Sodium Monofluorophosphate MSDS

1. Product Name and Identification

Product Name: Sodium Monofluorophosphate
Chemical Name: Sodium monofluorophosphate
Chemical Formula: Na_2FPO_3
CAS Number: 10163-35-2
EC Number: 233-433-0
Molecular Weight: 143.95 g/mol
Product Use: Dental care products, toothpaste additive, fluoride source, oral health applications
Supplier Information: [Company Name, Address, Phone Number, Emergency Contact Information]

2. Composition/Ingredients

Component: Sodium Monofluorophosphate
Concentration: ≥ 95%
CAS Number: 10163-35-2
EINECS Number: 233-433-0
Impurities: May contain trace amounts of sodium phosphate and sodium fluoride
Fluoride Content: 12.2% (as fluoride ion)
Water Content: ≤ 3.0%
Heavy Metals: ≤ 20 ppm (as Pb)

3. Hazards Identification

GHS Classification:

- Acute Toxicity - Oral (Category 4)
- Eye Irritation (Category 2A)
- Specific Target Organ Toxicity - Single Exposure (Category 3)

Signal Word: WARNING

Hazard Statements:

- H302: Harmful if swallowed
- H319: Causes serious eye irritation
- H335: May cause respiratory irritation

Precautionary Statements:

- Do not eat, drink or smoke when using this product
- Wash hands thoroughly after handling

- Avoid breathing dust/fume/gas/mist/vapors
- Wear protective gloves and eye protection
- If swallowed: Call a poison center if you feel unwell

4. First Aid Measures

Inhalation:

- Move person to fresh air immediately and keep comfortable
- If respiratory irritation develops, seek medical attention
- Monitor breathing and provide artificial respiration if needed
- Do not leave affected person unattended

Skin Contact:

- Wash immediately with plenty of soap and water for 15 minutes
- Remove contaminated clothing and shoes
- Generally non-irritating to intact skin
- Seek medical advice if irritation develops or persists

Eye Contact:

- Flush eyes immediately with clean water for at least 20 minutes
- Remove contact lenses if present and easy to remove
- Hold eyelids apart to ensure complete irrigation
- Seek immediate medical attention if irritation persists

Ingestion:

- Rinse mouth thoroughly with water
- Give water or milk to drink if person is conscious and alert
- Do not induce vomiting unless directed by medical professional
- Seek medical attention immediately - fluoride poisoning possible

5. Handling and Storage

Handling Precautions:

- Use appropriate personal protective equipment at all times
- Avoid generating and breathing dust particles
- Prevent ingestion - do not eat, drink, or smoke during handling
- Wash hands thoroughly after use
- Use only in well-ventilated areas

Storage Requirements:

- Store in original container in cool, dry place
- Keep tightly closed to prevent moisture absorption
- Storage temperature: 15-25°C recommended
- Protect from direct sunlight and heat sources
- Keep away from food, beverages, and animal feed
- Store separate from acids and strong bases

6. Exposure Controls/Personal Protection

Exposure Limits:

- OSHA PEL: 2.5 mg/m^3 (as fluoride, 8-hour TWA)
- ACGIH TLV: 2.5 mg/m^3 (as fluoride, 8-hour TWA)
- NIOSH REL: 2.5 mg/m^3 (as fluoride, 10-hour TWA)

Engineering Controls:

- Provide adequate general and local exhaust ventilation
- Use dust collection systems for powder handling
- Install emergency eyewash stations and safety showers
- Ensure proper ventilation to prevent dust accumulation

Personal Protective Equipment:

- **Respiratory:** N95 dust mask minimum; P100 filter for high dust operations
- **Eye Protection:** Chemical safety goggles with side shields
- **Skin Protection:** Nitrile or neoprene gloves; avoid latex gloves
- **Body Protection:** Long-sleeved shirt and long pants; chemical-resistant apron for bulk handling

7. Physical and Chemical Properties

Appearance: White crystalline powder
Odor: Odorless
pH: 7.5-8.5 (1% aqueous solution)
Melting Point: Decomposes at 625°C
Decomposition Temperature: >500°C
Density: 2.679 g/cm^3
Bulk Density: 0.6-0.9 g/cm^3
Solubility: Soluble in water (approximately 40 g/L at 25°C)
Solubility: Insoluble in ethanol
Hygroscopicity: Slightly hygroscopic
Particle Size: 200-400 mesh (typical)

8. Stability and Reactivity

Chemical Stability: Stable under normal storage and handling conditions

Conditions to Avoid:

- High temperatures above 500°C
- Strong acidic conditions (pH < 4)
- Contact with aluminum and aluminum alloys
- Prolonged exposure to moisture

Incompatible Materials:

- Strong acids (forms hydrogen fluoride)
- Aluminum and magnesium metals
- Glass and silica-containing materials at elevated temperatures
- Strong bases in concentrated solutions

Hazardous Decomposition Products:

- Hydrogen fluoride (in acidic conditions)
- Sodium oxide
- Phosphorus pentoxide
- Toxic fluorine compounds

Hazardous Reactions: May react with acids to release hydrogen fluoride gas; can etch glass and silicate materials

9. Toxicological Information

Acute Toxicity:

- Oral LD50 (rat): 1,250 mg/kg (harmful if swallowed)
- Dermal LD50 (rabbit): >2,000 mg/kg
- Inhalation LC50: No specific data available

Health Effects:

- **Acute:** Gastrointestinal irritation, nausea, vomiting from oral exposure
- **Chronic:** Dental and skeletal fluorosis with prolonged excessive exposure
- **Sensitization:** No evidence of skin or respiratory sensitization

Target Organs:

- Primary: Gastrointestinal system, teeth, bones
- Secondary: Kidneys, central nervous system (high doses)

Carcinogenicity:

- Not classified as carcinogenic by IARC, NTP, or OSHA
- No evidence of carcinogenic effects in available studies

Reproductive Toxicity:

- Limited evidence of reproductive effects at very high doses
- No effects expected at normal occupational exposure levels

Medical Surveillance:

- Monitor for signs of fluorosis in workers with chronic exposure
- Regular dental examinations recommended for exposed workers
- Baseline and periodic kidney function tests may be appropriate

10. Disposal Considerations

Waste Disposal Methods:

- Dispose through licensed hazardous waste contractor
- Small quantities may be disposed as fluoride-containing waste
- Do not discharge to surface water or sanitary sewer systems
- Follow all applicable federal, state, and local regulations

Container Disposal:

- Triple rinse containers with water before disposal
- Dispose of rinsate according to hazardous waste regulations
- Empty containers may be recycled where facilities exist
- Puncture containers to prevent inappropriate reuse

Environmental Precautions:

- Prevent release to waterways and groundwater
- Material may be harmful to aquatic organisms
- Contains fluoride which can accumulate in environment
- Use appropriate spill containment and cleanup procedures

Regulatory Information:

- May be classified as hazardous waste due to fluoride content
- Subject to RCRA regulations if discarded commercially
- Check local fluoride discharge limits for wastewater
- Reportable quantity: 1,000 pounds (CERCLA/SARA)

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Emergency Contact: [24-hour emergency response number]
Poison Control: National Poison Control Center: 1-800-222-1222
Regulatory Compliance: Complies with OSHA HCS 2012, GHS Rev. 7, and FDA requirements for oral care products

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