

ZINC FLUORIDE

ZFX

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Zinc difluoride	Solid needles or crystals Colorless to white Sinks and mixes with water.
Notify local health and pollution control agencies. Protect water intakes.	
Fire	Fire data not available.
Exposure	CALL FOR MEDICAL AID. SOLID OR DUST Irritating to eyes and nose. Harmful if swallowed. Move to fresh air. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
Water Pollution	HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
Collection Systems: Dredge

2. CHEMICAL DESIGNATIONS

- 2.1 **CG Compatibility Group:** Not listed.
- 2.2 **Formula:** ZnF₂
- 2.3 **IMO/UN Designation:** Not listed
- 2.4 **DOT ID No.:** 9158
- 2.5 **CAS Registry No.:** 7783-49-5
- 2.6 **NAERG Guide No.:** 151
- 2.7 **Standard Industrial Trade Classification:** 52310

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Approved dust and fume respirator, skin and eye protection.
- 3.2 **Symptoms Following Exposure:** INHALATION: Irritation of nasal passages, dryness, and nose bleed. EYES: Irritation may occur. SKIN: Excessive exposure may cause a rash. INGESTION: Salty or soapy taste, salivation, nausea, burning or crampy abdominal pain, vomiting, diarrhea, dehydration, and thirst.
- 3.3 **Treatment of Exposure:** Call a physician. INHALATION: Remove from exposure. EYES: Flush with water. SKIN: Wash with soap and cold water. INGESTION: Gastric lavage with lime water or a 1% solution of calcium chloride. Give several ounces of lime water at frequent intervals. Milk may be substituted. Aluminum hydroxide gel may be used to bind fluoride.
- 3.4 **TLV-TWA:** Not listed.
- 3.5 **TLV-STEL:** Not listed.
- 3.6 **TLV-Ceiling:** Not listed.
- 3.7 **Toxicity by Ingestion:** Grade 3; LD₅₀ = 50 to 500 mg/kg.
- 3.8 **Toxicity by Inhalation:** Currently not available.
- 3.9 **Chronic Toxicity:** Repeated exposures to excessive concentrations of fluorides may increase radiographic density of bones and eventually may be responsible for anatomical abnormalities.
- 3.10 **Vapor (Gas) Irritant Characteristics:** Not pertinent
- 3.11 **Liquid or Solid Characteristics:** Currently not available
- 3.12 **Odor Threshold:** Currently not available
- 3.13 **IDLH Value:** Not listed.
- 3.14 **OSHA PEL-TWA:** Not listed.
- 3.15 **OSHA PEL-STEL:** Not listed.
- 3.16 **OSHA PEL-Ceiling:** Not listed.
- 3.17 **EPA AEGL:** Not listed

4. FIRE HAZARDS

- 4.1 **Flash Point:** Currently not available
- 4.2 **Flammable Limits in Air:** Currently not available
- 4.3 **Fire Extinguishing Agents:** Currently not available
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Currently not available
- 4.5 **Special Hazards of Combustion Products:** Currently not available
- 4.6 **Behavior in Fire:** Currently not available
- 4.7 **Auto Ignition Temperature:** Currently not available
- 4.8 **Electrical Hazards:** Currently not available
- 4.9 **Burning Rate:** Currently not available
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** Not pertinent.
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** Not pertinent.
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
- 5.2 **Reactivity with Common Materials:** No reaction
- 5.3 **Stability During Transport:** Slightly hygroscopic
- 5.4 **Neutralizing Agents for Acids and Caustics:** Currently not available
- 5.5 **Polymerization:** Currently not available
- 5.6 **Inhibitor of Polymerization:** Currently not available

6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:** Fluoride salts are toxic to fish at concentrations as low as 2.3 ppm in fresh water. 96-hour TL_m values range from 4.7 to 35.5 mg Zn/l.
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):** 62.4 mg/l Zn will cause a 50% drop in the 5 day BOD.
- 6.4 **Food Chain Concentration Potential:** Zn may accumulate slightly. Fluorine is accumulated by aquatic animals.
- 6.5 **GESAMP Hazard Profile:** Not listed

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Currently not available
- 7.2 **Storage Temperature:** Currently not available
- 7.3 **Inert Atmosphere:** Currently not available
- 7.4 **Venting:** Currently not available
- 7.5 **IMO Pollution Category:** Currently not available
- 7.6 **Ship Type:** Currently not available
- 7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Not listed.
- 8.2 **49 CFR Class:** Not pertinent
- 8.3 **49 CFR Package Group:** Not listed.
- 8.4 **Marine Pollutant:** No
- 8.5 **NFPA Hazard Classification:** Not listed
- 8.6 **EPA Reportable Quantity:** 1000 pounds
- 8.7 **EPA Pollution Category:** C
- 8.8 **RCRA Waste Number:** Not listed
- 8.9 **EPA FWPCA List:** Yes

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Solid
- 9.2 **Molecular Weight:** 103.38 (anhydrous salt)
- 9.3 **Boiling Point at 1 atm:** 2732°F = 1500°C = 1773°K
- 9.4 **Freezing Point:** (Anhydrous salt) 1601.6°F = 872°C = 1145°K
- 9.5 **Critical Temperature:** Currently not available
- 9.6 **Critical Pressure:** Currently not available
- 9.7 **Specific Gravity:** 4.84 at 15°C 4.95 at 25°C
- 9.8 **Liquid Surface Tension:** Not pertinent
- 9.9 **Liquid Water Interfacial Tension:** Not pertinent
- 9.10 **Vapor (Gas) Specific Gravity:** Not pertinent
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent
- 9.12 **Latent Heat of Vaporization:** Estimated at BP 1500°C 958.4 Btu/lb = 532.5 cal/g = 22.3 X 10³ J/kg
- 9.13 **Heat of Combustion:** Not pertinent
- 9.14 **Heat of Decomposition:** Currently not available
- 9.15 **Heat of Solution:** Exothermic for anhydrous salt -227.8 Btu/lb = -126.5 cal/g = -5.3 X 10³ J/kg
- 9.16 **Heat of Polymerization:** Currently not available
- 9.17 **Heat of Fusion:** Currently not available
- 9.18 **Limiting Value:** Currently not available
- 9.19 **Reid Vapor Pressure:** Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
	N O T P E R T I N E N T		N O T P E R T I N E N T		N O T P E R T I N E N T		N O T P E R T I N E N T

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
77	1.650		N O T P E R T I N E N T		N O T P E R T I N E N T		N O T P E R T I N E N T