

Safety Data Sheet
According to OSHA and ANSI

Printing date 01/31/2013

Reviewed on 04/22/2008

1 Identification of the substance/mixture and of the company/undertaking**Product identifier****Product name:** Xenon difluoride**Stock number:** 39739, L16703**CAS Number:**

13709-36-9

EC number:

237-251-2

Details of the supplier of the safety data sheet**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company

Johnson Matthey Catalog Company, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

Information Department: Health, Safety and Environmental Department**Emergency telephone number:**

During normal hours the Health, Safety and Environmental Department at (800) 343-0660. After normal hours call Carechem 24 at (866) 928-0789.

2 Hazards identification**Classification of the substance or mixture****Classification according to Regulation (EC) No 1272/2008**

GHS03 Flame over circle

Ox. Sol. 2 H272 May intensify fire; oxidizer.



GHS06 Skull and crossbones

Acute Tox. 2 H300 Fatal if swallowed.

Acute Tox. 2 H330 Fatal if inhaled.



GHS05 Corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

Eye Dam. 1

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

T+; Very toxic

R26: Very toxic by inhalation.



T; Toxic

R25: Toxic if swallowed.



C; Corrosive

R34: Causes burns.



O; Oxidizing

R8: Contact with combustible material may cause fire.

Information concerning particular hazards for human and environment: Not applicable**Label elements****Labelling according to Regulation (EC) No 1272/2008**

The substance is classified and labelled according to the CLP regulation.

(Contd. on page 2)

USA

Safety Data Sheet

According to OSHA and ANSI

Printing date 01/31/2013

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Product name: Xenon difluoride

(Contd. of page 1)

Hazard pictograms

GHS03

GHS05

GHS06

Signal word Danger**Hazard statements**

H272 May intensify fire; oxidizer.
 H300+H330 Fatal if swallowed or if inhaled.
 H314 Causes severe skin burns and eye damage.

Precautionary statements

P221 Take any precaution to avoid mixing with combustibles.
 P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
 P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P320 Specific treatment is urgent (see on this label).
 P405 Store locked up.
 P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard description:**WHMIS classification**

C - Oxidizing materials
 D1A - Very toxic material causing immediate and serious toxic effects
 D2B - Toxic material causing other toxic effects
 E - Corrosive material

**Classification system****HMIS ratings (scale 0-4)**

(Hazardous Materials Identification System)

| | | |
|------------|---|----------------------------|
| HEALTH | 3 | Health (acute effects) = 3 |
| FIRE | 0 | Flammability = 0 |
| REACTIVITY | 3 | Reactivity = 3 |

Other hazards**Results of PBT and vPvB assessment**

PBT: Not applicable.
 vPvB: Not applicable.

3 Composition/information on ingredients**Chemical characterization:** Substances**CAS# Description:**

13709-36-9 Xenon difluoride

Identification number(s):**EC number:** 237-251-2**4 First aid measures****Description of first aid measures****General information**

Immediately remove any clothing soiled by the product.
 Remove breathing apparatus only after contaminated clothing has been completely removed.
 In case of irregular breathing or respiratory arrest provide artificial respiration.

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm.
 Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly.
 Seek immediate medical advice.

After eye contact

Rinse opened eye for several minutes under running water. Then consult a doctor.

(Contd. on page 3)

USA

Safety Data Sheet
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Printing date 01/31/2013

Reviewed on 04/22/2008

Product name: Xenon difluoride

(Contd. of page 2)

After swallowing Do not induce vomiting; immediately call for medical help.

Information for doctor

Most important symptoms and effects, both acute and delayed

No further relevant information available.

Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5 Firefighting measures**Extinguishing media****Suitable extinguishing agents**

Product is not flammable. Use fire fighting measures that suit the surrounding fire.

Special hazards arising from the substance or mixture

This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.

If this product is involved in a fire, the following can be released:

Metal oxide fume

Hydrogen fluoride (HF)

Advice for firefighters**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

6 Accidental release measures**Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Environmental precautions:

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

Methods and material for containment and cleaning up:

Use neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Reference to other sections

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****Precautions for safe handling**

Handle under dry protective gas.

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Open and handle container with care.

Information about protection against explosions and fires:

The product is not flammable

Substance/product can reduce the ignition temperature of flammable substances.

This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.

Conditions for safe storage, including any incompatibilities**Storage**

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility:

Store away from flammable substances.

Store away from reducing agents.

Store away from air.

Do not store with organic materials.

Store away from metal powders.

Store away from water/moisture.

Further information about storage conditions:

Store under dry inert gas.

This product is moisture sensitive.

This product is air sensitive.

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

Protect from humidity and water.

(Contd. on page 4)

- USA -

Safety Data Sheet
According to OSHA and ANSI

Printing date 01/31/2013

Reviewed on 04/22/2008

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(Contd. of page 3)

Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Control parameters

Components with limit values that require monitoring at the workplace:

| | |
|--------------------|-------------------|
| Fluorides (as F) | mg/m ³ |
| ACGIH TLV | 2.5 |
| Austria MAK | 2.5 |
| Belgium TWA | 2.5 |
| Finland TWA | 2.5 |
| France TWA | 2.5 |
| Germany MAK | 2.5 |
| Hungary TWA | 1; 2-STEL |
| Netherlands MAC-K | 3.5 |
| Norway TWA | 0.6 |
| Poland TWA | 1; 3-STEL |
| Sweden NGV | 2 |
| Switzerland MAK-W | 1.5; 3-KZG-W |
| United Kingdom TWA | 2.5 |
| Russia TWA | 2 |
| Denmark TWA | 2.5 |
| USA PEL | 2.5 |

13709-36-9 Xenon difluoride (100.0%)

| | |
|-------------|------------------------------------|
| PEL (USA) | 2.5 mg/m ³ as F |
| REL (USA) | 2.5 mg/m ³ as F |
| TLV (USA) | 2.5 mg/m ³ as F, BEI |
| EL (Canada) | 2.5 mg/m ³ as F |

Ingredients with biological limit values:**13709-36-9 Xenon difluoride (100.0%)**

| | |
|-----------|--|
| BEI (USA) | 2 mg/L Medium: urine Time: prior to shift Parameter: Fluoride (background, nonspecific) |
| | 3 mg/L Medium: urine Time: end of shift Parameter: Fluoride (background, nonspecific) |

Additional information: No data

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

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the eyes and skin.

Maintain an ergonomically appropriate working environment.

Breathing equipment:

Use self-contained respiratory protective device in emergency situations.

Protection of hands:

Impervious gloves

Check protective gloves prior to each use for their proper condition.

The selection of suitable gloves not only depends on the material, but also on quality.

Quality will vary from manufacturer to manufacturer.

Eye protection:

Tightly sealed goggles

Full face protection

(Contd. on page 5)

- USA

Safety Data Sheet
According to OSHA and ANSI

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Reviewed on 04/22/2008

Product name: Xenon difluoride

(Contd. of page 4)

Body protection: Protective work clothing.

9 Physical and chemical properties**Information on basic physical and chemical properties****General Information****Appearance:**

Form: Crystalline powder
Color: Colorless
Odor: Not determined
Odor threshold: Not determined.

pH-value: Not applicable.

Change in condition

Melting point/Melting range: 129°C (264 °F)
Boiling point/Boiling range: Not determined
Sublimation temperature / start: Not determined

Flash point: Not applicable
Flammability (solid, gaseous) Contact with combustible material may cause fire.
Ignition temperature: Not determined
Decomposition temperature: Not determined
Auto igniting: Not determined.
Explosion limits:
Lower: Not determined
Upper: Not determined
Vapor pressure at 25°C (77 °F): 5.2 hPa (4 mm Hg)
Density at 20°C (68 °F): 4.32 g/cm³ (36.05 lbs/gal)
Relative density Not determined.
Vapor density Not applicable.
Evaporation rate Not applicable.
Partition coefficient (n-octanol/water): Not determined.
Viscosity:
dynamic: Not applicable.
kinematic: Not applicable.
Other information No further relevant information available.

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

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

Possibility of hazardous reactions

Reacts with reducing agents
 Reacts with flammable substances

Incompatible materials:

Reducing agents
 Air
 Flammable substances
 Organic materials
 Metal powders
 Water/moisture

Hazardous decomposition products:

Metal oxide fume
 Hydrogen fluoride

11 Toxicological information**Information on toxicological effects****Acute toxicity:****Primary irritant effect:****on the skin:**

Irritant to skin and mucous membranes.
 Corrosive effect on skin and mucous membranes.

on the eye:

Irritating effect.
 Strong corrosive effect.

Sensitization: No sensitizing effects known.

(Contd. on page 6)

- USA -

Safety Data Sheet

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Product name: Xenon difluoride

(Contd. of page 5)

Subacute to chronic toxicity:

Fluorides may cause salivation, nausea, vomiting, diarrhea and abdominal pain, followed by weakness, tremors, shallow respiration, convulsions and coma. May cause brain and kidney damage. Chronic fluoride poisoning can cause severe bone changes, loss of weight, anorexia, anemia and dental defects.

Subacute to chronic toxicity:

The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

Behavioral - somnolence (general depressed activity).

Behavioral - convulsions or effect on seizure threshold.

Lungs, Thorax, or Respiration - cyanosis.

Sense Organs and Special Senses (Eye) - effect, not otherwise specified.

Lungs, Thorax, or Respiration - structural or functional change in trachea or bronchi.

Liver - liver function tests impaired.

Cardiac - changes in heart weight.

Lung, Thorax, or Respiration - changes in lung weight.

Additional toxicological information:

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

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

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

12 Ecological information**Toxicity**

Aquatic toxicity: No further relevant information available.

Persistence and degradability No further relevant information available.

Behavior in environmental systems:

Bioaccumulative potential No further relevant information available.

Mobility in soil No further relevant information available.

Additional 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.

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

Other adverse effects No further relevant information available.

13 Disposal considerations**Waste treatment methods**

Recommendation Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

14 Transport information**UN-Number**

DOT, ADR, IMDG, IATA

UN3087

UN proper shipping name

DOT, IMDG, IATA

ADR

OXIDIZING SOLID, TOXIC, N.O.S. (Xenon difluoride)
3087 OXIDIZING SOLID, TOXIC, N.O.S. (Xenon difluoride)**Transport hazard class(es)**

DOT



Class

5.1 Oxidising substances.

(Contd. on page 7)

USA

Safety Data Sheet

According to OSHA and ANSI

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Product name: Xenon difluoride

(Contd. of page 6)

Label 5.1+6.1
ADR



Class 5.1 (OT2) Oxidizing substances
Label 5.1+6.1
IMDG, IATA



Class 5.1 Oxidising substances.
Label 5.1+6.1

Packing group II
DOT, ADR, IMDG, IATA

Environmental hazards: No
Marine pollutant:

Special precautions for user Warning: Oxidizing substances
Danger code (Kemler): 56

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.

UN "Model Regulation": UN3087, OXIDIZING SOLID, TOXIC, N.O.S. (Xenon difluoride), 5.1 (6.1), II

15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations

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

All components of this product are listed on the Canadian Non-Domestic Substances List (NDSL).

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

Other regulations, limitations and prohibitive regulations

Substances of very high concern (SVHC) according to REACH, Article 57

Substance is not listed.

REACH - Pre-registered substances Substance is listed.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

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 user.

Department issuing MSDS: Health, Safety and Environmental Department.

Contact:

Zachariah C. Holt
Global EHS Manager

Abbreviations and acronyms:

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

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)

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

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

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)

WHMIS: Workplace Hazardous Materials Information System (Canada)