H280	Contains gas under pressure; may explode if heated
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H331	Toxic if inhaled
H335	May cause respiratory irritation
R23	Toxic by inhalation
R35	Causes severe burns
R37	Irritating to respiratory system
R41	Risk of serious damage to eyes
R5	Heating may cause an explosion
C	Corrosive
T	Toxic
Xi	Irritant

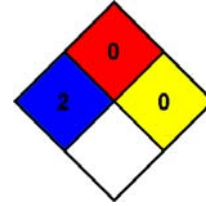


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- NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.
- NFPA fire hazard : 0 - Materials that will not burn.
- NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



### HMIS III Rating

- Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given
- Flammability : 1 Slight Hazard
- Physical : 1 Slight 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*