1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Sodium fluoride
Product Number : 450022
Brand : Aldrich
Supplier : Sigma-Aldrich Corporation
3050 Spruce Street
SAINT LOUIS MO  63103
USA
Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555
Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Target Organ Effect, Highly toxic by ingestion, Irritant

Target Organs
Kidney, Heart, Bone, Nerves., Gastrointestinal tract, Teeth., Damage to the lungs.
Kidney, Heart, Bone, Nerves., Gastrointestinal tract, Teeth., Damage to the lungs.

GHS Classification
Acute toxicity, Oral (Category 2)
Skin irritation (Category 2)
Eye irritation (Category 2A)
Acute aquatic toxicity (Category 3)

GHS Label elements, including precautionary statements

Pictogram

Signal word : Danger
Hazard statement(s)
H300 : Fatal if swallowed.
H315 : Causes skin irritation.
H319 : Causes serious eye irritation.
H402 : Harmful to aquatic life.

Precautionary statement(s)
P264 : Wash hands thoroughly after handling.
P301 + P310 : IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P305 + P351 + P338 : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

HMIS Classification
Health hazard : 3
Chronic Health Hazard: *
Flammability: 0
Physical hazards: 0

NFPA Rating
Health hazard: 3
Fire: 0
Reactivity Hazard: 0

Potential Health Effects
Inhalation May be harmful if inhaled. Causes respiratory tract irritation.
Skin May be harmful if absorbed through skin. Causes skin irritation.
Eyes Causes eye irritation.
Ingestion May be fatal if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula: FNa
Molecular Weight: 41.99 g/mol

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium fluoride</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>7681-49-4</td>
<td>231-667-8</td>
<td>009-004-00-7</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Conditions of flammability
Not flammable or combustible.

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Dry powder

Special protective equipment for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Hydrogen fluoride, Sodium oxides
Hazardous decomposition products formed under fire conditions. - Nature of decomposition products not known.

Further information
The product itself does not burn.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Do not flush with water. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Never allow product to get in contact with water during storage. Do not store near acids. Moisture sensitive. Keep in a dry place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium fluoride</td>
<td>7681-49-4</td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
</tbody>
</table>

Remarks
Varies with compound

<table>
<thead>
<tr>
<th>TWA</th>
<th>2.5 mg/m³</th>
<th>USA. Occupational Exposure Limits (OSHA) - Table Z2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z37.28-1969</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWA</td>
<td>2.5 mg/m³</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

Bone damage Fluorosis Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen varies

| TWA                      | 2.5 mg/m³ | USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000 |

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Immersion protection
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: > 480 min
Material tested: Dermatril® (Aldrich Z677272, Size M)

Splash protection
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: > 30 min
Material tested: Dermatril® (Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Form powder
Colour white

Safety data
pH no data available
Melting point/freezing point Melting point/range: 993 °C (1,819 °F)
Boiling point no data available
Flash point no data available
Ignition temperature no data available
Autoignition temperature no data available
Lower explosion limit no data available
Upper explosion limit no data available
Vapour pressure 1.9 hPa (1.4 mmHg)
Density 2.780 g/cm3
Water solubility no data available
Partition coefficient: n-octanol/water no data available
10. STABILITY AND REACTIVITY

**Chemical stability**
Stable under recommended storage conditions.

**Possibility of hazardous reactions**
no data available

**Conditions to avoid**
Exposure to moisture.

**Materials to avoid**
Strong acids

**Hazardous decomposition products**
Hazardous decomposition products formed under fire conditions. - Hydrogen fluoride, Sodium oxides
Hazardous decomposition products formed under fire conditions. - Nature of decomposition products not known.
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

**Acute toxicity**

**Oral LD50**
LD50 Oral - rat - 31 mg/kg
LD50 Oral - mouse - 44 mg/kg
LD50 Oral - rabbit - 200 mg/kg
LD50 Oral - Domestic Animals - 100 mg/kg
LD50 Oral - Bird (wild) - 110 mg/kg
TDLo Oral - Human - 0.214 mg/kg
TDLo Oral - Human - 3.57 mg/kg
Remarks: Gastrointestinal:Changes in structure or function of salivary glands. Gastrointestinal:Other changes.
TDLo Oral - Human - male - 1,662 mg/kg
TDLo Oral - Human - female - 7 mg/kg
Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Ptosis. Cyanosis
TDLo Oral - mouse - 0.0084 mg/kg
Remarks: Gastrointestinal:Decreased motility or constipation.
TDLo Oral - mouse - 0.034 mg/kg
LDLO Oral - Human - 71 mg/kg
LDLO Oral - Human - 32 mg/kg
LDLO Oral - Human - 0.07 mg/kg
Remarks: Cardiac:Arrhythmias (including changes it conduction). Peripheral Nerve and Sensation:Recording from peripheral motor nerve.
LDLO Oral - Human - female - 90 mg/kg
LDLO Oral - Human - female - 360 mg/kg
Remarks: Cyanosis

Inhalation LC50
no data available

Dermal LD50
no data available

Other information on acute toxicity
TDLo Intradermal - Human - 0.014 mg/kg

TDLo Parenteral - rat - 9 mg/kg
Remarks: Endocrine: Hyperglycemia. Blood: Changes in serum composition (e.g., TP, bilirubin, cholesterol).
Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: Hepatic microsomal mixed oxidase (dealkylation, hydroxylation, etc.).

TDLo Parenteral - rat - 35 mg/kg

LDLO Subcutaneous - rabbit - 100 mg/kg
LDLO Subcutaneous - guinea pig - 100 mg/kg
LDLO Intraperitoneal - dog - 50 mg/kg
LDLO Subcutaneous - dog - 155 mg/kg
LDLO Subcutaneous - cat - 14 mg/kg
LD50 Intraperitoneal - rat - 22 mg/kg
LD50 Intravenous - rat - 26 mg/kg
Remarks: Nutritional and Gross Metabolic: Weight loss or decreased weight gain.

LD50 Subcutaneous - rat - 175 mg/kg
LD50 Intraperitoneal - mouse - 38 mg/kg
Remarks: Gastrointestinal: Other changes. Liver: Other changes. Kidney, Ureter, Bladder: Other changes.

LD50 Intravenous - mouse - 50.83 mg/kg

LD50 Subcutaneous - mouse - 0.115 mg/kg
LD50 Intravenous - Monkey - 26.6 mg/kg

Skin corrosion/irritation
Serious eye damage/eye irritation
Eyes - rabbit - Eye irritation - 24 h
Remarks: Moderate eye irritation

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity
This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.
IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Sodium fluoride)
3 - Group 3: Not classifiable as to its carcinogenicity to humans (Sodium fluoride)

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**

no data available

**Teratogenicity**

no data available

**Specific target organ toxicity - single exposure (Globally Harmonized System)**
no data available

**Specific target organ toxicity - repeated exposure (Globally Harmonized System)**
no data available

**Aspiration hazard**
no data available

**Potential health effects**

<table>
<thead>
<tr>
<th>Route</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>May be harmful if inhaled. Causes respiratory tract irritation.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>May be fatal if swallowed.</td>
</tr>
<tr>
<td>Skin</td>
<td>May be harmful if absorbed through skin. Causes skin irritation.</td>
</tr>
<tr>
<td>Eyes</td>
<td>Causes eye irritation.</td>
</tr>
</tbody>
</table>

**Signs and Symptoms of Exposure**
prolonged or repeated exposure can cause:; Damage to the lungs.

**Synergistic effects**
no data available

**Additional Information**
RTECS: WB0350000

---

12. **ECOLOGICAL INFORMATION**

**Toxicity**

<table>
<thead>
<tr>
<th>Toxicity to fish</th>
<th>Toxicity to daphnia and other aquatic invertebrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>mortality NOEC - Cyprinodon variegatus (sheepshead minnow) - 500 mg/l - 96 h</td>
<td>EC50 - Daphnia magna (Water flea) - 98 mg/l - 48 h</td>
</tr>
<tr>
<td>LC50 - Oncorhynchus mykiss (rainbow trout) - 200 mg/l - 96 h</td>
<td></td>
</tr>
</tbody>
</table>

**Persistence and degradability**

**Bioaccumulative potential**

<table>
<thead>
<tr>
<th>Bioaccumulation</th>
<th>Bioconcentration factor (BCF): 2.3</th>
</tr>
</thead>
</table>

**Mobility in soil**
no data available
PBT and vPvB assessment
no data available

Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life.
no data available

13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1690   Class: 6.1   Packing group: III
Proper shipping name: Sodium fluoride, solid
Reportable Quantity (RQ): 1000 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN number: 1690   Class: 6.1   Packing group: III   EMS-No: F-A, S-A
Proper shipping name: SODIUM FLUORIDE, SOLID
Marine pollutant: No

IATA
UN number: 1690   Class: 6.1   Packing group: III
Proper shipping name: Sodium fluoride, solid

15. REGULATORY INFORMATION

OSHA Hazards
Target Organ Effect, Highly toxic by ingestion, Irritant

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium fluoride</td>
<td>7681-49-4</td>
<td>2007-03-01</td>
</tr>
</tbody>
</table>

Pennsylvania Right To Know Components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium fluoride</td>
<td>7681-49-4</td>
<td>2007-03-01</td>
</tr>
</tbody>
</table>

New Jersey Right To Know Components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium fluoride</td>
<td>7681-49-4</td>
<td>2007-03-01</td>
</tr>
</tbody>
</table>
California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information
Copyright 2012 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.