

## Chemical Safety Data Sheet MSDS / SDS

## Fluorine

Revision Date:2026-05-31 Revision Number:1

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

## Product identifier

Product name : Fluorine  
CBnumber : CB1221811  
CAS : 7782-41-4  
EINECS Number : 231-954-8  
Synonyms : Fluorine,F2

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

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.  
Uses advised against : none

## Company Identification

Company : Chemicalbook  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 010-86108875

## SECTION 2: Hazards identification

## GHS Label elements, including precautionary statements

Symbol(GHS)



Signal word

Danger

## Precautionary statements

P220 Keep/Store away from clothing/.../combustible materials.  
P244 Keep reduction valves free from grease and oil.  
P370+P376 in case of fire: Stop leak if safe to Do so.  
P403 Store in a well-ventilated place.  
P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
P264 Wash skin thoroughly after handling.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing. Rinse SKIN with water/shower.  
P363 Wash contaminated clothing before reuse.

P304+P340 IF INHALED: Remove victim to fresh air and Keep at rest in a position comfortable for breathing.

P310 Immediately call a POISON CENTER or doctor/physician.

P321 Specific treatment (see ... on this label).

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continuerinsing.

P405 Store locked up.

P501 Dispose of contents/container to.....

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

P284 Wear respiratory protection.

P304+P340 IF INHALED: Remove victim to fresh air and Keep at rest in a position comfortable for breathing.

P310 Immediately call a POISON CENTER or doctor/physician.

P320 Specific treatment is urgent (see ... on this label).

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents/container to.....

#### **Hazard statements**

H270 May cause or intensify fire; oxidizer

H314 Causes severe skin burns and eye damage

H330 Fatal if inhaled

---

## SECTION 3: Composition/information on ingredients

### **Substance**

Product name	: Fluorine
Synonyms	: Fluorine,F2
CAS	: 7782-41-4
EC number	: 231-954-8
MF	: F2
MW	: 38

---

## SECTION 4: First aid measures

### **4.1 Description of first-aid measures**

#### **If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration.

#### **In case of skin contact**

Wash off with soap and plenty of water.

#### **In case of eye contact**

Flush eyes with water as a precaution.

#### **If swallowed**

Never give anything by mouth to an unconscious person. Rinse mouth with water.

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

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11

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

No data available

---

# SECTION 5: Firefighting measures

## 5.1 Extinguishing media

### Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

## 5.2 Special hazards arising from the substance or mixture

Nature of decomposition products not known.

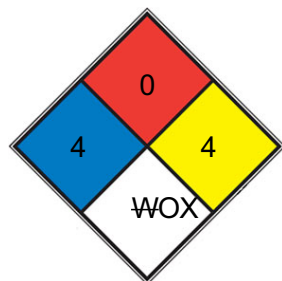
## 5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

## 5.4 Further information

No data available

## NFPA 704



<input checked="" type="checkbox"/>	HEALTH	4	Very short exposure could cause death or major residual injury (e.g. hydrogen cyanide, phosgene, methyl isocyanate, <a href="#">hydrofluoric acid</a> )
<input checked="" type="checkbox"/>	FIRE	0	Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 820 °C (1,500 °F) for a period of 5 minutes.(e.g. Carbon tetrachloride)
<input checked="" type="checkbox"/>	REACT	4	Readily capable of detonation or explosive decomposition at normal temperatures and pressures (e.g. <a href="#">nitroglycerin</a> , chlorine dioxide, nitrogen triiodide)
<input type="checkbox"/>	SPEC. HAZ.	WOX	Oxidizer, allows chemicals to burn without an air supply (e.g. <a href="#">potassium perchlorate</a> , <a href="#">ammonium nitrate</a> , hydrogen peroxide). Reacts with water in an unusual or dangerous manner(e.g. caesium, <a href="#">sodium</a> , <a href="#">sulfuric acid</a> ).

---

# SECTION 6: Accidental release measures

## 6.1 Personal precautions, protective equipment and emergency procedures

Avoid breathing vapors, mist or gas.

For personal protection see section 8.

## 6.2 Environmental precautions

No special environmental precautions required.

## 6.3 Methods and materials for containment and cleaning up

Keep in suitable, closed containers for disposal.

## 6.4 Reference to other sections

For disposal see section 13.

---

# SECTION 7: Handling and storage

## 7.1 Precautions for safe handling

For precautions see section 2.2.

## 7.2 Conditions for safe storage, including any incompatibilities

### Storage conditions

Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

### Storage stability

Recommended storage temperature -20 °C

### Storage class

Storage class (TRGS 510): 12: Non Combustible Liquids

## 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

---

# SECTION 8: Exposure controls/personal protection

## 8.1 Control parameters

### Ingredients with workplace control parameters

## 8.2 Exposure controls

### Personal protective equipment

#### Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.  
Chemical Book

### Body Protection

Impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### Respiratory protection

Respiratory protection not required. For nuisance exposures use type OV/AG (US) or type ABEK (EU EN 14387) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

### Control of environmental exposure

No special environmental precautions required.

---

## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

a) Physical state	liquid
b) Color	pale
c) Odor	Strong ozone-like odor detectable at 0.1 to 0.2 ppm
d) Melting point/freezing point	No data available
e) Initial boiling point and boiling range	-188°C
f) Flammability (solid, gas)	No data available
g) Upper/lower flammability or explosive limits	No data available
h) Flash point	No data available
i) Autoignition temperature	No data available
j) Decomposition temperature	No data available
k) pH	No data available
l) Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: No data available
m) Water solubility	reacts
n) Partition coefficient n-octanol/water	No data available
o) Vapor pressure	>760 mmHg at 20 °C
p) Density	1.695 (15°C)
Relative density	1.695 (15°C)
q) Relative vapor density	No data available
r) Particle characteristics	No data available
s) Explosive properties	Not classified as explosive.
t) Oxidizing properties	none
Solubility	reacts with H <sub>2</sub> O
Dielectric constant	1.5 (-201°C)

### 9.2 Other safety information

No data available

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

No data available

### 10.5 Incompatible materials

No data available

### 10.6 Hazardous decomposition products

In the event of fire: see section 5

---

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Mixture Acute toxicity

Oral: No data available

Inhalation: No data available

Dermal: No data available

#### Skin corrosion/irritation

Classified based on available data. For more details, see section 2

#### Serious eye damage/eye irritation

Classified based on available data. For more details, see section 2

#### Respiratory or skin sensitization

Classified based on available data. For more details, see section 2

#### Germ cell mutagenicity

Classified based on available data. For more details, see section 2

#### Carcinogenicity

Classified based on available data. For more details, see section 2

#### Reproductive toxicity

Classified based on available data. For more details, see section 2

#### Specific target organ toxicity - single exposure

Classified based on available data. For more details, see section 2

#### Specific target organ toxicity - repeated exposure

Classified based on available data. For more details, see section 2

### **Aspiration hazard**

Classified based on available data. For more details, see section 2

## **11.2 Additional Information**

### **Endocrine disrupting properties**

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

---

## **SECTION 12: Ecological information**

### **12.1 Toxicity**

#### **Mixture**

No data available

### **12.2 Persistence and degradability**

No data available

### **12.3 Bioaccumulative potential**

No data available

### **12.4 Mobility in soil**

No data available

### **12.5 Results of PBT and vPvB assessment**

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

### **12.6 Endocrine disrupting properties**

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission

Delegated regulation (EU) 2017/2100 or Commission

Regulation (EU) 2018/605 at levels of 0.1% or higher.

### **12.7 Other adverse effects**

No data available

#### **Components**

---

## **SECTION 13: Disposal considerations**

### **13.1 Waste treatment methods**

Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

**Contaminated packaging**

Dispose of as unused product.

---

## SECTION 14: Transport information

### 14.1 UN number

ADR/RID: -

IMDG: -

IATA: -

### 14.2 UN proper shipping name

ADR/RID: Not dangerous goods

IMDG: Not dangerous goods

IATA: Not dangerous goods

### 14.3 Transport hazard class(es)

ADR/RID: -

IMDG: -

IATA: -

### 14.4 Packaging group

ADR/RID: -

IMDG: -

IATA: -

### 14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

### 14.6 Special precautions for user

No data available

Further information: Not classified as dangerous in the meaning of transport regulations.

---

## SECTION 15: Regulatory information

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

This material safety data sheet complies with the requirements of Regulation (EC) No.

1907/2006.

International Chemical Weapons Convention : (CWC) Schedules of Toxic Chemicals and Precursors

REACH - Restrictions on the manufacture, : placing on the market and use of certain dangerous substances, preparations and articles (Annex

XVII)

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals  
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).

This product contains a substance listed on Annex XIV of the REACH Regulation (EC) Nr. 1907/2006.

Listed substance / Sunset Date : After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

Regulation (EC) No 1005/2009 on substances : that deplete the ozone layer

## 15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

---

## SECTION 16: Other information

### Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ADR - Agreement concerning the International Carriage of Dangerous Goods by Road

AIIC - Australian Inventory of Industrial Chemicals

ASTM - American Society for the Testing of Materials

bw - Body weight

CMR - Carcinogen, Mutagen or Reproductive Toxicant

DIN - Standard of the German Institute for Standardisation

DSL - Domestic Substances List (Canada)

EC<sub>x</sub> - Concentration associated with x% response

EL<sub>x</sub> - Loading rate associated with x% response

EmS - Emergency Schedule

ENCS - Existing and New Chemical Substances (Japan)

ErC<sub>x</sub> - Concentration associated with x% growth rate response

GHS - Globally Harmonized System

GLP - Good Laboratory Practice

IARC - International Agency for Research on Cancer

IATA - International Air Transport Association

IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk

IC<sub>50</sub> - Half maximal inhibitory concentration

ICAO - International Civil Aviation Organization

IECSC - Inventory of Existing Chemical Substances in China

IMDG - International Maritime Dangerous Goods

IMO - International Maritime Organization

ISHL - Industrial Safety and Health Law (Japan)

ISO - International Organisation for Standardization

KECI - Korea Existing Chemicals Inventory

LC<sub>50</sub> - Lethal Concentration to 50 % of a test population

LD<sub>50</sub> - Lethal Dose to 50% of a test population (Median Lethal Dose)

MARPOL - International Convention for the Prevention of Pollution from Ships

n.o.s. -Not Otherwise Specified

NO(A)EC - No Observed (Adverse) Effect Concentration

NO(A)EL - No Observed (Adverse) Effect Level

NOELR - No Observable Effect LoadingRate

NZIoC - New Zealand Inventory of Chemicals

OECD - Organization for EconomicCo-operation and Development

OPPTS - Office of Chemical Safety and PollutionPrevention

PBT - Persistent, Bioaccumulative and Toxic substance

PICCS - PhilippinesInventory of Chemicals and Chemical Substances

(Q)SAR - (Quantitative) StructureActivity Relationship

REACH - Regulation (EC) No 1907/2006 of the EuropeanParliament and of the Council concerning the Registration, Evaluation, Authorisation andRestriction of Chemicals

RID - Regulations concerning the International Carriage ofDangerous Goods by Rail

SADT - Self-Accelerating Decomposition Temperature

SDS -Safety Data Sheet

TCSI - Taiwan Chemical Substance Inventory

TECI - ThailandExisting Chemicals Inventory

TSCA - Toxic Substances Control Act (United States)

UN - United Nations

UNRTDG - United Nations Recommendations on the Transport ofDangerous Goods

vPvB - Very Persistent and Very Bioaccumulative

**Disclaimer:**

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.