

School Material Safety Data Sheet

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SODIUM FLUORIDE

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SECTION 1. INTRODUCTORY INFORMATION

MATERIAL NAME AND FORMULA: SODIUM FLUORIDE; NaF

SYNONYMS: Chemifluor, Florocid, Flura-Drops, Ossalin, etc.

CAS NUMBER: 7681-49-4

INGREDIENTS: Sodium Fluoride; ca 99% (Grades with lower purity are also available)

DOT CLASSIFICATION: ORM-B

MANUFACTURERS: Always request Material Safety Data Sheets from your chemical supplier. These should indicate the manufacturer of the substance and include an emergency phone number to call. The Manufacturers section of this book contains a listing of some of the larger manufacturers and available emergency numbers.

DESCRIPTION: Sodium Fluoride occurs as clear, lustrous crystals or white powder. No odor.

PRELIMINARY INFORMATION: This substance is a strong tissue irritant and toxic by ingestion. (5g is the approximate human lethal dose.) The material is not combustible but can react with acids to produce toxic and irritating hydrogen fluoride. Most common area of use would be in the chemistry lab. Sodium fluoride is a "particularly toxic and dangerous reagent" (ref. #511, p. 33). This material should not be used in schools if alternatives can be found to meet the necessary educational objectives. If its use is deemed necessary, keep amounts used to a minimum and use with great caution (ref. #511, p. 90).



SECTION 2. USE AND STORAGE INFORMATION

- PRELIMINARY PLANNING CONSIDERATIONS -

- Safety glasses or goggles and protective clothing (rubberized apron, etc.) should be worn for all experiments.
- Be sure eyewash station and safety shower are in good working order and readily available.
- Always provide for safe disposal of all chemical waste generated in the lab. Check applicable regulations prior to use.
- Not recommended for use or storage in schools without an absolute need being determined.
- Whenever possible, substitute less hazardous materials.
- Review sections 4 and 5 to prepare for possible accidents or emergencies.
- Rubber gloves are recommended when working with this material.
- Eating and smoking should be prohibited in areas where this material is handled.

-- USAGE PRECAUTIONS AND PROCEDURES --

- For safety, contact lenses should not be worn in the laboratory: Soft lenses may absorb and all lenses may concentrate irritants. Particles can adhere to contact lenses and cause corneal damage.
- READ THE LABEL and follow all precautions.
- Maintain good housekeeping practices to avoid unintentional mixing with incompatible materials.
- After working with this material, always wash hands and face thoroughly before eating, drinking, smoking, or using toilet facilities.
- No smoking in storage or use area.
- Avoid creating airborne dust conditions.
- Avoid contact with skin, eyes, and clothing.
- Do not ingest or breathe dust or mist.

-- ADDITIONAL INFORMATION --

- Material does not polymerize. It is stable under normal conditions.
- Incompatible with acids; may cause formation of HF (toxic and irritating gas).
- Sodium Fluoride is used in certain insecticides, fungicides, rodenticides, and in toothpastes and municipal water supplies (1 ppm).
- Aqueous solutions etch glass, but glass bottles can be used to store the powder or dry crystals.

- PREFERRED STORAGE LOCATION AND METHODS -

- Storage area should be cool and well ventilated. Containers should be tightly closed.
- Do not store chemicals alphabetically by name; store by chemical family instead to keep compatibles together.
- All chemical containers should be protected from physical damage and kept out of direct sunlight.
- No smoking in storage or use area.
- Purchase only amounts equivalent to one year's needs, if at all.
- Should be stored in approved, locked POISONS cabinet, away from acids.

SECTION 3. SPILLS AND DISPOSAL PROCEDURES

IF MATERIAL IS SPILLED:

- Ventilate area of spill.
- Cleanup personnel should wear personal protective equipment as necessary to prevent skin and eye contact and inhalation of dust.
- Prevent release of NaF to sewers or waterways.
- Carefully scoop up spilled material and collect in a suitable container for disposal or reclamation. Avoid creating airborne dust conditions.
- Cleanup methods such as vacuuming (with appropriate filter) or wet mopping will minimize dust dispersion.
- For liquid spills, cover material with an inert solid absorbent (vermiculite, dry sand, etc.) and scoop into appropriate container for disposal in accordance with existing regulations.

DISPOSAL OF SMALL QUANTITIES:

- Contact supplier or licensed disposal contractor for specific treatment/disposal procedures.
- Solid material may be disposed of in sealed containers in a secured sanitary landfill, regulations permitting.
- Treat solutions with an excess of lime, and dispose of the resulting (CaF) precipitate in an approved landfill, if regulations permit.

DISPOSAL OF LARGER AMOUNTS: Contact a licensed disposal company.

*** FOLLOW ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS FOR ALL WASTE DISPOSAL ***

SECTION 4: HEALTH HAZARDS

Current OSHA PEL and ACGIH TLV: 8-hr. TWA: 2.5 mg/m³ (as F)
 Human, Oral, LDLo: 71 mg/kg
 Rat, Oral, LD₅₀: 180 mg/kg
 Rabbit, Eye: 20 mg/24 hr - severe irritation

- Inhalation of sodium fluoride may cause irritation of the respiratory tract. Long-term exposure can result in skeletal abnormalities (fluorosis) characterized by bone densification and calcification of the ligaments of the pelvis and spine. Digestive tract disturbances have also been reported in workers exposed to fluoride.
- On ingestion, sodium fluoride causes severe gastrointestinal distress with excessive salivation, nausea, vomiting, diarrhea, and abdominal pain. Other effects may include muscular weakness, tremors, convulsions, weak pulse, and loss of consciousness. Death due to respiratory paralysis may occur.
- The above symptoms can occur from ingestion of less than one gram. The lethal dose for humans is about 5 grams.
- Sodium fluoride has not been identified as a known or suspected carcinogen by the NTP, IARC, or OSHA.

SECTION 5: FIRST AID PROCEDURES

Eye contact:

- Flush eyes promptly with plenty of running water for at least 15 minutes, including under the eyelids.
- Get prompt medical attention.*

Skin contact:

- Flush with running water then wash exposed areas of skin with soap and water.
- Get medical attention if irritation persists.*

Inhalation:

- Remove victim to fresh air; restore and/or support breathing as necessary.
- Get medical help for coughing or breathing difficulty.*

Ingestion:

- Get prompt medical attention.*
- Give several glasses of milk or water to drink. (Milk is preferable because of its calcium content.) Induce vomiting -- but ONLY if victim is conscious and alert.
- Never give anything by mouth to a person who is unconscious or convulsing.

* Get medical help (in school, paramedic, or community) for further treatment, observation, and support after first aid.

SECTION 6: FIRE PROCEDURES AND DATA

Sodium fluoride is not combustible. Skin and eye contact should be avoided.

- Extinguishing media: Use media appropriate to surrounding fire conditions.
- For major fires, or if large quantities of this material are involved, fire fighters should wear appropriate protective clothing and use respiratory protection. Self-contained breathing apparatus is recommended.
- A water spray may be used to cool fire-exposed containers and disperse vapors.

THERMAL DECOMPOSITION PRODUCTS: None

FLASH POINT AND METHOD(S) ... Not Combustible
 AUTOIGNITION TEMPERATURE ... Not Combustible

FLAMMABILITY LIMITS IN AIR (vol. %) :

SECTION 7: PHYSICAL DATA

BOILING POINT (@ 1 atm) ... 3095°F (1702°C)
 VAPOR PRESSURE (@ 20°C, mm Hg) ... ca 0 (1@1077°C)
 SOLUBILITY IN WATER (@ 20°C) (g/cc) ... 4.2 (5.0 @100°C)
 SPECIFIC GRAVITY ... 2.8
 MELTING POINT ... 1818°F (922°C)
 FORMULA WEIGHT ... 42

DATA SOURCES: Genium's Industrial MSDS #138 (8/85) and references 2, 4, 5, 6, 7, 9, 12, 14, 20, 27, 43, 506, 509, 510, 511, 518.
 (see glossary for titles)

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