

PRODUCT NAME: SODIUM FLUORIDE

1. Product and Company Identification

Product Name: Sodium Fluoride
Synonyms: Floridine, Sodium monofluoride, Disodium difluoride, Natrium fluoride, Florocid.
Item Numbers: N/A

European Contact Details

BOC Edwards, Manor Royal, Crawley,
West Sussex, RH10 2LW, England
General enquiries
UK : +44 (0)1293 528844
France : +(33) 1 47 98 24 01
Germany : +(49) 89 991 9180
Italy : +(39) 0248-4471

US Contact Details

BOC Edwards, 301 Ballardvale Street,
Wilmington, MA 01887
General enquiries
+(1) 978-658-5410
Toll Free: 1-800-848-9800

24 h Emergency telephone number:
Chemtrec : 1-800-424-9300

2. Composition/Information on Ingredients

Ingredient	% Weight	CAS No	Hazard class*	Risk phrase*	EINECS No.
Sodium Fluoride FORMULA: NaF RTECS #: WB0350000	>99.9%	7681-49-4	T	R25; R32; R36/38	231-667-8

OSHA Regulatory Status: This material is classified hazardous under OSHA regulations.

3. Hazards Identification

EMERGENCY OVERVIEW
White to off-white solid material that can cause severe eye irritation with burns and skin or respiratory irritation. Skin irritation may be delayed. Inhalation of sufficient quantities may cause the swelling and retention of body fluid in the lungs (oedema). Repeated overexposure to fluorides may have long-term health effects.

Eye Effects: Contact may cause severe irritation and burns with lesions and loss of vision.
Skin Effects: May cause severe skin irritation. Irritation may be delayed. It is possible that tissue damage may occur if skin is wet or moist. Effects are progressive while any residual active fluorides remain.
Ingestion/ Oral Effects: May react with stomach acid to produce highly corrosive hydrogen fluoride. Ingestion of sufficient quantities may cause nausea, vomiting, diarrhoea, and abdominal pain. Fluorides may cause circulatory or respiratory failure and death. Effects may be delayed.

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Inhalation Effects: May cause severe respiratory irritation accompanied by coughing, burning sensation, and difficulty breathing. Significant amounts may cause fluid retention and swelling in the lungs (oedema). Repeated exposure may cause chronic bronchitis or other long-term health effects (See Section 11).

Extended Effects Extended low level systemic absorption of fluoride may cause fluorosis, an abnormal calcification pattern of the skeletal system. Prolonged repeated exposure may cause changes in the bone and chronic respiratory irritation, congestion, and impairment.

Medical Conditions Aggravated By Exposure: Irritant properties may aggravate pre-existing eye, skin, and respiratory conditions. Individuals suffering from diabetes or kidney problems may be more susceptible to the effects of fluoride.

NFPA Hazard codes		HMIS Hazard codes		Rating System
Health	3	Health	3	0 = No Hazard
Flammability	0	Flammability	0	1 = Slight hazard
Instability	0	Reactivity	0	2 = Moderate Hazard
				3 = Serious Hazard
				4 = Severe hazard

Note: The Reactivity Hazard Rating is based on the 2nd Edition of the National Paint and Coatings Association's (NPCA's) Hazardous Materials Identification System (HMIS®). Hazard ratings were based on the best available information at the time of the review. Ratings will be re-assigned in accordance with Compressed Gas Association (CGA) guidelines as published in the future edition of CGA Pamphlet P-19.

4. First Aid Measures

Eyes: Immediately flush eyes with lukewarm water for at least 15 minutes occasionally opening and closing upper and lower lid to ensure adequate flushing. Continue flushing while obtaining immediate medical attention.

Skin: If exposure occurs, remove contaminated clothing as rapidly as possible while flushing affected area with copious quantities of water. Irritation may be delayed. Medical attention is recommended. Skin may be treated with a calcium gluconate gel or slurry in water or glycerine to bind the active fluorides in an insoluble form and limit irritation.

Ingestion/Oral: Administer 1-2 glassfuls of milk, calcium gluconate, or calcium lactate to bind fluoride ion in the gastrointestinal tract. Never give anything by mouth to an individual that is or could rapidly become unconscious. Get immediate medical attention.

Inhalation: PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO DUSTS. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH APPROPRIATE RESPIRATORS. Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If breathing is difficult, administer oxygen. If breathing has stopped administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive. Assure that mucous or vomited material does not obstruct the airway by use of positional drainage.

Other Information Delayed pulmonary oedema may occur. Keep patient under medical observation for at least 48 hours.

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5. Fire Fighting Measures

Extinguishing Media: Use media appropriate for surrounding fire. Use water spray in flooding quantities. Non-flammable.

Fire and Explosion Hazard: Material will not burn. Can evolve hydrogen fluoride and disodium oxide under fire conditions.

Instructions and Special Protective Equipment for Fire Fighters: Approach fire from upwind. Fire fighters should wear respiratory protection (SCBA) and full turnout or Bunker gear with additional chemical protective clothing as necessary to prevent exposure. Water from firefighting is corrosive. Prevent runoff to waterways and sewers.

For Flammability Properties - see Section 9

6. Accidental Release Measures

Immediately evacuate all personnel from affected area and deny entry to unauthorised or unprotected individuals. Use appropriate protective equipment (See Section 8). Do not walk through or otherwise scatter spilled material. Contact your closest BOC Edwards location for further instructions.

7. Handling and Storage

Handling: Do not eat, drink, smoke, apply cosmetics or store personal items in work and storage areas. Wear chemical resistant suit, gloves, chemical type goggles, and resistant boots. Wash thoroughly after handling. Use with adequate ventilation. Do not get in eyes, on skin, or on clothing. Do not ingest or inhale.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from strong acids.

8. Exposure Controls/Personal Protection

Exposure Limits¹

Ingredient	ACGIH - TLV -	OSHA - PEL	Occupational Exposure Limits EH40 (UK)
Sodium Fluoride FORMULA: NaF CAS: 7681-49-4	2.5 mg/m ³ (Fluorides, as F)	2.5 mg/m ³ (Fluorides, as F)	2.5 mg/m ³ (TWA)

¹ Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.

² As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

³ As stated in the ACGIH 2003 Threshold Limit Values for Chemical Substances and Physical Agents.

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Personal Protection:

Engineering Controls: Sodium fluoride should be contained in an enclosed system.

Respiratory Protection: Containment or a system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. If exposure levels are likely to be exceeded, use a positive pressure NIOSH approved air-supplying respirator systems (SCBA or airline/escape bottle) using a full-face mask and at a minimum Grade D air.

Hand/Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye/Face Protection: Safety glasses. If sodium fluoride is released, wear chemical goggles or full-facepiece respirator depending upon level of exposure.

Hygiene Measures: Wash thoroughly after handling, before meals and breaks and before leaving the work area.

Other/General Protection: A safety shower and eyewash "fountain" should be located in close proximity to the work area.

9. Physical and Chemical Properties

Appearance and Odour	Odourless white to off-white solid	Boiling Point	3092/1700	°C/°F
pH	7.4 (solution)	Freezing Point	990/1814	°C/°F
Solubility in Water	4.22%	Auto Ignition	No Data	°C/°F
Volatile Content by Volume	0	Flash Point	Not Applicable	°C/°F
Specific Gravity	2.78			
Vapour Pressure (mbar)	Not Applicable	Vapour Pressure (Torr)	Not Applicable	

10. Stability and Reactivity

Stability: Stable

Incompatible Material/Conditions: Incompatible with acids

Hazardous Decomposition: Thermal decomposition will produce toxic hydrogen fluoride and disodium oxide

Hazardous Polymerisation: Will not occur

11. Toxicological Information

For a comprehensive description for the various toxicological (health) effects which may arise if the user comes into contact with the substance or preparation refer to Section 3 Hazards Identification.

INHALATION: Inhalation may cause irritation and pulmonary oedema. Repeated inhalation may have chronic effects.

INGESTION: See Animal Data.

SKIN AND EYE: A 2% aqueous solution of sodium fluoride caused corneal defects and necrotic areas in the conjunctiva.

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Animal Data:

LD50 value: Oral LD50s of 32 mg/kg and 51.6 mg/kg (administered under light anaesthesia via stomach tube) have been cited in the rat.
Oral LD50s of 57 mg/kg in the mouse and 200 mg/kg in the rabbit have also been reported.

LC50 value: Ninety-six-hour LC₅₀s for fluoride in freshwater fish range from 51 mg/litre in the rainbow trout (*Oncorhynchus mykiss*) to 460 mg/litre in the threespine stickleback (*Gasterosteus aculeatus*). All 96-hour acute toxicity tests on marine fish gave results greater than 100 mg/litre.

Carcinogenicity: NTP: No IARC: No OSHA: No

12. Ecological Information

Product does not contain Class I or Class II ozone depleting substances. See Section 11 for ecotoxicity values. Sodium fluoride is listed as an extremely hazardous substance with a threshold planning quantity (TPQ) of 100 pounds. The CERCLA Reportable Quantity (RQ) is 100 pounds.

13. Disposal Considerations

Do not attempt to dispose or recycle residual waste or unused quantities. Contact BOC Edwards for recycle and/or disposal instructions

14. Transport Information

PARAMETER	EUROPEAN	CANADIAN TDG	UNITED STATES DOT
Proper Shipping Name	Sodium fluoride	Sodium fluoride	Sodium fluoride
Hazard Class	6.1	6.1	6.1
Identification Number	UN 1690	UN 1690	UN 1690
Shipping Label	TOXIC	TOXIC	POISON

Additional Marking Requirement:

If net weight of product \geq 1000 pounds, the container must be also marked with the letters "RQ".

Additional Shipping Paper Description Requirement:

If net weight of product \geq 1000 pounds, the shipping papers must be also marked with the letters "RQ".

Packing Group: III

15. Regulatory Information

European Regulatory Information

This product has been classified in accordance with the Dangerous Substances Directive (67/548/EEC, as amended) and the Preparations Directive (88/379/EEC, as amended), implemented in the UK as the Chemical (Hazard Information and Packing) Regulations 1994 (CHIP, as amended).

Classified as dangerous to supply: Yes

Risk Phrases:

R25: Toxic if swallowed
R32: Contact with acids liberates very toxic gas
R36/38: Irritating to eyes and skin

Safety Phrases:

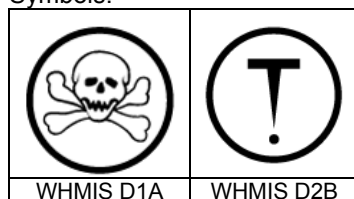
S1/2 Keep locked and out of the reach of children

DCC1 No : 824

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- S22 Do not breathe dust
S36 Wear suitable protective clothing
S45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)

Symbols:



United States Regulatory Information

SARA TITLE III NOTIFICATIONS AND INFORMATION

SARA TITLE III - HAZARD CLASSES:

Acute Health Hazard
Chronic Health Hazard

SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION: This product does not contain toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

California Proposition 65: This product does not contain ingredient(s) known to the State of California to cause cancer or reproductive toxicity.

Canadian Regulatory Information

WHMIS Classification: D1A, D2B

EINECS/U.S. TSCA/Canadian DSL: All ingredients are listed on the U.S. Toxic Substances Control Act (TSCA) inventory or exempt from listing and on the Canadian Domestic Substance List (DSL) and European Inventory of Existing Chemical Substances (EINECS).

16. Other Information

This MSDS is compiled in accordance with ANSI Z400.1 and the EU Safety Data Sheet Directive 91/155/EEC

Glossary: **CAS**, Chemical Abstracts Service. **TWA**, Time-Weighted Average. **STEL**, Short Term Exposure Limit. **NFPA**, National Fire Protection Association. **HMIS**, Hazardous Material Information Service. **LD**, Lethal Dose. **LC**, Lethal Concentration. **OSHA**, Occupational Safety and Health Administration, US department of Labour. **ACGIH**, American Conference of Governmental Industrial Hygienists. **EINECS**, European Inventory of Existing Commercial Substances. **MSHA**, Mine Safety and Health Administration. **N/A**, Not Applicable. **NAV**, Not Available. **NIOSH**, National Institute for Occupational Safety and Health. **SCBA**, Self-Contained Breathing Apparatus. **CFR**, Code of Federal Regulations. **RTECS**, Registry of Toxic Effects of Chemical Substances. **IARC**, International Agency for Research in Cancer. **NTP**, National Toxicology Program, **OEL**, Occupational Exposure Limit. **TLV**, Threshold Limit Value. **TSCA**, Toxic Substances Control Act, **CMRG**: Chemical Manufacturer Recommended Guideline, **AIHA**: American Industrial Hygiene Association Workplace Environmental Exposure Level (**WEEL**).

Revisions

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Although the information and recommendations in this data sheet are to the best of our knowledge correct, it is recommended that you make your own determination of the material's suitability for your purpose before you use it. The information contained in this data sheet has been reproduced from the manufacturer's data, the accuracy of this information is the responsibility of the manufacturer. BOC Edwards accepts no responsibility for damage of any nature resulting from the use of, or the reliance upon this data sheet.