

Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date: 02.08.2016

Version number 5

Revision: 02.08.2016

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

1.1. Product identifier

Trade name: **LITHIUM FLUORIDE**

Article code: LiF

CAS Number:

7789-24-4

EC number:

232-152-0

Registration number:

The registration number is not available, since the substance/mixture or its use is excluded from registration according to article 2 of the REACH Regulation (EC) No. 1907/2006, the annual tonnage does not require a registration or the registration is planned for a later date.

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

Application of the substance / the mixture: X-rays monochromator crystal.

Uses advised against: Other uses than the identified uses indicated above.

1.3. Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Saint-Gobain Cristaux & Détecteurs

104, Route de Larchant

F-77140 Saint-Pierre-Les-Nemours

Telephone: 0033 (0) 1 64 45 10 10

Fax: 0033 (0) 1 64 45 10 01

Further information obtainable from: customer.service.SGCD@saint-gobain.com

1.4. Emergency telephone number

Centre anti poison et de toxicovigilance (Intoxication centre)

Phone: Paris: +33 (0) 1 40 05 48 48, Marseille: +33 (0) 1 91 75 25 25

* SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008:



GHS06 skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

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GHS07

- Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2 H319 Causes serious eye irritation.
STOT SE 3 H335 May cause respiratory irritation.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008:

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

Hazard pictograms:



GHS06

Signal word: Danger

Hazard statements:

- H301 Toxic if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statements:

- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P362 Take off contaminated clothing.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTER/doctor if you feel unwell.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water.
P405 Store locked up.

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P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Additional information:
EUH032 Contact with acids liberates very toxic gas.

2.3. Other hazards

Results of PBT and vPvB assessment: This substance does not meet the criteria for classification as PBT or vPvB.

* SECTION 3: Composition/information on ingredients

3.1. Substances

CAS No. Description
7789-24-4 lithium fluoride (100%), uncoloured crystal
Identification number(s):
EC number: 232-152-0

SECTION 4: First aid measures

4.1. Description of first aid measures

General information:

Personal protection for the First Aider.

Position and transport stably in side position.

In case of accident or if you feel unwell, seek medical advice immediately (show safety data sheet if possible).

Medical supervision for at least 48 hours.

After inhalation:

Seek immediate medical advice.

Take affected persons into fresh air and keep quiet.

In case of breathing difficulties administer oxygen.

In case of irregular breathing or respiratory arrest provide artificial respiration.

Use a respiratory bag or breathing device.

In case of unconsciousness place patient stably in side position for transportation.

After skin contact:

Take off all contaminated clothing.

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

After eye contact:

Protect unharmed eye.

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

Remove contact lenses, if present and easy to do. Continue rinsing.

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After swallowing:

Rinse mouth.

Do not induce vomiting; call for medical help immediately.

4.2. Most important symptoms and effects, both acute and delayed

Headache

Drowsiness

Gastric or intestinal disorders

Cyanosis

Unconsciousness

Coughing

Nausea

Breathing difficulty

Irritating to eyes, respiratory system and skin.

Prolonged or repetitive skin contact may cause skin defatting or dermatitis.

Hazards: Toxic if swallowed.

4.3. Indication of any immediate medical attention and special treatment needed

First Aid, decontamination, treatment of symptoms.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing agents: Use fire extinguishing methods suitable to surrounding conditions.

For safety reasons unsuitable extinguishing agents: Water with full jet

5.2. Special hazards arising from the substance or mixture

The product is non flammable.

In certain fire conditions, traces of other toxic gases cannot be excluded, e.g.:

Hydrogen fluoride (HF)

Metal oxide fume

5.3. Advice for firefighters

Protective equipment:

Do not inhale explosion gases or combustion gases.

Wear self-contained respiratory protective device.

Wear fully protective suit.

Additional information:

Move undamaged containers from immediate hazard area if it can be done safely.

Collect contaminated fire fighting water separately. It must not enter the sewage system.

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Trade name: **LITHIUM FLUORIDE**

Cool endangered receptacles with water spray.

* **SECTION 6: Accidental release measures**

6.1. Personal precautions, protective equipment and emergency procedures

Avoid any contact with eyes or skin.

Wear protective clothing.

Do not inhale dust / smoke / mist.

Use respiratory protective device against the effects of fumes/dust/aerosol.

Avoid formation of dust.

Ensure adequate ventilation.

Keep people at a distance and stay on the windward side.

6.2. Environmental precautions

Keep contaminated washing water and dispose of appropriately.

Dumping into the environment must be prevented.

Do not allow to penetrate the ground/soil.

Do not allow to enter sewers/ surface or ground water.

6.3. Methods and material for containment and cleaning up

Remove mechanically, placing in appropriate containers for disposal.

Use approved industrial vacuum cleaner for removal.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

6.4. Reference to other sections

See section 1 for emergency contact details.

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

* **SECTION 7: Handling and storage**

7.1. Precautions for safe handling

Any unavoidable deposit of dust must be regularly removed.

Avoid contact with eyes or skin. Wear personal protective equipment.

Do not breathe dust/fume/gas/mist/vapours/spray.

Provide adequate ventilation as well as local exhaust at critical locations.

Information about fire - and explosion protection:

The product is not flammable.

Usual measures for fire prevention.

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7.2. Conditions for safe storage, including any incompatibilities

Storage:

Requirements to be met by storerooms and receptacles:

Store only in the original container.

Access is only to be granted to authorised personal.

Information about storage in one common storage facility:

Keep away from food, drink and animal feeding stuffs.

Store away from flammable substances.

Do not store together with acids.

Further information about storage conditions:

Store in cool, dry conditions in well sealed containers.

Protect from heat and direct sunlight.

Protect from humidity and water.

Keep the packaging dry and well sealed to prevent contamination and adsorption of dampness.

Ensure that local, federal and national legislation on storage conditions are observed.

Store under lock and key and with access restricted to technical experts or their assistants only.

Storage class: 6.1D Incombustible toxic or chronic active substances

7.3. Specific end use(s) See section 1.

* SECTION 8: Exposure controls/personal protection

Additional information about design of technical facilities:

Technical measures and the application of adequate working methods take priority over the use of personal protection equipment.

8.1. Control parameters

Ingredients with limit values that require monitoring at the workplace:

7789-24-4 lithium fluoride

WEL (Great Britain)	Long-term value: 2.5 mg/m ³ as F
IOELV (EU)	Long-term value: 2.5 mg/m ³ as F

Regulatory information: WEL (Great Britain): EH40/2011

Additional information: The lists valid during the making were used as basis.

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8.2. Exposure controls

Personal protective equipment:

General protective and hygienic measures:

Ensure that washing facilities are available at the work place.

Do not eat, drink, smoke or sniff while working.

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

Do not inhale dust / smoke / mist.

Respiratory protection:

If technical suction or ventilation measures are not possible or are insufficient, protective breathing apparatus must be worn.

The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, a self-contained breathing apparatus must be used!

Suitable respiratory protective equipment:

Filter B/P2

Filter B/P3

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Protection of hands:

Tested protective gloves are to be worn. When handling chemical substances, chemical protective gloves must be worn with CE label including a four digit code. Type of chemical protective gloves to choose depends on the concentration and quantity of dangerous substances as well as on work place specifications. In the cases of special applications, it is recommended to check the chemical resistance with the manufacturer of the gloves.

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

Material of gloves:

Recommendation:

Nitrile rubber, NBR

Butyl rubber, BR

PVC gloves

Fluorocarbon rubber (Viton)

Recommended thickness of the material: ≥ 0.35 mm

Penetration time: > 480 min

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Penetration time of glove material:

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Tightly sealed goggles
(EN 166)

Body protection:

Only wear fitting, comfortable and clean protective clothing.

Recommendation:

Protective work clothing

Apron

Boots

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General Information

Appearance:

Form:	Solid Crystalline
Colour:	Colourless
Odour:	Odourless
Odour threshold:	Not determined.

pH-value: Not applicable.

Change in condition

Melting point/Melting range:	842 °C
Boiling point/Boiling range:	1676 °C

Flash point: Not applicable.

Flammability (solid, gaseous): Product is not flammable.

Ignition temperature: Not determined.

Decomposition temperature: Not determined.

Self-igniting: Product is not selfigniting.

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Trade name: **LITHIUM FLUORIDE**

Danger of explosion: Not explosive.
Product does not present an explosion hazard.

Vapour pressure: Not applicable.

Density at 20 °C: 2.64 g/cm³

Vapour density: Not applicable.

Evaporation rate: Not applicable.

Solubility in / Miscibility with
water at 25 °C: 1.3-2.7 g/l

Partition coefficient (n-octanol/water): Not determined.

Viscosity:
Dynamic: Not applicable.
Kinematic: Not applicable.

9.2. Other information Molecular weight: 25.94 g/mol

* **SECTION 10: Stability and reactivity**

10.1. Reactivity The product is stable under standard conditions (temperature, pressure) of storage and handling.

10.2. Chemical stability
The product is stable under standard conditions (temperature, pressure) of storage and handling.

10.3. Possibility of hazardous reactions
Reacts with water.
Reacts with acids.
Contact with strong acids releases hydrogen fluoride.

10.4. Conditions to avoid
Avoid generation of dust.
Protect from direct sunlight.
Heat
Water/ moisture

10.5. Incompatible materials
Acids
Material, combustible

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Water
Oxidizing agents

10.6. Hazardous decomposition products
In case of fire, the following products can be released:
Metal oxid fume
Hydrogen fluoride
Danger of toxic fluorine based pyrolysis products.

* **SECTION 11: Toxicological information**

11.1. Information on toxicological effects

Acute toxicity:
Toxic if swallowed.

LD/LC50 values:

Oral	LD50	143 mg/kg (rat)
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Primary irritant effect:
Skin corrosion/irritation:
Prolonged/repetitive skin contact may cause skin defatting or dermatitis.
Causes skin irritation.
Serious eye damage/irritation:
Causes serious eye irritation.
Respiratory tract: May cause respiratory irritation.

Respiratory or skin sensitisation: Based on available data, the classification criteria are not met.

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):
Germ cell mutagenicity: Based on available data, the classification criteria are not met.
Carcinogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity: Based on available data, the classification criteria are not met.

STOT-single exposure:
May cause respiratory irritation.

STOT-repeated exposure: Based on available data, the classification criteria are not met.

Aspiration hazard: Based on available data, the classification criteria are not met.

* **SECTION 12: Ecological information**

12.1. Toxicity
Aquatic toxicity: The product is not toxic to the aquatic environment.

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Trade name: **LITHIUM FLUORIDE****12.2. Persistence and degradability**

Methods for determination of degradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential No indication of bio-accumulation potential.**12.4. Mobility in soil** No further relevant information available.**General notes:**

Avoid transfer into the environment.

Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water

12.5. Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

12.6. Other adverse effects No further relevant information available.* **SECTION 13: Disposal considerations****13.1. Waste treatment methods****Recommendation:**

Must be specially treated adhering to official regulations.

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Waste disposal according to official state regulations.

Hand over to officially registered waste disposal company.

Uncleaned packaging:**Recommendation:**

Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.

Packagings that may not be cleansed are to be disposed of in the same manner as the product.

Disposal must be made according to official regulations.

* **SECTION 14: Transport information****14.1. UN-Number**

ADR, IMDG, IATA

UN3288

14.2. UN proper shipping name

ADR

3288 TOXIC SOLID, INORGANIC, N.O.S. (lithium fluoride)

IMDG, IATA

TOXIC SOLID, INORGANIC, N.O.S. (lithium fluoride)

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Trade name: **LITHIUM FLUORIDE**

14.3. Transport hazard class(es)

ADR, IMDG, IATA

Class 6.1 Toxic substances.
Label 6.1

14.4. Packing group

ADR, IMDG, IATA III

14.5. Environmental hazards

Marine pollutant: No

14.6. Special precautions for user

Warning: Toxic substances.
Danger code (Kemler): 60
EMS Number: F-A,S-A
Stowage Category A

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable.

Transport/Additional information:

ADR

Limited quantities (LQ) 5 kg
Excepted quantities (EQ) Code: E1
Maximum net quantity per inner packaging: 30 g
Maximum net quantity per outer packaging: 1000 g

Transport category 2

Tunnel restriction code E

IMDG

Limited quantities (LQ) 5 kg
Excepted quantities (EQ) Code: E1
Maximum net quantity per inner packaging: 30 g
Maximum net quantity per outer packaging: 1000 g

UN "Model Regulation": UN 3288 TOXIC SOLID, INORGANIC, N.O.S. (LITHIUM FLUORIDE), 6.1, III

* SECTION 15: Regulatory information

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

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Trade name: **LITHIUM FLUORIDE****EU-Regulations**

Regulation (EC) No 1907/2006 (REACH)

Regulation (EC) No 1272/2008 (CLP)

Regulation 98/24/EC (employee health protection)

Labelling according to Regulation (EC) No 1272/2008: GHS label elements

National regulations:

Information about limitation of use:

Employment restrictions concerning juveniles must be observed.

Employment restrictions concerning pregnant and lactating women must be observed.

Employment restrictions concerning women of child-bearing age must be observed.

Other regulations, limitations and prohibitive regulations: National legislation has to be observed!

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

SECTION 16: Other information

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

Training hints:

The product should only be handled by persons, who were informed sufficiently about the nature of the product and about the necessary safety precautions.

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)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised 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)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Acute Tox. 3: Acute toxicity – Category 3

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

* Data compared to the previous version altered.