

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/26/2009

Reviewed on 05/26/2009

1 Identification of substance:

Product details:

Product name: Deuterium

Stock number: 42942

Manufacturer/Supplier:

Alfa Aesar, A Johnson Matthey Company
Johnson Matthey Catalog Company, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Emergency Phone: (978) 521-6300
CHEMTREC: (800) 424-9300
Web Site: www.alfa.com

Information Department: Health, Safety and Environmental Department

Emergency information:

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

2 Composition/Data on components:

Chemical characterization:

Description: (CAS#)

Deuterium (CAS# 7782-39-0), 100%

Identification number(s):

EINECS Number: 231-952-7

Index number: 001-001-00-9

3 Hazards identification

Hazard description:



F+ Extremely flammable

Information pertaining to particular dangers for man and environment

R 12 Extremely flammable.

Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH	0
FIRE	4
REACTIVITY	0

Health (acute effects) = 0

Flammability = 4

Reactivity = 0

GHS label elements



Danger

2.2/1 - Extremely flammable gas.



Warning

2.5/C - Contains gas under pressure; may explode if heated.

Prevention:

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Response:

Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

Eliminate all ignition sources if safe to do so.

Storage:

Store in a well-ventilated place.

Protect from sunlight. Store in a well-ventilated place.

4 First aid measures

After inhalation Supply fresh air; consult doctor in case of complaints.

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5 Fire fighting measures**Suitable extinguishing agents**

Stop flow of gas. Do not extinguish fire unless flow of gas can be stopped. Use water spray to keep container cool.

Special hazards caused by the material, its products of combustion or resulting gases:

Danger of containers bursting upon heating.

Can form explosive gas-air mixtures.

Protective equipment: Wear self-contained respirator.

6 Accidental release measures

Person-related safety precautions: Keep away from ignition sources

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Ensure adequate ventilation.

Keep away from ignition sources.

Additional information:

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage**Handling****Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Keep away from heat and direct sunlight.

Ensure good ventilation at the workplace.

Open and handle container with care.

Information about protection against explosions and fires:

Keep ignition sources away.

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

Storage

Requirements to be met by storerooms and receptacles: Store in a cool location.

Information about storage in one common storage facility:

Store away from oxidizing agents.

Store away from halogens.

Further information about storage conditions: Protect from heat and direct sunlight.

Maximum storage temperature: 52°C

8 Exposure controls and personal protection

Components with limit values that require monitoring at the workplace: Not required.

Additional information: No data

Personal protective equipment**General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Breathing equipment:

Use suitable respiratory protective device in case of insufficient ventilation.

Eye protection: Safety glasses

Body protection: Protective work clothing.

9 Physical and chemical properties:**General Information**

Form:	Gaseous
Color:	Colorless
Odor:	Odorless

Change in condition

Melting point/Melting range:	-254.6°C (-426°F)
Boiling point/Boiling range:	-249.7°C (-417°F)
Sublimation temperature / start:	Not determined

Flammability (solid, gaseous)	Extremely flammable
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Ignition temperature:	585°C (1085°F)
Decomposition temperature:	Not determined
Explosion limits:	
Lower:	5 Vol %
Upper:	75 Vol %
Vapor pressure:	Not determined
Density at 20°C (68°F):	0.18 g/cm ³
Solubility in / Miscibility with Water:	Slightly soluble

10 Stability and reactivity**Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

Materials to be avoided:

Oxidizing agents

Halogens

Interhalogens

Alkali metals

Alkaline earth metals

Metal powders

Dangerous reactions

Reacts violently with interhalogens.

Reacts with alkali metals.

Reacts with alkaline earth metals.

Reacts with oxidizing agents

Dangerous products of decomposition: None known.**11 Toxicological information****Acute toxicity:****Primary irritant effect:****on the skin:** Generally the product does not irritate the skin.**on the eye:** No irritating effect.**Sensitization:** No sensitizing effects known.**Subacute to chronic toxicity:**

Deuterium acts as an asphyxiant, displacing air. Exposure can cause nausea, headache and vomiting.

Additional toxicological information:

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

12 Ecological information:**General notes:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations**Product:****Recommendation** Consult state, local or national regulations to ensure proper disposal.**Uncleaned packagings:****Recommendation:** Disposal must be made according to official regulations.

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14 Transport information

DOT regulations:



Hazard class: 2.1
Identification number: UN1957
Proper shipping name (technical name): DEUTERIUM, COMPRESSED
Label 2.1

Land transport ADR/RID (cross-border)



ADR/RID class: 2 1F Gases
Danger code (Kemler): 23
UN-Number: 1957
Description of goods: 1957 DEUTERIUM, COMPRESSED

Maritime transport IMDG:



IMDG Class: 2.1
UN Number: 1957
Label 2.1
Proper shipping name: DEUTERIUM, COMPRESSED

Air transport ICAO-TI and IATA-DGR:



ICAO/IATA Class: 2.1
UN/ID Number: 1957
Label 2.1
Proper shipping name: DEUTERIUM, COMPRESSED

UN "Model Regulation": UN1957, DEUTERIUM, COMPRESSED, 2.1

15 Regulations

Product related hazard informations:

Hazard symbols:

F+ Extremely flammable

Risk phrases:

12 Extremely flammable.

Safety phrases:

9 Keep container in a well-ventilated place.
 16 Keep away from sources of ignition - No smoking.
 33 Take precautionary measures against static discharges.

National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

Information about limitation of use: For use only by technically qualified individuals.

16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the

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user.

Department issuing MSDS: Health, Safety and Environmental Department.**Contact:** Zachariah Holt**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

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