Sodium Fluoride

Sodium Fluoride

Material Safety Data Sheet

Chemical: Sodium Fluoride

NFPA: H=3 F=0 I=0 S=None
HMIS: H=3 F=0 R=0 PPE= Supplied by user; dependent on conditions

MSDS Number: NAF-1103
Effective Date: 13 November 2003
Issued by: Solvay Chemicals, Inc. Regulatory Affairs Department

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1. Company and Product Identification

1.1 Product Name: Sodium Fluoride
Chemical Name: Sodium fluoride
Synonyms: None
Chemical Formula: NaF
Molecular Weight: 42
CAS Number: 7681-49-4
EINECS Number: 231-667-8
Grade/Trade Names: Coarse Blends, Granular, Powder, USP, Coarse, Crystal

1.2 Recommended Uses: Welding and fluxing agents; metallurgy; glass industry; dental application; water fluoridation

1.3 Supplier:
Solvay Fluorides, LLC
PO BOX 27328 Houston, TX 77227-7328
3333 Richmond Ave. Houston, Texas 77098

1.4 Emergency Telephone Numbers
Emergencies (USA): 1-800-424-9300 (CHEMTREC®)
Transportation Emergencies (INTERNATIONAL/MARITIME): 1-703-527-3887 (CHEMTREC®)
Transportation Emergencies (CANADA): 1-613-996-6666 (CANUTEC)
Transportation Emergencies (MEXICO-SETIQ): 01-800-00-214-00 (MEX. REPUBLIC)
525-559-1588 (Mexico City and metro area)

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2. Composition/Information on Ingredients

INGREDIENTS	FORMULA	WT. PERCENT	CAS #
Sodium Fluoride	NaF	≥ 97.00	7681-49-4
Sodium Fluorosilicate	Na_2SiF_6	≤ 2.50	16893-85-9
Water	H_2O	≤ 0.50	7732-18-5

3. Hazards Identification

Emergency Overview:

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

3.1 Route of Entry: Inhalation: Yes Skin: Yes Ingestion: Yes

3.2 Potential Effects of exposure:

- Irritating to the mucous membranes, eyes and skin.
- Risk of cardiac and nervous disorders.
- Fatalities have been observed after a single dose of 5 grams or more taken by an adult weighing 70 kg.
- Chronic exposure to the product can cause bone or dental fluorosis

Inhalation:

- Nose and throat irritation.
- Cough.
- 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:

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

Skin contact:

- Irritation.
- In case of repeated contact: risk of burns.

Ingestion:

- Severe irritation of the mouth, throat, esophagus and stomach.
- Abundant salivation.
- Nausea, vomiting, abdominal cramps and diarrhea.
- Risk of hypocalcaemia 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.

Carcinogenicity: See section 11.3

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4. First-Aid Measures

4.1 General Recommendations: Strict hygiene during and at the end of working shifts.

Inhalation:
- Remove the subject from dusty environment.
- Administer oxygen or cardiopulmonary resuscitation if necessary.
- Consult a physician in case of respiratory symptoms.

Eyes:
- Consult an ophthalmologist immediately in all cases.
- Take to hospital immediately.
- Flush eyes with running water for 5 minutes, while keeping the eyelids wide open.
- Rinse the eyes with calcium gluconate (1% solution in physiological serum) (10ml of calcium gluconate 10% in 90 ml of physiological serum) for 10 minutes. (Continue a calcium gluconate drip into eyes…then drop-wise while transporting.) If 1% calcium gluconate is not available continue flushing with water.
- In the case ofdifficulty opening the lids, administer an analgesic eye wash. Do not use oily drops, ointment, or HF skin burn treatments).

Skin:
- Remove contaminated shoes, socks and clothing, while washing the affected skin with running water for 5 minutes. Double-bag all contaminated clothing for disposal.
- 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.
- Apply water longer (15 minutes) if calcium gluconate is not available.
- Provide clean clothing.
- Consult a physician in cases of persistent pain or redness.

Ingestion:
General recommendations
- Consult a physician immediately in all cases.
- Take to hospital.

If the subject is completely conscious:
- Rinse mouth with fresh water.
- Give a 1% aqueous calcium gluconate solution to drink.
- If the subject presents nervous, respiratory or cardiovascular disorders: administer oxygen.
- Administer classical resuscitation measures.

If the subject is unconscious:
- NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

4.2 Medical Treatment/Notes to Physician: See Section 4.1.

5. Fire-Fighting Measures

5.1 Flash point: Not applicable.

5.2 Auto-ignition Temperature: No data.

5.3 Flammability Limits: No data.

5.4 Unusual Fire and Explosion Hazards: No data.

5.5 Extinguishing Methods
Common: In case of fire in close proximity, all means of extinguishing are acceptable.

Inappropriate extinguishing means: No restriction.

5.6 Fire Fighting Procedures:
Specific hazards:
- Non-combustible.
- Formation of dangerous gas/vapors 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 intervening in close proximity wear acid resistant over suit.
- After intervention, take a shower, remove clothing carefully, clean and check equipment.

Other precautions: Control the use of water due to environmental risk (see section 6).

6. Accidental Release Measures

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

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

6.3 Precautions for protection of the environment:
- Immediately notify the appropriate authorities in case of significant discharge.
- Prevent discharges into the environment (sewers, rivers, soils, etc.).

7. Handling and Storage

7.1 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).

7.2 Storage:
- Keep in original packaging, and closed.
- Keep away from reactive products (see section 10).

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7.3 Specific Uses: See Section 1.2.

7.4 Other precautions:

- Warn people about the hazards of sodium fluoride.
- Avoid dust and formation of dust clouds.
- Follow the protective measures given in section 8.

7.5 Packaging:

- Paper lined with PE.
- Drums lined with PE.

8. Exposure Controls/Personal Protection

8.1 Exposure Limit Values:

Authorized limit Values	TLV® ACGIH®-USA (2002)	OSHA PEL	NIOSH REL (1994)
Fluorides	2.5 mg/m^3 (as F)	2.5 mg/m^3 (as F)	2.5 mg/m^3 (as F)

ACGIH® and TLV® are registered trademarks of the American Conference of Governmental Industrial Hygienists.

8.2 Exposure Controls:

- Follow the protective measures given in section 7.
- Maintain employee exposures to levels below the applicable exposure limits.

8.2.1 Occupational Exposure Controls:

8.2.1.1 Ventilation: Provide local ventilation suitable for the dust risk.

8.2.1.2 Respiratory protection:

- 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.
- Use only NIOSH-approved respirators.
- Comply with OSHA respiratory protection requirements.

8.2.1.3 Hand protection: Protective gloves - chemical-resistant (PVC, neoprene, rubber).

8.2.1.4 Eye protection: Dustproof goggles.

8.2.1.5 Skin protection:

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

8.3 Other precautions:

- Do not smoke, eat or drink in the working area.
- Take off contaminated clothing immediately after work.
- Provide shower and eyewash stations.
- Consult the industrial hygienist or the safety manager for the selection of personal protective equipment suitable for the working conditions.
- Maintain adequate supply of antidote gel, calcium gluconate.

9. Physical and Chemical Properties

9.1 **Appearance:** Crystalline powder.
Color: White.
Odor: Odorless.

9.2 **Important Health, Safety and Environmental information:**
pH: 9.2 at 20°C (68°F) 1% solution.

Change of state:
Melting point: 995°C (1823°F).
Boiling point: 1695°C (3083°F).
Decomposition Temperature: No data.

Flash Point: Not applicable.

Flammability: Not applicable.

Explosive Properties: No data.

Oxidizing Properties: Not applicable.

Vapor pressure: 1.33 hPa.

Relative Density:
Specific gravity (H_2O=1): 2.5-2.6.

Solubility:
Water: 42 g/l at 20°C (68°F).
Fat: No data.

Partition coefficient: Not applicable.

Viscosity: Not applicable.

Vapor Density (air=1): Not applicable.

Evaporation Rate: Not applicable.

9.3 **Other Information:**

Granulometry: 90% > 1 mm.

10. Stability and Reactivity

Stability: Stable under certain conditions (see below).

10.1 **Conditions to avoid:** Moisture.

10.2 **Materials and substances to avoid:**
- Strong acids-reacts.
- Glass-reacts.

10.3 **Hazardous decomposition products:** Hydrogen fluoride.

10.4 **Hazardous Polymerization:** Will not occur.

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11. Toxicological Information

11.1 Acute toxicity:
Inhalation:

Oral: LD_{50} = 52-250 mg/kg , rat.

Dermal: LD lo = ~300 mg/kg, mouse.

Irritation:
- Rabbit, slight irritant (skin).
- Rabbit, irritant (eyes).

Sensitization: No data

Comments:
- Chronic exposure may entail dental or skeletal fluorosis.
- The carcinogenic effect found in animals is not demonstrated in humans.
- Risk of toxic effect on reproduction.

11.2 Chronic toxicity:
- Oral route, after prolonged exposure, rat/mouse, target organ: skeleton / thyroid / testes / kidney, liver, ~ 1mg/kg, observed effect.
- Ambiguous carcinogenic effect.
- Ambiguous mutagenic effect.
- Fetotoxic and fertility effects.

11.3 Carcinogenic Designation: None.

12. Ecological Information

12.1 Acute ecotoxicity:
- Fish, Salmo gairdneri, LC_{50}, 96 hour(s), 112 mg/l.
- Crustaceans, Daphnia magna, EC_{50}, 48 hour(s), 213 mg/l
  Conditions: Fresh water.
- Crustaceans, Mysidopsis bahia, EC_{50}, 96 hour(s), 23mg/l
  Conditions: Salt water.
- Algae, Scene desmus sp. EC_{50}, 96 hour(s), 95 mg/l.

12.2 Chronic ecotoxicity:
- Fish, Salmo gairdneri, LC_{50}, 21 days, from 5.9-10.3 mg/l.
- Crustaceans, Daphnia magna, NOEC, 21 days, 8.1 mg/l.

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

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12.4 Degradation
Abiotic: Water/soil - complexation/precipitation of inorganic materials.
Degradation products: aluminum/iron/calcium/phosphate complexes and/or precipitates as a function of pH (Fluorides).

Biotic: not applicable (inorganic compound).

12.5 Potential for bioaccumulation: Bioconcentration: log Po/w.
Not applicable (ionizable inorganic compound).
Accumulation into vegetable leafs (Fluorides).

12.6 Other adverse effects /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

13.1 Waste treatment:
- Consult current federal, state and local regulations regarding the proper disposal of this material.
- Dispose of the product at a landfill authorized for industrial waste.

13.2 Packaging treatment: Consult current federal, state and local regulations regarding the proper disposal of emptied containers.

13.3 RCRA Hazardous Waste: Not Listed.

14. Transport Information

Mode	DOT	IMDG	IATA
UN Number	UN 1690	UN 1690	UN 1690
Class (Subsidiary)	6.1	6.1	6.1
Proper Shipping Name	Sodium Fluoride	Sodium Fluoride	Sodium Fluoride
Hazard label (Subsidiary)	Poison		
Placard [Subsidiary]	Poison	1690	
Packing Group	III	III	III
Reportable Quantity	1000 lbs.		
MFAG			
Emergency Info	ERG: 154	EmS: 6.1-04	ERG Code: 6L

15. Regulatory Information

National Regulations (US)

TSCA Inventory 8(b): Yes.

SARA Title III Sec. 302/303 Extremely Hazardous Substances (40 CFR 355): No.

SARA Title III Sec. 311/312 (40 CFR 370): No.

SARA Title III Sec. 313 Toxic Chemical Emissions Reporting (40 CFR 372): No.

CERCLA Hazardous Substance (40 CFR Part 302):
Listed: Yes, Reportable Quantity 1,000 lbs.

State Component Listing:

State	Comment
CA	Airborne Contaminants & Emissions Inventory
CA	Hazardous Substance List
CT	Hazardous Materials Survey
IL	Chemical Safety Act
IL	Toxic Substances Disclosure to Employees Act
IN	Occupational Health & Safety Standards - Air
KY	Occupational Health & Safety Standards - Air
LA	Spill Reporting
MA	Oil and Hazardous Materials List
MA	Right to Know Substance List
MN	Hazardous Substance List
NJ	Right to Know Substances List
NJ	Spill Tax List
NC	Exposure limits for Air Contaminants
NY	Release Reporting; List of Hazardous Substances
PA	Right to Know
RI	Right to Know

National Regulations (Canada)

Canadian DSL Registration: DSL.

WHMIS Classification: D2A - Very Toxic Material.

This product has been classified in accordance with the hazard criteria of the ***Controlled Products Regulations,*** and the MSDS contains all the information required by the ***Controlled Products Regulations.***

Labeling according to Directive 1999/45/EC.

Category	ID	Phrase
Symbols	T	Toxic.
Phrases R	25	Toxic if swallowed.
	32	Contact with acids liberates very toxic gas.
	36	Irritating to eyes and skin.
Phrases S	22	Do not breathe dust.
	36	Wear suitable protective clothing.
	45	In case of accident or if you feel unwell, seek medical advice immediately show the label where possible.

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16. Other Information

16.1 Ratings:

NFPA (NATIONAL FIRE PROTECTION ASSOCIATION)

Health = 03 Flammability = 0 Instability = 0 Special = None

HMIS (HAZARDOUS MATERIAL INFORMATION SYSTEM)

Health = 3 Fire = 0 Reactivity = 0 PPE = Supplied by User; dependent on local conditions

16.2 Other Information:

The previous information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations or mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and integrity of the work environment. (Unless noted to the contrary, the technical information applies only to pure product).

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16.3 Reason for revision:

Supersedes edition: Solvay Fluorides Inc. MSDS dated 5/6/2003

Purpose of revision: Change Company name and MSDS format

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