AMMONIUM FLUOBORATE

AFB

CAUTIONARY RESPONSE INFORMATION

Common Synonyms
Ammonium borofluoride
Ammonium tetrafluoborate

Solid crystals White Odorless

Sinks and mixes with water.

Wear goggles and self-contained breathing apparatus. Keep people away.
Stop discharge if possible.
Isolate and remove discharged material.
Notify local health and pollution control agencies.
Protect water intakes.

Fire

Not flammable.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose, and throat.
If inhaled may cause nose bleeds and nausea.
Move to fresh air.
DUST
Irritating to eyes, nose, and throat.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water. Induce vomiting.

Water Pollution

Effects of low concentrations on aquatic life are unknown.
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: Pump; Dredge

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed
2.2 Formula: NH_4BF_4
2.3 IMO/UN Designation: Not listed
2.4 DOT ID No.: Not listed
2.5 CAS Registry No.: 13826-83-0
2.6 NAERG Guide No.: 154
2.7 Standard Industrial Trade Classification: 51481

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Mechanical filter respirator if dusty or misty; self-contained breathing apparatus if fuming. Rubber gloves; safety glasses (dust) or chemical goggles (mist); full, clean work clothing.
3.2 Symptoms Following Exposure: INHALATION: May cause irritation of respiratory passages, nose bleeds, and nausea. EYES: May irritate.
3.3 Treatment of Exposure: INHALATION: Remove to fresh air; if symptoms persist consult a physician. EYES: Wash with water for 15 minutes and get medical attention. INGESTION: Give 3 to 4 glasses of water and induce vomiting. Consult a physician.
3.4 TLV-TWA: Not listed.
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Currently not available
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Currently not available
3.10 Vapor (Gas) Irritant Characteristics: Not pertinent
3.11 Liquid or Solid Characteristics: Currently not available
3.12 Odor Threshold: Not pertinent
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: Not flammable
4.2 Flammable Limits in Air: Not flammable
4.3 Fire Extinguishing Agents: Water spray will probably reduce fume and irritant gases.
4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent
4.5 Special Hazards of Combustion Products: Not pertinent
4.6 Behavior in Fire: Sublimes above 238°C yielding toxic fumes.
4.7 Auto Ignition Temperature: Not flammable
4.8 Electrical Hazards: Not pertinent
4.9 Burning Rate: Not pertinent
4.10 Adiabatic Flame Temperature: Not pertinent
4.11 Stoichometric Air to Fuel Ratio: Not pertinent
4.12 Flame Temperature: Not pertinent
4.13 Combustion Molar Ratio (Reactant to Product): Currently not available
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: Stable
5.4 Neutralizing Agents for Acids and Caustics: Not pertinent
5.5 Polymerization: Not pertinent
5.6 Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

6.1 Aquatic Toxicity: Currently not available
6.2 Waterfowl Toxicity: Currently not available
6.3 Biological Oxygen Demand (BOD): 87 ppm reduced BOD 50%
6.4 Food Chain Concentration Potential: Currently not available
6.5 GESAMP Hazard Profile: Not listed

7. SHIPPING INFORMATION

7.1 Grades of Purity: 97.0% minimum
7.2 Storage Temperature: Ambient (moderate)
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: 5000
8.7 EPA Pollution Category: D
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: 104.9
9.3 Boiling Point at 1 atm: Not pertinent, sublimes at 460°F = 238°C = 511.2°K
9.4 Freezing Point: 446°F = 230°C = 503.2°K
9.5 Critical Temperature: Not pertinent
9.6 Critical Pressure: Not pertinent
9.7 Specific Gravity: 1.871 at 15°C = 1.85 at 17.5°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): Currently not available
9.12 Latent Heat of Vaporization: Btu/lb = 144 = cal/g 80.2 = J/kg 3.36 X 10^5 NOTE: these data are for heat of sublimation.
9.13 Heat of Combustion: Not pertinent
9.14 Heat of Decomposition: Currently not available
9.15 Heat of Solution: Currently not available
9.16 Heat of Polymerization: Not pertinent
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
	NOT PERTINENT		NOT PERTINENT		NOT PERTINENT		NOT PERTINENT

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
80	23.952	80	0.000		CURRENTLY NOT AVAILABLE		NOT PERTINENT
90	29.486	100	0.001				
100	35.020	120	0.003				
110	40.554	140	0.006				
120	46.088	160	0.011				
130	51.622	180	0.018				
140	57.156	200	0.030				
150	62.690	220	0.046				
160	68.224	240	0.070				
170	73.757	260	0.101				
180	79.290	280	0.142				
190	84.825	300	0.196				
200	90.358	320	0.264				
210	95.893	340	0.350				
		360	0.457				
		380	0.587				
		400	0.744				
		420	0.933				
		440	1.158				