

Safety Data Sheet

Deuterium chloride 20%w in D2O

Classification acc. to 29 CFR 1910.1200

Version number: GHS 4.0
Replaces version of: 2023-02-06 (GHS 3)

Revision: 2025-06-10

SECTION 1: Identification

1.1 Product identifier

Identification of the substance

Deuterium chloride 20%w in D2O

CAS number

7698-05-7

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

Relevant identified uses

the product is intended for research, analysis and scientific education
scientific research and development
product and process oriented research and development
laboratory and analytical use
laboratory chemical

1.3 Details of the supplier of the safety data sheet

Zeochem AG
Joweid 5, CH-8630 Rüti
Switzerland

Telephone: +41 44 922 93 93
e-Mail: info@zeochem.com
Website: <https://www.zeochem.com>

1.4 Emergency telephone number

Poison center		
Country	Name	Telephone
Switzerland	Toxzentrum Zürich / Tox. Info Suisse	+41 44 251 51 51 / CH: 145 - 24h/7d
United States	CHEMTREC USA	+1 800 424 9300 - 24h/7d

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

This substance does not meet the criteria for classification.

2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

not required

2.3 Other hazards

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) in a concentration of $\geq 0.1\%$.

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SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance	Deuterium chloride 20%w in D2O
Identifiers	
CAS No	7698-05-7
Purity	≥20 %

Impurities and additives, classification acc. to GHS

Name of substance	CAS No	Wt%	Classification acc. to GHS
Deuterium oxide	7789-20-0	80	

Molecular formula	Cl D
Molar mass	37.5 g/mol

Remarks

For full text of abbreviations: see SECTION 16

SECTION 4: First-aid measures

4.1 Description of first-aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. Provide fresh air.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects are not known to date.

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

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Water spray, BC-powder, Carbon dioxide (CO2)

Unsuitable extinguishing media

Water jet

5.2 Special hazards arising from the substance or mixture

Information on this property is not available.

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Coordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety.

For emergency responders

Wear breathing apparatus if exposed to vapors/dust/aerosols/gases.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains

Advice on how to clean up a spill

Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage: sawdust, kieselgur (diatomite), sand, universal binder

Appropriate containment techniques

Use of adsorbent materials.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations

Store in a dry place.

- Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Use only in well-ventilated areas.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

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7.2 Conditions for safe storage, including any incompatibilities

- Specific designs for storage rooms or vessels
- Storage temperature
Recommended storage temperature: 16 – 22 °C
15 °C
- Packaging compatibilities
Only packagings which are approved (e.g. acc. to the Dangerous Goods Regulations) may be used.

7.3 Specific end use(s)

See section 16 for a general overview.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)
this information is not available

Human health values

Relevant DNELs and other threshold levels				
Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	8 mg/m ³	human, inhalatory	worker (industry)	chronic - local effects
DNEL	15 mg/m ³	human, inhalatory	worker (industry)	acute - local effects

8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Skin protection

- Hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

- Type of material

Nitrile

IIR: isobutene-isoprene (butyl) rubber

- Breakthrough times of the glove material

>30 minutes (permeation: level 2)

- Other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

Respiratory protection

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In case of inadequate ventilation wear respiratory protection.

Environmental exposure controls

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	liquid
Color	clear
Particle	not relevant (liquid)
Odor	pungent

Other safety parameters

pH (value)	not determined
Melting point/freezing point	3.81 °C
Initial boiling point and boiling range	101 °C
Flash point	not determined
Evaporation rate	not determined
Flammability (solid, gas)	not relevant, (fluid)
Vapor pressure	20.6 mmHg at 25 °C
Density	1.2 g/cm³
Vapor density	this information is not available
Solubility(ies)	not determined

Partition coefficient

- n-octanol/water (log KOW)	this information is not available
Auto-ignition temperature	not determined
Viscosity	not determined
Explosive properties	none
Oxidizing properties	none
9.2 Other information	there is no additional information

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SECTION 10: Stability and reactivity

10.1 Reactivity

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials".

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

There are no specific conditions known which have to be avoided.

10.5 Incompatible materials

There is no additional information.

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

This substance does not meet the criteria for classification.

Acute toxicity

Shall not be classified as acutely toxic.

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant.

Respiratory or skin sensitization

Shall not be classified as a respiratory or skin sensitizer.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans			
Name of substance	CAS No	Classification	Number
Deuterium chloride 20%w in D2O	7647-01-0	3	

Legend

3 Not classifiable as to carcinogenicity in humans

Reproductive toxicity

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- Shall not be classified as a reproductive toxicant.
- Specific target organ toxicity - single exposure
 - Shall not be classified as a specific target organ toxicant (single exposure).
- Specific target organ toxicity - repeated exposure
 - Shall not be classified as a specific target organ toxicant (repeated exposure).
- Aspiration hazard
 - Shall not be classified as presenting an aspiration hazard.

SECTION 12: Ecological information

- 12.1 Toxicity**
 - Shall not be classified as hazardous to the aquatic environment.
- 12.2 Persistence and degradability**
 - Data are not available.
- 12.3 Bioaccumulative potential**
 - Data are not available.
- 12.4 Mobility in soil**
 - Data are not available.
- 12.5 Results of PBT and vPvB assessment**
 - According to the results of its assessment, this substance is not a PBT or a vPvB.
- 12.6 Endocrine disrupting properties**
 - Does not contain an endocrine disruptor (ED) in a concentration of $\geq 0.1\%$.
- 12.7 Other adverse effects**
 - Data are not available.

SECTION 13: Disposal considerations

- 13.1 Waste treatment methods**
 - Waste treatment-relevant information
 - Recycling/reclamation of other inorganic materials.
 - Sewage disposal-relevant information
 - Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.
 - Waste treatment of containers/packages
 - Only packagings which are approved (e.g. acc. to DOT) may be used. Completely emptied packages can be recycled.
 - Handle contaminated packages in the same way as the substance itself.
 - Remarks**
 - Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: Transport information

- 14.1 UN number**
 - DOT
 - UN 1789

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IMDG-Code	UN 1789
ICAO-TI	UN 1789
14.2 UN proper shipping name	
DOT	Hydrochloric acid
IMDG-Code	HYDROCHLORIC ACID
ICAO-TI	Hydrochloric acid
14.3 Transport hazard class(es)	
DOT	8
IMDG-Code	8
ICAO-TI	8
14.4 Packing group	
DOT	II
IMDG-Code	II
ICAO-TI	II
14.5 Environmental hazards	non-environmentally hazardous acc. to the dangerous goods regulations
14.6 Special precautions for user	
There is no additional information.	
14.7 Transport in bulk according to IMO instruments	
The cargo is not intended to be carried in bulk.	

Information for each of the UN Model Regulations

Transport of dangerous goods by road or rail (49 CFR US DOT) - Additional information

Particulars in the shipper's declaration	UN1789, Hydrochloric acid, 8, II
Danger label(s)	8



Special provisions (SP)	386, A3, B3, B15, B133, IB2, N41, T8, TP2
ERG No	157

International Maritime Dangerous Goods Code (IMDG) - Additional information

Marine pollutant	-
Danger label(s)	8



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Excepted quantities (EQ)	E2
Limited quantities (LQ)	1 L
EmS	F-A, S-B
Stowage category	C
Segregation group	1 - Acids

International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Danger label(s)	8
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Special provisions (SP)	A3
Excepted quantities (EQ)	E2
Limited quantities (LQ)	0,5 L

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

National regulations (United States)

Toxic Substance Control Act (TSCA) substance is listed (ACTIVE)

Superfund Amendment and Reauthorization Act (SARA TITLE III)

- The List of Extremely Hazardous Substances and Their Threshold Planning Quantities (EPCRA Section 302, 304)

not listed

- Specific Toxic Chemical Listings (EPCRA Section 313)

not listed

Toxics Release Inventory: Specific Toxic Chemical Listings

Name of substance	CAS No	Remarks	Effective date
Deuterium chloride 20%w in D2O	7647-01-0	acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size	1987-01-01

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

- List of Hazardous Substances and Reportable Quantities (CERCLA section 102a) (40 CFR 302.4)

not listed

Clean Air Act

not listed

Right to Know Hazardous Substance List

- Cleaning Product Right to Know Act Substance List (CA-RTK)

not listed

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Name of substance	CAS No	Functionality	Authoritative Lists
Deuterium chloride 20%w in D2O	7647-01-0		CA TACs OEHA RELs

- Toxic or Hazardous Substance List (MA-TURA)
not listed

Name of substance	CAS No	DEP CODE	PBT / HHS / LHS	PBT / HHS Threshold	De Minimis Concentration Threshold
Deuterium chloride 20%w in D2O	7647-01-0				1.0 %

- Hazardous Substances List (MN-ERTK)
not listed

Name of substance	CAS No	References	Remarks
Deuterium chloride 20%w in D2O	7647-01-0	A, O	

Legend

- A American Conference of Governmental Industrial Hygienists (ACGIH), "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 1992-93", available from ACGIH
O Occupational Safety and Health Administration (OSHA), Safety and Health Standards, Code of Federal Regulations, title 29, part 1910, subpart Z, "Toxic and Hazardous Substances, 1990." General information: Minnesota Department of Labor and Industry, Occupational Safety and Health Division

- Hazardous Substance List (NJ-RTK)
not listed

Name of substance	CAS No	Remarks	Classifications
Deuterium chloride 20%w in D2O	7647-01-0		CO R1

Legend

- CO Corrosive
R1 Reactive - First Degree

- Hazardous Substance List (Chapter 323) (PA-RTK)
not listed

Name acc. to inventory	CAS No	Classification
HYDROCHLORIC ACID	7647-01-0	E

Legend

- E Environmental hazard

- Hazardous Substance List (RI-RTK)
not listed

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Name of substance	CAS No	References
Deuterium chloride 20%w in D2O	7647-01-0	T, F
Deuterium chloride 20%w in D2O	7647-01-0	T, F
Deuterium chloride 20%w in D2O	7647-01-0	T, F

Legend

F Flammability (NFPA®)
T Toxicity (ACGIH®)

California Environmental Protection Agency (Cal/EPA): Proposition 65 - Safe Drinking Water and Toxic Enforcement Act of 1987

not listed

Industry or sector specific available guidance(s)

NPCA-HMIS® III

Hazardous Materials Identification System. American Coatings Association.

Category	Rating	Description
Chronic	/	none
Health	0	no significant risk to health
Flammability	0	material that will not burn under typical fire conditions
Physical hazard	0	material that is normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosive
Personal protection	-	

NFPA® 704

National Fire Protection Association: Standard System for the Identification of the Hazards of Materials for Emergency Response (United States).

Category	Degree of hazard	Description
Flammability	0	material that will not burn under typical fire conditions
Health	0	material that, under emergency conditions, would offer no hazard beyond that of ordinary combustible material
Instability	0	material that is normally stable, even under fire conditions
Special hazard		

National inventories

Country	Inventory	Status
EU	REACH Reg.	all ingredients are listed
US	TSCA	all ingredients are listed (ACTIVE)

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Legend

REACH Reg. REACH registered substances
TSCA Toxic Substance Control Act

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information, including date of preparation or last revision

Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
1.3	Details of the supplier of the safety data sheet: Zeochem AG Joweid 5, CH-8630 Rüti Switzerland Telephone: +41 44 922 93 93 e-Mail: info@zeochem.com / info@zeochem.ch Website: https://www.zeochem.com	Details of the supplier of the safety data sheet: Zeochem AG Joweid 5, CH-8630 Rüti Switzerland Telephone: +41 44 922 93 93 e-Mail: info@zeochem.com Website: https://www.zeochem.com	yes
2.3	Endocrine disrupting properties: Does not contain an endocrine disruptor (EDC) in a concentration of $\geq 0,1\%$.	Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) in a concentration of $\geq 0.1\%$.	yes
3.1	Molar mass: 37.5 g/mol For full text of abbreviations: see SECTION 16.	Molar mass: 37.5 g/mol	yes
3.1		Remarks: For full text of abbreviations: see SECTION 16	yes
5.2	Special hazards arising from the substance or mixture	Special hazards arising from the substance or mixture: Information on this property is not available.	yes
7.2		- Specific designs for storage rooms or vessels	yes
7.2		Storage temperature: Recommended storage temperature: 16 – 22 °C 15 °C	yes
12.6	Endocrine disrupting properties: Does not contain an endocrine disruptor (EDC) in a concentration of $\geq 0,1\%$.	Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) in a concentration of $\geq 0.1\%$.	yes
15.1	Toxic Substance Control Act (TSCA): substance is listed as "ACTIVE"	Toxic Substance Control Act (TSCA): substance is listed (ACTIVE)	yes
15.1		Toxics Release Inventory: Specific Toxic Chemical Listings: change in the listing (table)	yes
15.1		Hazardous Substance List (RI-RTK): change in the listing (table)	yes
15.1		National inventories: change in the listing (table)	yes

Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200.

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Transport of dangerous goods by road or rail (49 CFR US DOT). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.