SAFETY DATA SHEET

1. Identification

Product identifier: SODIUM FLUORIDE, SOLUTION, 0.1 M
Other means of identification:
  Product code: 2128

Recommended use:
  professional, scientific and technical activities: other professional, scientific and technical activities
Recommended restrictions:
  None known.

Manufacturer/Importer/Supplier/Distributor information:
  Company name: GFS Chemicals, Inc.
  Address: P.O. Box 245
  Powell
  OH
  43065
  US
  Telephone: Phone 740-881-5501
  Toll Free 800-858-9682
  Fax 740-881-5989
  Website: www.gfschemicals.com
  E-mail: service@gfschemicals.com
  Emergency phone number: Emergency Assistance Chemtrec 800-424-9300

2. Hazard(s) identification

Physical hazards:
  Not classified.
Health hazards:
  Reproductive toxicity
  Category 2
OSHA hazard(s):
  Not classified.

Label elements:
  Signal word: Warning
  Hazard statement:
    Suspected of damaging fertility or the unborn child.
  Precautionary statement:
    Prevention:
      Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.
    Response:
      If exposed or concerned: Get medical advice/attention.
    Storage:
      Store locked up.
    Disposal:
      Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Hazardous components</th>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>SODIUM FLUORIDE</td>
<td>7681-49-4</td>
<td>&lt;0.5</td>
<td></td>
</tr>
</tbody>
</table>

Non-hazardous components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER</td>
<td>7732-18-5</td>
<td>&gt;99.5</td>
</tr>
</tbody>
</table>

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.
4. First-aid measures

Inhalation
Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact
If calcium gluconate gel is available, rub it into affected skin. Rinse skin with water/shower. Get medical attention if irritation develops and persists.

Eye contact
Rinse with water. Get medical attention if irritation develops and persists.

Ingestion
Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed
Not available.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically.

General information
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. IF exposed or concerned: Get medical advice/attention.

5. Fire-fighting measures

Suitable extinguishing media

Unsuitable extinguishing media
None known.

Specific hazards arising from the chemical
Not applicable.

Special protective equipment and precautions for firefighters
Wear suitable protective equipment.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Wear appropriate personal protective equipment.

Methods and materials for containment and cleaning up
This product is miscible in water. Stop the flow of material, if this is without risk.

Large Spills: Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. For waste disposal, see section 13 of the MSDS.

Environmental precautions
Avoid discharge into drains, water courses or onto the ground. Prevent further leakage or spillage if safe to do so. Do not contaminate water.

7. Handling and storage

Precautions for safe handling
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact during pregnancy/while nursing. Use personal protective equipment as required. Avoid prolonged exposure. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment.

Conditions for safe storage, including any incompatibilities
Store locked up. Store in a cool, dry place out of direct sunlight.

8. Exposure controls/personal protection

Occupational exposure limits

<table>
<thead>
<tr>
<th>US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SODIUM FLUORIDE (CAS 7681-49-4)</td>
<td>PEL</td>
<td>2.5 mg/m3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>US. OSHA Table Z-2 (29 CFR 1910.1000)</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SODIUM FLUORIDE (CAS 7681-49-4)</td>
<td>TWA</td>
<td>2.5 mg/m3</td>
<td>Dust.</td>
</tr>
</tbody>
</table>

Material name: SODIUM FLUORIDE, SOLUTION, 0.1 M
2128 Version #: 01 Revision date: Issue date: November-21-2013
US. ACIHZ Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SODIUM FLUORIDE (CAS 7681-49-4)</td>
<td>TWA</td>
<td>2.5 mg/m³</td>
</tr>
</tbody>
</table>

US. NIOSH: Pocket Guide to Chemical Hazards

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
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<tr>
<td>SODIUM FLUORIDE (CAS 7681-49-4)</td>
<td>TWA</td>
<td>2.5 mg/m³</td>
</tr>
</tbody>
</table>

No biological exposure limits noted for the ingredient(s).

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection
- Wear safety glasses with side shields (or goggles).

Skin protection
- Hand protection: Wear protective gloves.
- Other: Normal work clothing (long sleeved shirts and long pants) is recommended.

Respiratory protection
- When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

General hygiene considerations
- Avoid contact with skin. Avoid contact with eyes. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance
- Clear.

Physical state
- Liquid.

Form
- Aqueous solution.

Color
- Colorless.

Odor
- Odorless.

Odor threshold
- Not available.

pH
- Not available.

Melting point/freezing point
- 32 °F (0 °C) estimated

Initial boiling point and boiling range
- > 212 °F (> 100 °C)

Flash point
- Not available.

Evaporation rate
- Not available.

Flammability (solid, gas)
- Not applicable.

Upper/lower flammability or explosive limits
- Flammability limit - lower (%)
- Not available.
- Flammability limit - upper (%)
- Not available.
- Explosive limit - lower (%)
- Not available.
- Explosive limit - upper (%)
- Not available.

Vapor density
- Not available.

Relative density
- Not available.

Solubility(ies)
- Miscible.

Partition coefficient (n-octanol/water)
- Not available.

Auto-ignition temperature
- Not available.

Decomposition temperature
- Not available.

Viscosity
- Not available.
Other information
- **Density**: 1.01 g/cm³ estimated
- **Molecular formula**: NaF
- **Molecular weight**: 41.99
- **Percent volatile**: > 99.5%
- **Specific gravity**: 1.01 estimated

10. Stability and reactivity
- **Reactivity**: Not available.
- **Chemical stability**: Material is stable under normal conditions.
- **Possibility of hazardous reactions**: No dangerous reaction known under conditions of normal use.
- **Conditions to avoid**: None under normal conditions.
- **Incompatible materials**: None known.
- **Hazardous decomposition products**: Hydrogen fluoride.

11. Toxicological information

Information on likely routes of exposure
- **Ingestion**: Based on available data, the classification criteria are not met.
- **Inhalation**: Due to lack of data the classification is not possible.
- **Skin contact**: Due to lack of data the classification is not possible.
- **Eye contact**: Due to lack of data the classification is not possible.

Symptoms related to the physical, chemical and toxicological characteristics
Not available.

Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>SODIUM FLUORIDE, SOLUTION, 0.1 M (CAS Mixture)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 Mouse</td>
<td>9030 mg/kg</td>
<td></td>
</tr>
<tr>
<td>LD50 Rat</td>
<td>8360 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 Mouse</td>
<td>4020 mg/kg</td>
<td></td>
</tr>
<tr>
<td>LD50 Rat</td>
<td>2809.5239 mg/kg, estimated</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>SODIUM FLUORIDE (CAS 7681-49-4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 Mouse</td>
<td>46 mg/kg</td>
<td></td>
</tr>
<tr>
<td>LD50 Rat</td>
<td>44.3 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 Mouse</td>
<td>23 mg/kg</td>
<td></td>
</tr>
<tr>
<td>LD50 Rat</td>
<td>17.2 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

**Skin corrosion/irritation**: Due to lack of data the classification is not possible.

**Serious eye damage/eye irritation**: May be irritating to eyes. Due to lack of data the classification is not possible.
Respiratory sensitization  Due to lack of data the classification is not possible.
Skin sensitization  May be irritating to the skin. Due to lack of data the classification is not possible.
Germ cell mutagenicity  Due to lack of data the classification is not possible.
Carcinogenicity  This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
Reproductive toxicity  Suspected of damaging fertility or the unborn child.
Specific target organ toxicity - single exposure  Due to lack of data the classification is not possible.
Specific target organ toxicity - repeated exposure  Due to lack of data the classification is not possible.
Aspiration hazard  Due to lack of data the classification is not possible.
Chronic effects  Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity  Contains a substance which causes risk of hazardous effects to the environment.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>SODIUM FLUORIDE, SOLUTION, 0.1 M (CAS Mixture)</td>
<td>Crustacea</td>
<td>EC50 Daphnia 30476.1914 mg/l, 48 hours, estimated</td>
</tr>
<tr>
<td>Components</td>
<td>Species</td>
<td>Test Results</td>
</tr>
<tr>
<td>SODIUM FLUORIDE (CAS 7681-49-4)</td>
<td>Aquatic</td>
<td>EC50 Water flea (Daphnia magna) 98 mg/l, 48 hours</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

Persistence and degradability  No data is available on the degradability of this product.
Bioaccumulative potential  Not available.
Mobility in soil  Not available.
Other adverse effects  Not available.

13. Disposal considerations

Disposal instructions  Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations  Not available.
Hazardous waste code  Not regulated.
Waste from residues / unused products  Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging  Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT  Not regulated as a hazardous material by DOT.
IATA  Not regulated as a dangerous good.
IMDG  Not regulated as a dangerous good.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code  No information available.

15. Regulatory information

US federal regulations  All components are on the U.S. EPA TSCA Inventory List.
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)  Not regulated.
US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not on regulatory list.

CERCLA Hazardous Substance List (40 CFR 302.4)
SODIUM FLUORIDE (CAS 7681-49-4) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories
Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No
SARA 302 Extremely hazardous substance No
SARA 311/312 Hazardous chemical No

Other federal regulations
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.
Safe Drinking Water Act (SDWA)
Not regulated.
Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number
Not listed.
Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))
DEA Exempt Chemical Mixtures Code Number
Not regulated.
Food and Drug Administration (FDA)
Not regulated.

US state regulations
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US. Massachusetts RTK - Substance List
SODIUM FLUORIDE (CAS 7681-49-4)

US. New Jersey Worker and Community Right-to-Know Act
Not regulated.

US. Pennsylvania RTK - Hazardous Substances
SODIUM FLUORIDE (CAS 7681-49-4)

US. Rhode Island RTK
Not regulated.

US. California Proposition 65
US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Not listed.

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>No</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances  (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>No</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>No</td>
</tr>
<tr>
<td>Country(s) or region</td>
<td>Inventory name</td>
<td>On inventory (yes/no)*</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A “Yes” indicates this product complies with the inventory requirements administered by the governing country(s)*

**16. Other information, including date of preparation or last revision**

Issue date: November-21-2013
Version #: 01
Further information: Not available.
Disclaimer: The information in the sheet was written based on the best knowledge and experience currently available. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Revision Information:
Composition / Information on Ingredients: Ingredients
Physical & Chemical Properties: Multiple Properties