

Safety Data Sheet

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SODIUM FLUORIDE

Section 1 - Chemical Product and Company Identification

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Product/Chemical Name: SODIUM FLUORIDE

Chemical Formula: NaF

CAS Number: 7681-49-4

Other Designations: Floridine; sodium monofluoride; disodium difluoride; natrium fluoride; Florocid

Derivation: Prepared by fusing cryolite with sodium hydroxide. Also made by adding equivalent amounts of sodium hydroxide or sodium carbonate to 40% hydrogen fluoride (instantaneous precipitation).

General Use: Used as an insecticide (particularly against ants and roaches); as a constituent of vitreous enamel and glass mixtures; as a steel-degassing agent; in the fluoridation of drinking water; in dental laboratories; in removal of hydrogen fluoride (HF) from exhaust gases to reduce air pollution; for preserving wood, pastes, and mucilage; and for disinfecting fermentation apparatus in breweries and distilleries.

Emergency Telephone: (ChemTel) Contract MIS0000335; 800 255-3924; INTL 813 248-0585

Section 2 - Hazards Identification

Potential Health Effects

Target Organs: Kidneys, heart, gastrointestinal system, skeletal structures, teeth, nerves, bone.

Primary Entry Routes: Routes of entry for solids and liquids are ingestion and inhalation but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 2), H300

Skin irritation (Category 2), H315

Eye irritation (Category 2A), H319

Chronic aquatic toxicity (Category 3), H412

GHS Label elements, including precautionary statements

Pictogram

HMIS	
H	3
F	0
R	1
PPE†	
See 8	



Signal word

Danger

Hazard statement(s)

H301 Toxic if swallowed.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H412 Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P273 Avoid release to the environment.

P280 Wear eye protection/ face protection.

P280 Wear protective gloves.

P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P303 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P332 + P313 If skin irritation occurs: Get medical advice/ attention.

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P337 + P313 If eye irritation persists: Get medical advice/ attention.
 P362 Take off contaminated clothing and wash before reuse.
 P405 Store locked up.
 P501 Dispose of contents/ container to an approved waste disposal plant.
Hazards not otherwise classified (HNOC) or not covered by GHS - Contact with acids liberates very toxic gas.
 Strong hydrogen fluoride-releaser.

Acute Effects

Inhalation: Causes severe irritation to the respiratory tract, symptoms may include coughing, sore throat, and labored breathing. May be absorbed through inhalation of dust; symptoms may parallel those from ingestion exposure. Irritation effects may not appear immediately.

Eye: Eye irritant! May cause irritation and serious eye damage. Effects may not immediately appear.

Skin: Causes irritation, with redness and pain. Solutions are corrosive. Effects may not appear immediately.

Ingestion: Toxic! May cause salivation, nausea, vomiting, diarrhea, and abdominal pain. Symptoms of weakness, tremors, shallow respiration, cardopedal spasm, convulsions, and coma may follow. May cause brain and kidney damage. Affects heart and circulatory system. Death may occur from respiratory paralysis. Estimated lethal dose = 5-10 grams.

Carcinogenicity: Sodium fluoride is not listed as a carcinogen by the NTP, IARC, or OSHA.

Medical Conditions Aggravated by Long-Term Exposure: Populations that appear to be at increased risk from the effects of fluoride are individuals that suffer from diabetes insipidus or some forms of renal impairment.

Chronic Effects: Chronic exposure may cause mottling of teeth and bone damage (osteosclerosis) and fluorosis. Symptoms of fluorosis include brittle bones, weight loss, anemia, calcified ligaments, general ill health and joint stiffness.

Section 3 - Composition / Information on Ingredients

Ingredient Name	CAS Number	EINECS/ELINCS	% wt or % vol
Sodium Fluoride	7681-49-4	231-667-8	98

Trace Impurities:

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH
	TWA	STEL	TWA	STEL	TWA	STEL	IDLH
Sodium Fluoride	2.5 mg F/m ³	None estab.	2.5 mg F/m ³	none estab.	2.5 mg F/m ³	none estab.	none estab.

Section 4 - First Aid Measures

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. **CALL A PHYSICIAN IMMEDIATELY.**

Eye Contact: Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.

Skin Contact: Wipe off any excess material from skin and then immediately flush skin with large amounts of soapy water. Remove contaminated clothing and shoes. Wash clothing before re-use. Apply bandages soaked in magnesium sulfate. **CALL A PHYSICIAN IMMEDIATELY.**

Ingestion: Unlikely. If accidental ingestion should occur, have the exposed person drink 1 to 2 glasses of milk and induce vomiting. Never give anything by mouth to someone who is unconscious or convulsing. **CALL A PHYSICIAN IMMEDIATELY.**

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: For large exposures, systemic effects (hypocalcemia and hypomagnesia) may occur.

Section 5 - Fire-Fighting Measures

Flash Point:

Burning Rate:

Autoignition Temperature:

LEL: none

UEL: none

Flammability Classification: non-flammable

Extinguishing Media: Sodium fluoride does not burn. Use extinguishing agents that will put out the surrounding fire.

Unusual Fire or Explosion Hazards: None reported.

Hazardous Combustion Products:

Fire-Fighting Instructions: Do not release runoff from fire control methods to sewers or waterways.

Fire-Fighting Equipment: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.



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Section 6 - Accidental Release Measures

Spill /Leak Procedures: Notify safety personnel, provide adequate ventilation, and do not allow the spilled sodium fluoride to come into contact with acids. Do not flush the spilled material to sewers, watersheds, or waterways. Shovel, scoop, or vacuum the spilled sodium fluoride and place it into appropriate containers for disposal without creating dusty conditions.

Large Spills

Containment: For large spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or waterways.

Cleanup: Cleanup personnel must wear appropriate personal protective equipment (see sect. 8).

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Separate from acids and oxidizing materials. Containers of this material may be hazardous when empty since they retain product residues (dust, solids).

Storage Requirements: Store sodium fluoride in closed, airtight, moisture-proof containers in a cool, dry, well-ventilated area *away from acids*. Protect these containers from physical damage.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: General exhaust is adequate under normal operating conditions.

If risk of overexposure exists, wear NIOSH-approved dust respirator.

Correct fit is essential to obtain adequate protection.

In confined spaces where there is inadequate ventilation, wear full-face air supplied breathing apparatus.

Personal Protective Clothing/Equipment

Eyes: Safety glasses with side shields; or as required, chemical goggles.

Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Wear chemical protective gloves, eg. PVC. Wear safety footwear.

Respiratory Protection:

Ventilation: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source. **Administrative Controls:** If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Contaminated Equipment: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance and Odor: White crystals/Odorless.

Odor Threshold: no data available

Vapor Pressure: 1 @ 1077C (1971F)

pH: no data available

Vapor Pressure: 1.9 hPa (1.4 mmHg)

Vapor Density: no data available (air=1)

Evaporation Rate: Not available

Viscosity: no data available

LEL: no data available vol%

UEL: no data available vol %

Molecular Formula: NaF

Molecular Weight: 42

Water Solubility: 4 g NaF/100 ml H₂O at 59°F (15°C)

Other Solubilities: no data available

Boiling Point: 3092°F (1700°C)

Freezing/Melting Point: 1814°F (993°C)

Viscosity: no data available

Refractive Index: no data available

Surface Tension: no data available

% Volatile: no data available

Evaporation Rate: no data available

Specific Gravity/Density: 2.78 g/cm³

Flash Point: no data available °C (°F)

Auto-ignition Temperature: no data available °C (°F)

Partition coefficient: n-octanol/water log Pow: at 25 °C (77 °F)

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Section 10 - Stability and Reactivity

Stability: Sodium Fluoride is stable at room temperature in closed containers under normal storage and handling conditions.

Polymerization: Hazardous polymerization cannot occur.

Chemical Incompatibilities: Accidental contact of sodium fluoride with acids will produce very dangerous hydrogen fluoride gas.

Conditions to Avoid: Prevent any contact with acids.

Hazardous Decomposition Products: Although sodium fluoride does not burn, decomposition of it by reaction with acids or acidic vapors will produce extremely corrosive and toxic hydrogen fluoride.

Section 11- Toxicological Information

Toxicity Data:*

Oral rat LD50: 52 mg/kg;

Eye Draize test, rabbit, eye: 20 mg/24H Moderate;

Oral, mouse: LD50 = 44 mg/kg;

Oral, rabbit: LD50 = 200 mg/kg;

Oral, rat: LD50 = 31 mg/kg;

Epidemiology: Oral, rat: TDLo = 617 mg/kg/2Y-C (Tumorigenic - equivocal tumorigenic agent by RTECS criteria - Endocrine - thyroid tumors and Musculoskeletal - tumors.; Oral, mouse: TDLo = 14 mg/kg/43W-C (Tumorigenic - equivocal tumorigenic agent by RTECS criteria - Skin and Appendages - tumors.

Teratogenicity: Oral, rat: TDLo = 240 mg/kg (female 11-14 day(s) after conception) Specific Developmental Abnormalities - musculoskeletal system.; Oral, rat: TDLo = 255 mg/kg (female 85 day(s) pre-mating) Specific Developmental Abnormalities - Central Nervous System.; Intraperitoneal, rat: TDLo = 9 mg/kg (female 10-18 day(s) after conception) Effects on Embryo or Fetus - extra-embryonic structures (e.g. placenta, umbilical cord) and Effects on Embryo or Fetus - fetal death.

Reproductive Effects: Oral, rat: TDLo = 150 mg/kg (male 30 day(s) pre-mating) Reproductive - Paternal Effects - spermatogenesis (incl. genetic material, sperm morphology, motility, and count) and Paternal Effects - testes, epididymis, sperm duct and Fertility - male fertility index (e.g. # males impregnating females per # males exposed to fertile nonpregnant females).; Oral, rat: TDLo = 221 mg/kg (female 1-20 day(s) after conception) Fertility - post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants).

Mutagenicity: DNA Inhibition: Human, Fibroblast = 100 mg/L.; Cytogenetic Analysis: Human, Fibroblast = 20 mg/L.; Cytogenetic Analysis: Human, Lymphocyte = 20 mg/L.; Mutation in Mammalian Somatic Cells: Human, Lymphocyte = 440 mg/L.

Neurotoxicity: No information found

* See NIOSH, RTECS (WB0350000), for additional toxicity data.

Section 12 - Ecological Information

Toxicity

Toxicity to fish mortality NOEC - Cyprinodon variegatus (sheepshead minnow) - 500 mg/l - 96h

LC50 - Oncorhynchus mykiss (rainbow trout) - 200 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates - EC50 - Daphnia magna (Water flea) - 98 mg/l - 48 h

Persistence and degradability

No data available

Bioaccumulative potential

Bioaccumulation Salmo trutta - 10 d

- 5 mg/l

Bioconcentration factor (BCF): 2.3

Mobility in soil

No data available

Section 13 - Disposal Considerations

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

Disposal Regulatory Requirements:

Container Cleaning and Disposal:

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Section 14 - Transport Information

Transportation Data (49 CFR 172.101):

<p>Domestic (Land, D.O.T.) UN/NA: UN1690 Proper Shipping Name: SODIUM FLUORIDE, SOLID Hazard Class: 6.1 Packing Group: III USA RQ: CAS# 7681-49-4; 1000 lb final RQ; 454 kg final RQ Poison Inhalation Hazard: No</p>	<p>International (Air, I.C.A.O.) UN/NA: UN1690 Proper Shipping Name: SODIUM FLUORIDE, SOLID Hazard Class: 6.1 Packing Group: III</p>
<p>International (Water, I.M.O.) UN/NA: UN1690 Proper Shipping Name: SODIUM FLUORIDE, SOLID Hazard Class: 6.1 Packing Group: III</p>	<p>TDG UN/NA: UN1690 Proper Shipping Name: SODIUM FLUORIDE, SOLID Hazard Class: 6.1 Packing Group: III</p>

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 7681-49-4 is listed on the TSCA inventory.

Health & Safety Reporting List None of the chemicals are on the Health & Safety Reporting List. **Chemical Test Rules** None of the chemicals in this product are under a Chemical Test Rule.

Section 12b None of the chemicals are listed under TSCA Section 12b. \

TSCA Significant New Use Rule None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs CAS# 7681-49-4; 1000 lb final RQ; 454 kg final RQ

SARA Section 302 Extremely Hazardous Substances None of the chemicals in this product have a TPO.

SARA Codes CAS # 7681-49-4; immediate, delayed.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act: This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

Clean Water Act: CAS# 7681-49-4 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA. **STATE** CAS# 7681-49-4 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, (listed as Fluorides, inorganic), Minnesota, (listed as Fluorides), Massachusetts. **California Prop 65** California No Significant Risk Level: None of the chemicals in this product are listed.

European Labeling in Accordance with EC Directives

Hazard Symbols: T

Risk Phrases:

R 25 Toxic if swallowed.

R 32 Contact with acids liberates very toxic gas.

R 36/38 Irritating to eyes and skin.

Safety Phrases:

S 22 Do not breathe dust.

S 36 Wear suitable protective clothing.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)

CAS# 7681-49-4; 1

Canada

CAS# 7681-49-4 is listed on Canada's DSL List

Canadian WHMIS Classifications: Not available

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

CAS# 7681-49-4 is listed on Canada's Ingredient Disclosure List

US Federal

TSCA

CAS# 7681-49-4 is listed on the TSCA Inventory.

Section 16 - Other Information

Disclaimer: All information, recommendations and suggestions appearing herein are based upon sources believed to be reliable: However, it is the users responsibility to determine the safety, toxicity and suitability for its own use of this product. WEGO CHEMICAL GROUP DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE USE BY OTHERS OF THIS PRODUCT.

