

PRODUCT SAFETY INFORMATION

This Product Safety Information does not constitute a Safety Data Sheet and shall only be used as a source of information. The relevant Safety Data Sheet is available upon mail request to Productsafety.Information@solvay.com

SODIUM FLUORIDE

1. SUBSTANCE/PREPARATION IDENTIFICATION

Identification of the substance or the preparation

Product name	:	SODIUM FLUORIDE
Chemical name	:	Sodium fluoride
Formula:	:	NaF
Molecular Weight	:	42
EC Number (EINECS)	:	231-667-8

2. COMPOSITION/INFORMATION ON INGREDIENTS

◆ Sodium fluoride		
CAS Number	:	7681-49-4
ID Number (Annex I)	:	009-004-00-7
EC Number (EINECS)	:	231-667-8
Symbols	:	T
Phrases R	:	25, 32, 36/38
Concentration	:	>= 99,00 %

3. HAZARDS IDENTIFICATION

- ◆ Hazardous product for the human health and the aquatic environment.
- ◆ Presents hazards from its ionizing fluorine.
- ◆ In case of decomposition, releases hydrogen fluoride.

4. FIRST-AID MEASURES

General recommendations

- ◆ Personal protective equipment required for rescuers (see section 8).
- ◆ Submerge soiled clothing in a basin of water.
- ◆ Strict hygiene during and at the end of working shifts.

Effects

Main effects

- ◆ Irritating to mucous membrane, eyes and skin.
- ◆ Risk of cardiac and nervous disorders.



- ◆ Fatalities have been observed after a single dose of 5 grams and more taken by an adult weighing 70 kg.
- ◆ Chronic exposure to the product can cause bone or dental fluorosis.

Inhalation

- ◆ Nose and throat irritation.
- ◆ At high concentrations, risk of hypocalcemia with nervous problems (tetany) and cardiac arrhythmia.
- ◆ In case of repeated or prolonged exposure: risk of sore throat, nose bleeds, chronic bronchitis.

Eyes contact

- ◆ Severe eye irritation, watering and redness.
- ◆ Risk of temporary eye lesions.

Skin contact

- ◆ Irritation.
- ◆ In case of prolonged contact: risk of burns.

Ingestion

- ◆ Severe irritation of the mouth, throat, oesophagus and stomach.
- ◆ Abundant salivation.
- ◆ Nausea, vomiting, abdominal cramps and diarrhea.
- ◆ Risk of hypocalcemia with nervous disorders (tetany) and cardiac rhythm disorders.
- ◆ Risk of convulsions, loss of consciousness, deep coma and cardiopulmonary arrest.
- ◆ Risk of general symptoms having a severe prognosis.

First aid

Inhalation

- ◆ Remove the subject from dusty environment and let him blow his nose.
- ◆ Oxygen or cardiopulmonary resuscitation if necessary.
- ◆ Consult with a physician in case of respiratory and nervous symptoms.

Eyes contact

- ◆ Rinse the eyes with a calcium gluconate 1% solution in physiological serum (10 ml of calcium gluconate 10% in 90 ml of physiological serum)
- ◆ Consult with an ophthalmologist in all cases.

Skin contact

- ◆ Remove contaminated shoes, socks and clothing; wash the affected skin with running water.
- ◆ Immediately apply calcium gluconate gel 2.5% and massage into the affected area using rubber gloves; continue to massage while repeatedly applying gel until 15 minutes after pain is relieved.
- ◆ If fingers/finger nails are touched, even if there is no pain, dip them in a bath of 5% calcium gluconate for 15 to 20 minutes.
- ◆ Clean clothing.
- ◆ Consult with a physician in case of persistent pain or redness.

Ingestion

General recommendations

- ◆ Consult with a physician immediately in all cases.
- ◆ Take to hospital.



If the subject is completely conscious:

- ◆ Rinse mouth with fresh water.
- ◆ Give to drink a 1% aqueous calcium gluconate solution.
- ◆ Do not induce vomiting.
- ◆ If the subject presents nervous, respiratory or cardiovascular disorders: administer oxygen.

If the subject is unconscious:

- ◆ Classical resuscitation measures.

Medical treatment

Inhalation

- ◆ Pulmonary resuscitation (oxygen therapy).
- ◆ As soon as possible, give a 2,5 to 3% calcium gluconate solution by nebulizer.
- ◆ Surveillance of cardiac (ECG) and respiratory functions.
- ◆ In case of hypocalcemia, I.V. perfusion of 20 ml of a 10% calcium gluconate solution diluted in 1 liter of physiological serum.
- ◆ Rest and 48 hours medical surveillance.
- ◆ Surveillance of hyperfluoremia and possible treatment with hemodialysis.

Eyes contact

- ◆ On the advice of the ophthalmologist.

Skin contact

- ◆ Application of calcium gluconate gel 2,5%, 4 to 6 times by day.

Ingestion

- ◆ Pulmonary resuscitation (oxygen therapy).
- ◆ Careful gastric lavage after administration of 10 vials of calcium gluconate (to be repeated as frequently as needed).
- ◆ Prevention or treatment for shock.
- ◆ Digestive endoscopy in all cases.
- ◆ Surveillance and treatment of hypocalcemia.
- ◆ In case of hypocalcemia, I.V. perfusion of 20 ml of a 10% calcium gluconate solution diluted in 1 liter of physiological serum.
- ◆ Surveillance of hyperfluoremia and possible treatment with hemodialysis.
- ◆ Surveillance of cardiac (ECG), respiratory and renal functions.

5. FIRE-FIGHTING MEASURES

Common extinguishing means

- ◆ In case of fire in close proximity, all means of extinguishing are acceptable.

Inappropriate extinguishing means

- ◆ No restriction.

Specific hazards

- ◆ Non-combustible
- ◆ Formation of dangerous gas/vapours in case of decomposition (see section 10).

Protective measures in case of intervention

- ◆ Wear self contained breathing apparatus when in close proximity or in confined spaces.
- ◆ When intervention in close proximity wear acid resistant over suit.



- ◆ After intervention, proceed to clean the equipment (take a shower, remove clothing carefully, clean and check).

6. ACCIDENTAL RELEASE MEASURES

Precautions

- ◆ Follow the protective measures given in section 8.
- ◆ Avoid dispersing the dust into a cloud.

Cleanup methods

- ◆ Collect the product with suitable means avoiding dust formation.
- ◆ Place everything into a closed, labelled container compatible with the product.
- ◆ For disposal methods, refer to section 13.
- ◆ Clean the area with large quantities of water.

Precautions for protection of the environment

- ◆ Immediately notify the appropriate authorities in case of significant discharge.
- ◆ Prevent discharges into the environment (sewers, rivers, soils,...).

7. HANDLING AND STORAGE

Handling

- ◆ Use only equipment and materials which are compatible with the product.
- ◆ Keep away from heat sources.
- ◆ Keep away from reactive products (see section 10).

Storage

- ◆ Keep in original packaging, closed.
- ◆ Keep away from reactive products (see section 10).

Other precautions

- ◆ Avoid dust and formation of dust clouds.
- ◆ Follow the protective measures given in section 8.
- ◆ Warn people about the dangers of the product.

Packaging

- ◆ Paper + PE.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls

- ◆ Provide local ventilation suitable for the dust risk
- ◆ Maintain employee exposures to levels below the applicable exposure limits.
- ◆ Follow the protective measures given in section 7.

Authorized limit values

- ◆ **Sodium fluoride**
TLV (ACGIH-USA) 2001
TWA = 2,5 mg/m³
Remark: Fluorides, as F



Respiratory protection

- ◆ In case of dust clouds/fog/fumes, dust mask type P3.
- ◆ Self-contained breathing apparatus in medium confinement/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.
- ◆ Use only respiratory protection that conforms to international/ national standards.

Hand protection

- ◆ Protective gloves - chemical resistant:
- ◆ Recommended materials: PVC, neoprene, rubber

Eye protection

- ◆ Dust proof goggles obligatory.

Skin protection

- ◆ Overalls
- ◆ Apron/boots of PVC, neoprene, rubber in case of dusts.

Other precautions

- ◆ Shower and eye wash stations.
- ◆ Take off contaminated clothing immediately after work.
- ◆ Do not smoke, eat and drink in the working area.
- ◆ Consult the industrial hygienist or the safety manager for the selection of personal protective equipment suitable for the working conditions.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: crystalline powder

Color/Colour: white

Odor/Odour: odorless/odourless

Change of state

- ◆ Melting point/range:
ca. 992 Cel
- ◆ Boiling point/range (1013 mbars):
ca. 1.700 Cel

Flash point

- ◆ Not applicable

Vapor/vapour pressure

- ◆ 1,33 hPa
temperature 1.077 Cel

Density

- ◆ Bulk density
from 1.000 - 1.400 kg/m³

Solubility

- ◆ Water
42 g/l
temperature 20 Cel



pH

- ◆ 7,4
temperature 20 Cel
Remark: Saturated solution

Partition coefficient P (n-octanol/water)

- ◆ Not applicable

Decomposition temperature

- ◆ No data

Granulometry

- ◆ 90 % > 0,1 mm

Danger of explosion

- ◆ No data

10. STABILITY AND REACTIVITY

Stability

- ◆ Stable under certain conditions (see below).

Conditions to avoid

- ◆ Moisture

Materials to avoid

- ◆ Strong acids
- ◆ Glass

Hazardous decomposition products

- ◆ Hydrogen fluoride

11. TOXICOLOGICAL INFORMATION

Acute toxicity

- ◆ Oral route, LD 50, rat, 52 - 250 mg/kg
- ◆ Dermal route, LD lo, mouse, ca. 300 mg/kg

Irritation

- ◆ Rat, slightly irritant (skin)
- ◆ Rabbit, irritant (eyes)

Chronic toxicity

- ◆ Oral route, after prolonged exposure, rat/mouse, Target organ: skeleton / thyroid / testes / kidney, liver, ca. 1 mg/kg, observed effect
- ◆ Ambiguous mutagenic effect
- ◆ Ambiguous carcinogenic effect
- ◆ Foetotoxic and fertility effects

Comments

- ◆ Chronic exposure may entail dental or skeletal fluorosis
- ◆ The carcinogenic effect found in animals is not demonstrated in human
- ◆ Risk of toxic effect on reproduction



12. ECOLOGICAL INFORMATION

Acute ecotoxicity

- ◆ Fishes, *Salmo gairdneri*, LC 50, 96 h, 112 mg/l
- ◆ Crustaceans, *Daphnia magna*, EC 50, 48 h, 213 mg/l
Conditions: fresh water
- ◆ Crustaceans, *Mysidopsis bahia*, EC 50, 96 h, 23 mg/l
Conditions: salt water
- ◆ Algae, *Scenedesmus* sp., EC 50, 96 h, 95 mg/l

Chronic ecotoxicity

- ◆ Fishes, *Salmo gairdneri*, LC 50, 21 day, from 5,9 - 10,3 mg/l
- ◆ Crustaceans, *Daphnia magna*, NOEC, 21 day, 8,1 mg/l

Mobility

- ◆ Air
Result: mobility as solid aerosols
- ◆ Water
Result: considerable solubility and mobility
- ◆ Soil/sediments
Result: adsorption on mineral soil constituents
Conditions: slightly acid pH
(Fluorides)

Abiotic degradation

- ◆ Water/soil
Result: complexation/precipitation of inorganic materials
Degradation's products: aluminum/iron/calcium/phosphate complexes and/or precipitates as a function of pH
(Fluorides)

Biotic degradation

- ◆ Result: not applicable (inorganic compound)

Potential for bioaccumulation

- ◆ Bioconcentration: log P_o/w
Result: not applicable (ionizable inorganic compound)
- ◆ Result: accumulation into vegetable leaves
(Fluorides)

Comments

- ◆ Harmful for aquatic organisms.
- ◆ Nevertheless, hazard for the aquatic environment is limited due to product properties:
- ◆ . low chronic toxicity.
- ◆ Product fate is highly depending on environmental conditions: pH, temperature, oxidoreductive potential, mineral and organic content of the medium,...

13. DISPOSAL CONSIDERATIONS

Waste treatment

- ◆ Dispose in compliance with local/federal and national regulations.
- ◆ Dissolve carefully in water.



- ◆ Use lime or, preferably, calcium hydroxide to precipitate the fluoride ion in the form of CaF₂.
- ◆ Filtrate the product and send the cake to a landfill for industrial waste.

Packaging treatment

- ◆ Rinse the empty containers with plenty of water and treat the effluent in the same way as waste.
- ◆ Or
- ◆ Dispose of the containers by dispatching them to an approved incineration facility for hazardous waste.
- ◆ The empty and clean containers are to be reused in conformity with regulations.

14. TRANSPORT INFORMATION

UN Number	1690
IATA Class:	6.1
Packing group:	III
Hazard label:	TOXIC
PSN:	
SODIUM FLUORIDE	
IMDG Class:	6.1
Packing group:	III
Hazard label:	TOXIC
Placard:	1690
MFAG:	750
EmS:	6.1-04
IMDG Name:	
SODIUM FLUORIDE	
ADR/ADNR Class	6.1, 63° c
Packing group:	III
Hazard label:	6.1
Placard:	60/1690
ADR/RID Name:	
SODIUM FLUORIDE	
RID Class:	6.1, 63° c
Packing group:	III
Hazard label:	6.1
Placard:	60/1690
ADR/RID Name:	
SODIUM FLUORIDE	

15. REGULATORY INFORMATION

EC Labelling

- ◆ Name of dangerous product(s) (to indicate on the label):
Sodium fluoride
- ◆ According to Annex I of Dir. 67/548/EEC (19th ATP: Dir. 93/72/EEC).

Symbols	T	Toxic
Phrases R	25	Toxic if swallowed.
	32	Contact with acids liberates very toxic gas.
	36/38	Irritating to eyes and skin.
Phrases S	22	Do not breathe dust.



36
45

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

- ◆ Labelling "Dangerous for the environment": to be established in a future update of Annex I (see section 12).

Additional informations (label for packaging)

- ◆ Indicate on the label: EC LABELING

16. OTHER INFORMATION

The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product which conforms to the specification, unless otherwise stated. In this case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and the environment.

