

# Material Safety Data Sheet

Printing date 02/21/2007

Version 1

Reviewed on 02/21/2007

## 1 Identification of substance

· **Product details**

· **Trade name:** Fluorine

· **Article number:** 086-01-0010BOC

· **Creation date:** 02/21/2007

· **Manufacturer/Supplier:**

BOC Canada Limited  
5860 Chedworth Way  
Mississauga, Ontario L5R 0A2  
www.bocgases.ca

TELEPHONE NUMBER: (905) 501-1700

24-HOUR EMERGENCY TELEPHONE NUMBER: (905) 501-0802

EMERGENCY RESPONSE PLAN NO: 2-0101

Please ensure that this MSDS is received by the appropriate person

· **Information department:** Customer Service Centre: 1-866-385-5349

## 2 Composition/Data on components

· **Chemical characterization:**

· **CAS No. Description**

7782-41-4 fluorine

· **Identification number(s)**

· **EINECS Number:** 231-954-8

· **EU Number:** 009-001-00-0

## 3 Hazards identification

· **Hazard description:**



Very toxic  
Corrosive  
Oxidizing

· **WHMIS-symbols:**

D2B - Toxic material causing other toxic effects

E - Corrosive material

A - Compressed gas

C - Oxidizing materials

D1A - Very toxic material causing immediate and serious toxic effects



(Contd. on page 2)

CDN

## Material Safety Data Sheet

Printing date 02/21/2007

Version 1

Reviewed on 02/21/2007

**Trade name: Fluorine**

(Contd. of page 1)

**· HMIS-ratings (scale 0 - 4)**

HEALTH	4	Health = 4
FIRE	3	Fire = 3
REACTIVITY	0	Reactivity = 0

**· NFPA ratings (scale 0 - 4)**

4	3	0
OX		

Health = 4  
Fire = 3  
Reactivity = 0

**· Information pertaining to particular dangers for man and environment:**

- May cause fire.
- Contact with combustible material may cause fire.
- Very toxic by inhalation.
- Causes severe burns.
- Risk of serious damage to eyes.

**· Classification system:**

The classification is in line with internationally approved calculation standards. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

### 4 First aid measures

**· General information:**

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

**· After inhalation:**

- Supply fresh air or oxygen; call for doctor.
- In case of unconsciousness place patient stably on the body side position.

**· After skin contact:** Immediately wash with water and soap and rinse thoroughly.**· After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.**· After swallowing:** Not applicable

### 5 Fire fighting measures

**· Suitable extinguishing agents:**

- CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**· Protective equipment:** Wear self-contained respiratory protective device.

### 6 Accidental release measures

**· Person-related safety precautions:**

- Wear protective equipment. Keep unprotected persons away.
- Ensure adequate ventillation.
- Stop leak - ONLY if possible to do so without risk.

(Contd. on page 3)

## Material Safety Data Sheet

Printing date 02/21/2007

Version 1

Reviewed on 02/21/2007

**Trade name: Fluorine**

(Contd. of page 2)

- **Measures for environmental protection:**
  - Prevent seepage into sewage system, workpits and/or cellars.
  - In case of gas release or seepage into the ground inform responsible authorities.
- **Measures for cleaning/collecting:**
  - Use neutralizing agent.
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.

### 7 Handling and storage

- **Handling:**
- **Information for safe handling:**
  - Ensure good ventilation/exhaustion at the workplace.
  - Open and handle cylinder with care.
  - Handle with care. Avoid jolting, friction, and impact.
  - Use only in well ventilated areas.
  - Store cylinders upright with valve protection cap in place and firmly secured to prevent falling or being knocked over.
  - If difficulty with operating cylinder valve is experienced discontinue use and contact supplier.
- **Information about protection against explosions and fires:**
  - Keep ignition sources away - Do not smoke.
  - Keep respiratory protective device available.
  - Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use.
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
  - Do not expose cylinder to temperatures higher than 50°C (122 °F)
- **Information about storage in one common storage facility:**
  - Store separately from cylinders containing flammables by a minimum distance of 20' or by a barrier of non-combustible material at least 5' high having a fire resistant rating of at least 30minutes.
  - Sources of ignition should be removed from storage area.
- **Further information about storage conditions:**
  - Keep cylinder valve tightly closed.
  - Store cylinder in a well ventilated area.
  - Store in accordance with local fire code and/or building code or any pertaining regulations.

### 8 Exposure controls and personal protection

- **Additional information about design of technical systems:**
  - Adequate local ventilation.
  - Safety showers and eyewash stations should be nearby.
- **Components with limit values that require monitoring at the workplace:**

<b>7782-41-4 fluorine (23-100%)</b>	
EL	0.1 ppm
- **Additional information:** The lists that were valid during the creation were used as basis.

(Contd. on page 4)

## Material Safety Data Sheet

Printing date 02/21/2007

Version 1

Reviewed on 02/21/2007

**Trade name: Fluorine**

(Contd. of page 3)

- **Personal protective equipment:**
- **General protective and hygienic measures:**
  - Keep away from foodstuffs, beverages and feed.
  - Immediately remove all soiled and contaminated clothing.
  - Wash hands before breaks and at the end of work.
  - Store protective clothing separately.
  - Avoid contact with the eyes.
  - Avoid contact with the eyes and skin.
  - Protective clothing should be kept free of oil and grease.
  - PPE should be inspected and maintained regularly to retain its effectiveness.

- **Breathing equipment:**

Use atmosphere-supplying respirators (e.g. supplied-air: demand, pressure-demand, or continuous-flow or self-contained breathing apparatus: demand or pressure-demand or combination supplied-air with auxiliary self-contained air supply atmosphere-supplying respirator) in case of insufficient ventilation.

- **Protection of hands:**



Protective gloves.

- **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

- **Eye protection:** Safety glasses

### 9 Physical and chemical properties

- **General Information**

<b>Form:</b>	Gaseous.
<b>Color:</b>	Light yellow
<b>Odor:</b>	Pungent

- **Change in condition**

**Melting point/Melting range:** -219.61°C  
**Boiling point/Boiling range:** -188°C

- **Flash point:** Not applicable.

- **Flammability (solid, gaseous):** May cause fire.  
 Contact with combustible material may cause fire.

- **Danger of explosion:** Explosive when mixed with combustible material.

### 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Dangerous reactions** No dangerous reactions known.
- **Dangerous products of decomposition:** No dangerous decomposition products known.

CDN

(Contd. on page 5)

## Material Safety Data Sheet

Printing date 02/21/2007

Version 1

Reviewed on 02/21/2007

**Trade name: Fluorine**

(Contd. of page 4)

### 11 Toxicological information

**· Acute toxicity:****· LD/LC50 values that are relevant for classification:****7782-41-4 fluorine**

Inhalative LC50/1hr 185 ppm (rat)

**· Primary irritant effect:****· on the skin:** Strong caustic effect on skin and mucous membranes.**· on the eye:**

Strong caustic effect.

Strong irritant with the danger of severe eye injury.

**· Sensitization:** No sensitizing effects known.**· Additional toxicological information:**

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

### 12 Ecological information

**· General notes:** Must not reach bodies of water or drainage ditch undiluted or unneutralized.

### 13 Disposal considerations

**· Product:****· Recommendation:**

Cylinder and unused product should be returned to vendor. Disposable cylinder must be disposed of in accordance with local regulations.

**· Uncleaned packagings:****· Recommendation:**

Cylinder and unused product should be returned to vendor. Disposable cylinder must be disposed of in accordance with local regulations.

**· Recommended cleansing agent:** None applicable.

### 14 Transport information

**· TDG and DOT regulations:****· Hazard class:**

2

**· Identification number:**

UN1045

**· Packing group:**

-

**· Proper shipping name (technical name):** FLUORINE, COMPRESSED**· Label**

2.3+5.1+8

(Contd. on page 6)

# Material Safety Data Sheet

Printing date 02/21/2007

Version 1

Reviewed on 02/21/2007

**Trade name: Fluorine**

(Contd. of page 5)

· **Packaging group:** -

· **Maritime transport IMDG:**



· **IMDG Class:** 2.3  
 · **UN Number:** 1045  
 · **Label:** 2.3+5.1+8  
 · **Packaging group:** -  
 · **EMS Number:** F-C,S-W  
 · **Marine pollutant:** No  
 · **Propper shipping name:** FLUORINE, COMPRESSED

· **Air transport ICAO-TI and IATA-DGR:**



· **ICAO/IATA Class:** 2  
 · **UN/ID Number:** 1045  
 · **Label:** 2.3+5.1+8  
 · **Packaging group:** -  
 · **Propper shipping name:** FLUORINE, COMPRESSED

## 15 Regulations

· **Sara**

· **Section 355 (extremely hazardous substances):**

Substance is listed.

· **Section 313 (Specific toxic chemical listings):**

Substance is listed.

· **TSCA (Toxic Substances Control Act):**

Substance is listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

Substance is not listed.

· **Chemicals known to cause reproductive toxicity for females:**

Substance is not listed.

· **Chemicals known to cause reproductive toxicity for males:**

Substance is not listed.

· **Chemicals known to cause developmental toxicity:**

Substance is not listed.

(Contd. on page 7)

## Material Safety Data Sheet

Printing date 02/21/2007

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**Trade name: Fluorine**

(Contd. of page 6)

**· Cancerogenity categories****· EPA (Environmental Protection Agency)**

Substance is not listed.

**· NTP (National Toxicology Program)**

Substance is not listed.

**· TLV (Threshold Limit Value established by ACGIH)**

Substance is not listed.

**· NIOSH-Ca (National Institute for Occupational Safety and Health)**

Substance is not listed.

**· OSHA-Ca (Occupational Safety & Health Administration)**

Substance is not listed.

**· Canadian substance listings:****· Canadian Domestic Substances List (DSL)**

Substance is listed.

**· Canadian Ingredient Disclosure list (limit 0.1%)**

Substance is not listed.

**· Canadian Ingredient Disclosure list (limit 1%)**

Substance is listed.

**· Product related hazard informations:**

The product has been classified and marked in accordance with directives on hazardous materials.

**· Hazard symbols:**

Very toxic

Corrosive

Oxidizing

**· Risk phrases:**

May cause fire.

Contact with combustible material may cause fire.

Very toxic by inhalation.

Causes severe burns.

Risk of serious damage to eyes.

**· Safety phrases:**

Keep locked up.

Keep container in a well-ventilated place.

Keep away from combustible material.

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

Wear suitable protective clothing, gloves and eye/face protection.

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

### 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

**· Department issuing MSDS:** Customer Service Centre: 1-866-385-5349**· Contact:** Canada Technical Services: 1-866-385-5349