

Material Safety Data Sheet

According to OSHA and ANSI

Printing date 05/27/2011

Reviewed on 07/10/2009

1 Identification of the substance/mixture and of the company/undertaking**Product identifier****Product name:** Lithium fluoride**Stock number:** 14463**CAS Number:**

7789-24-4

EINECS Number:

232-152-0

Relevant identified uses of the substance or mixture and uses advised against.**Sector of Use** SU24 Scientific research and development**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**

GHS06 Skull and crossbones

H301 Toxic if swallowed.



GHS07

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

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

T; Toxic

R25: Toxic if swallowed.



Xi; Irritant

R36/37/38: Irritating to eyes, respiratory system and skin.

Label elements**Labelling according to EU guidelines:****Code letter and hazard designation of product:**

T Toxic

Risk phrases:

25 Toxic if swallowed.

36/37/38 Irritating to eyes, respiratory system and skin.

Safety phrases:

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

36/37 Wear suitable protective clothing and gloves.

45 In case of accident or if you feel unwell, seek medical advice immediately.

Hazard description:**WHMIS classification**

(Contd. on page 2)

USA

Material Safety Data Sheet

According to OSHA and ANSI

Printing date 05/27/2011

Reviewed on 07/10/2009

Product name: Lithium fluoride

(Contd. of page 1)

Classification system**HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

| | |
|------------|---|
| HEALTH | 2 |
| FIRE | 0 |
| REACTIVITY | 1 |

Health (acute effects) = 2

Flammability = 0

Reactivity = 1

Other hazards**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**3 Composition/information on ingredients****Chemical characterization: Substances****(CAS#) Description:**

Lithium fluoride (CAS# 7789-24-4): 100%

Identification number(s):**EINECS Number:** 232-152-0**4 First aid measures****Description of first aid measures****General information**

Immediately remove any clothing soiled by the product.

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.

After swallowing

Do not induce vomiting; immediately call for medical help.

Seek immediate medical advice.

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

In case of fire, the following can be released:

Lithium oxide

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:

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.

USA

(Contd. on page 3)

Material Safety Data Sheet

According to OSHA and ANSI

Printing date 05/27/2011

Reviewed on 07/10/2009

Product name: Lithium fluoride

(Contd. of page 2)

7 Handling and storage**Handling****Precautions for safe handling**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Information about protection against explosions and fires: The product is not flammable**Conditions for safe storage, including any incompatibilities****Storage****Requirements to be met by storerooms and receptacles:**

Unsuitable material for container: ceramic, glass

Information about storage in one common storage facility: Do not store together with acids.**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

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 |

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.

Avoid contact with the eyes and skin.

Breathing equipment: Use suitable respirator when high concentrations are present.**Protection of hands:**

Impervious gloves

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

Material of gloves

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

Quality will vary from manufacturer to manufacturer.

Eye protection: Safety glasses**Body protection:** Protective work clothing.**9 Physical and chemical properties****Information on basic physical and chemical properties****General Information****Appearance:**

| | |
|---------------|----------|
| Form: | Powder |
| Color: | White |
| Odor: | Odorless |

(Contd. on page 4)

USA

Material Safety Data Sheet

According to OSHA and ANSI

Printing date 05/27/2011

Reviewed on 07/10/2009

Product name: Lithium fluoride

(Contd. of page 3)

| | |
|---|---|
| Odour threshold: | Not determined. |
| pH-value: | Not applicable. |
| Change in condition | |
| Melting point/Melting range: | 845°C (1553 °F) |
| Boiling point/Boiling range: | 1680°C (3056 °F) |
| Sublimation temperature / start: | Not determined |
| Flash point: | Not applicable |
| Flammability (solid, gaseous) | Not determined. |
| Ignition temperature: | Not determined |
| Decomposition temperature: | Not determined |
| Auto igniting: | Not determined. |
| Danger of explosion: | Product does not present an explosion hazard. |
| Explosion limits: | |
| Lower: | Not determined |
| Upper: | Not determined |
| Vapor pressure: | Not applicable. |
| Density at 20°C (68 °F): | 2.635 g/cm ³ (21.989 lbs/gal) |
| Relative density | Not determined. |
| Vapour density | Not applicable. |
| Evaporation rate | Not applicable. |
| Solubility in / Miscibility with | |
| Water at 20°C (68 °F): | 1.3 g/l |
| Segregation 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 strong mineral acids forming hydrogen fluoride**Incompatible materials:** Acids**Hazardous decomposition products:**

Lithium oxide

Hydrogen fluoride

11 Toxicological information**Information on toxicological effects****Acute toxicity:****LD/LC50 values that are relevant for classification:**

| | | |
|------|------|-------------------|
| Oral | LD50 | 119 mg/kg (mouse) |
| | | 143 mg/kg (rat) |

Primary irritant effect:**on the skin:** Irritant to skin and mucous membranes.**on the eye:** Irritating effect.**Sensitization:** No sensitizing effects known.**Subacute to chronic toxicity:**

Large amounts of lithium compounds may cause vomiting, diarrhea, ataxia, intestinal irritation, kidney injury, central nervous system depression and a drop in blood pressure. Central nervous system effects may include slurred speech, blurred vision, dizziness, sensory loss, convulsions and stupor. Chronic intake may cause neuromuscular effects such as tremor, ataxia, weakness, clonus and hyperactive reflexes. Lithium can cause kidney damage, gastrointestinal disturbances, fatigue, dehydration, weight loss, dermatological effects and thyroid damage. Lithium ion has shown teratogenic effects in rats and mice.

(Contd. on page 5)

USA

Material Safety Data Sheet

According to OSHA and ANSI

Printing date 05/27/2011

Reviewed on 07/10/2009

Product name: Lithium fluoride

(Contd. of page 4)

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:

Kidney, Ureter, Bladder - urine volume increased.

Kidney, Ureter, Bladder - proteinuria.

Blood - changes in serum composition (e.g. TP, bilirubin, cholesterol).

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**Toxicity**

Acquatic 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**DOT regulations:**

Hazard class: 6.1
Identification number: UN3288
Packing group: III
Proper shipping name (technical name): TOXIC SOLID, INORGANIC, N.O.S.
Label: 6.1

Land transport ADR/RID (cross-border)

ADR/RID class: 6.1 (T5) Toxic substances
Danger code (Kemler): 60
UN-Number: 3288
Packaging group: III

(Contd. on page 6)

USA

Material Safety Data Sheet

According to OSHA and ANSI

Printing date 05/27/2011

Reviewed on 07/10/2009

Product name: Lithium fluoride

(Contd. of page 5)

UN proper shipping name: 3288 TOXIC SOLID, INORGANIC, N.O.S.**Maritime transport IMDG:**

IMDG Class: 6.1
UN Number: 3288
Label 6.1
Packaging group: III
Marine pollutant: No
Proper shipping name: TOXIC SOLID, INORGANIC, N.O.S.

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class: 6.1
UN/ID Number: 3288
Label 6.1
Packaging group: III
Proper shipping name: TOXIC SOLID, INORGANIC, N.O.S.

UN "Model Regulation": UN3288, TOXIC SOLID, INORGANIC, N.O.S., 6.1, III**Special precautions for user Warning:** Toxic substances**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.**15 Regulatory information**

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

Product related hazard informations:**Hazard symbols:**

T Toxic

Risk phrases:

25 Toxic if swallowed.

36/37/38 Irritating to eyes, respiratory system and skin.

Safety phrases:

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

36/37 Wear suitable protective clothing and gloves.

45 In case of accident or if you feel unwell, seek medical advice immediately.

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 Domestic Substances List (DSL).

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

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)

(Contd. on page 7)

USA

Material Safety Data Sheet
According to OSHA and ANSI

Printing date 05/27/2011

Reviewed on 07/10/2009

Product name: Lithium fluoride

(Contd. of page 6)

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)
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)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

USA