

# FERROUS FLUOROBORATE

FFB

## CAUTIONARY RESPONSE INFORMATION

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| <b>Common Synonyms</b><br>Ferrous borofluoride  | Liquid<br>Yellow-green<br><br>Sinks and mixes with water.  |
| <b>KEEP PEOPLE AWAY. AVOID CONTACT WITH LIQUID AND VAPOR.</b><br>Avoid inhalation.<br>Wear goggles and self-contained breathing apparatus.<br>Notify local health and pollution control agencies.<br>Protect water intakes. |  |
| <b>Fire</b>   | Not flammable.<br>Irritating gases may be produced when heated.  |
| <b>Exposure</b>   | CALL FOR MEDICAL AID.<br><br>VAPOR<br>POISONOUS IF INHALED.<br>If in eyes, hold eyelids open and flush with plenty of water.<br>If breathing has stopped, give artificial respiration.<br>If breathing is difficult, give oxygen.<br><br>LIQUID<br>Irritating to skin and eyes.<br>If swallowed will cause nausea and vomiting.<br>Remove contaminated clothing and shoes.<br>Flush affected areas with plenty of water.<br>IF IN EYES: hold eyelids open and flush with plenty of water.<br>IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting.<br>IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm. |
| <b>Water Pollution</b>  | Effect of low concentrations on aquatic life is unknown.<br>May be dangerous if it enters water intakes.<br>Notify local health and wildlife officials.<br>Notify operators of nearby water intakes.   |

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| <b>1. CORRECTIVE RESPONSE ACTIONS</b><br>Stop discharge<br>Collection Systems: Dredge<br>Do not burn  | <b>2. CHEMICAL DESIGNATIONS</b><br>2.1 CG Compatibility Group: Not listed.<br>2.2 Formula: Fe(BF <sub>4</sub> ) <sub>2</sub> ·H <sub>2</sub> O<br>2.3 IMO/UN Designation: Not listed<br>2.4 DOT ID No.: Not listed<br>2.5 CAS Registry No.: Currently not available<br>2.6 NAERG Guide No.: Not listed<br>2.7 Standard Industrial Trade Classification: 52310 |
| <b>3. HEALTH HAZARDS</b><br>3.1 Personal Protective Equipment: Goggles or face shield; rubber gloves<br>3.2 Symptoms Following Exposure: Ingestion causes irritation of mouth and stomach. Contact with eyes or skin causes irritation.<br>3.3 Treatment of Exposure: INGESTION: give large amount of water; induce vomiting; get medical attention. EYES: flush with water for at least 15 min. SKIN: flush with water.<br>3.4 TLV-TWA: 1 mg/m <sup>3</sup> (as iron)<br>3.5 TLV-STEL: Not listed.<br>3.6 TLV-Ceiling: Not listed.<br>3.7 Toxicity by Ingestion: Currently not available<br>3.8 Toxicity by Inhalation: Currently not available.<br>3.9 Chronic Toxicity: Currently not available<br>3.10 Vapor (Gas) Irritant Characteristics: Currently not available<br>3.11 Liquid or Solid Characteristics: Currently not available<br>3.12 Odor Threshold: Currently not available<br>3.13 IDLH Value: Not listed.<br>3.14 OSHA PEL-TWA: Not listed.<br>3.15 OSHA PEL-STEL: Not listed.<br>3.16 OSHA PEL-Ceiling: Not listed.<br>3.17 EPA AEGL: Not listed |   |

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| <b>4. FIRE HAZARDS</b><br>4.1 Flash Point: Not flammable<br>4.2 Flammable Limits in Air: Not flammable<br>4.3 Fire Extinguishing Agents: Not pertinent<br>4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent<br>4.5 Special Hazards of Combustion Products: Currently not available<br>4.6 Behavior in Fire: Not pertinent<br>4.7 Auto Ignition Temperature: Not pertinent<br>4.8 Electrical Hazards: Not pertinent<br>4.9 Burning Rate: Not pertinent<br>4.10 Adiabatic Flame Temperature: Currently not available<br>4.11 Stoichiometric Air to Fuel Ratio: Not pertinent<br>4.12 Flame Temperature: Currently not available<br>4.13 Combustion Molar Ratio (Reactant to Product): Not pertinent<br>4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed | <b>7. SHIPPING INFORMATION</b><br>7.1 Grades of Purity: 50% solution in water<br>7.2 Storage Temperature: Ambient<br>7.3 Inert Atmosphere: No requirement<br>7.4 Venting: Open<br>7.5 IMO Pollution Category: Currently not available<br>7.6 Ship Type: Currently not available<br>7.7 Barge Hull Type: Currently not available<br><br><b>8. HAZARD CLASSIFICATIONS</b><br>8.1 49 CFR Category: Not listed<br>8.2 49 CFR Class: Not pertinent<br>8.3 49 CFR Package Group: Not listed.<br>8.4 Marine Pollutant: No<br>8.5 NFPA Hazard Classification: Not listed<br>8.6 EPA Reportable Quantity: Not listed.<br>8.7 EPA Pollution Category: Not listed.<br>8.8 RCRA Waste Number: Not listed<br>8.9 EPA FWPCA List: Not listed  |
| <b>5. CHEMICAL REACTIVITY</b><br>5.1 Reactivity with Water: No reaction<br>5.2 Reactivity with Common Materials: Currently not available<br>5.3 Stability During Transport: Stable<br>5.4 Neutralizing Agents for Acids and Caustics: Not pertinent<br>5.5 Polymerization: Not pertinent<br>5.6 Inhibitor of Polymerization: Not pertinent   | <b>9. PHYSICAL &amp; CHEMICAL PROPERTIES</b><br>9.1 Physical State at 15° C and 1 atm: Liquid<br>9.2 Molecular Weight: 229.5 (solute only)<br>9.3 Boiling Point at 1 atm: Not pertinent (decomposes)<br>9.4 Freezing Point: Not pertinent<br>9.5 Critical Temperature: Not pertinent<br>9.6 Critical Pressure: Not pertinent<br>9.7 Specific Gravity: (est.) >1.1 at 20°C (liquid)<br>9.8 Liquid Surface Tension: Not pertinent<br>9.9 Liquid Water Interfacial Tension: Not pertinent<br>9.10 Vapor (Gas) Specific Gravity: Not pertinent<br>9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent<br>9.12 Latent Heat of Vaporization: Not pertinent<br>9.13 Heat of Combustion: Not pertinent<br>9.14 Heat of Decomposition: Not pertinent<br>9.15 Heat of Solution: Not pertinent<br>9.16 Heat of Polymerization: Not pertinent<br>9.17 Heat of Fusion: Currently not available<br>9.18 Limiting Value: Currently not available<br>9.19 Reid Vapor Pressure: Currently not available |
| <b>6. WATER POLLUTION</b><br>6.1 Aquatic Toxicity: Currently not available<br>6.2 Waterfowl Toxicity: Currently not available<br>6.3 Biological Oxygen Demand (BOD): Currently not available<br>6.4 Food Chain Concentration Potential: None<br>6.5 GESAMP Hazard Profile: Not listed  |   |

NOTES

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| 9.20<br>SATURATED LIQUID DENSITY |                       | 9.21<br>LIQUID HEAT CAPACITY |  | 9.22<br>LIQUID THERMAL CONDUCTIVITY |  | 9.23<br>LIQUID VISCOSITY   |  |
|----------------------------------|-----------------------|------------------------------|--|-------------------------------------|--|----------------------------|--|
| Temperature<br>(degrees F)       | Pounds per cubic foot | Temperature<br>(degrees F)   | British thermal unit per<br>pound-F                          | Temperature<br>(degrees F)          | British thermal unit inch<br>per hour-square foot-F          | Temperature<br>(degrees F) | Centipoise   |
| 68                               | 68.660                |                              | N<br>O<br>T<br><br>P<br>E<br>R<br>T<br>I<br>N<br>E<br>N<br>T |                                     | N<br>O<br>T<br><br>P<br>E<br>R<br>T<br>I<br>N<br>E<br>N<br>T |                            | N<br>O<br>T<br><br>P<br>E<br>R<br>T<br>I<br>N<br>E<br>N<br>T |

| 9.24<br>SOLUBILITY IN WATER |                                      | 9.25<br>SATURATED VAPOR PRESSURE |  | 9.26<br>SATURATED VAPOR DENSITY |  | 9.27<br>IDEAL GAS HEAT CAPACITY |  |
|-----------------------------|--------------------------------------|----------------------------------|--|---------------------------------|--|---------------------------------|--|
| Temperature<br>(degrees F)  | Pounds per 100 pounds<br>of water    | Temperature<br>(degrees F)       | Pounds per square inch                                       | Temperature<br>(degrees F)      | Pounds per cubic foot  | Temperature<br>(degrees F)      | British thermal unit per<br>pound-F                          |
|                             | M<br>I<br>S<br>C<br>I<br>B<br>L<br>E |                                  | N<br>O<br>T<br><br>P<br>E<br>R<br>T<br>I<br>N<br>E<br>N<br>T |                                 | N<br>O<br>T<br><br>P<br>E<br>R<br>T<br>I<br>N<br>E<br>N<br>T |                                 | N<br>O<br>T<br><br>P<br>E<br>R<br>T<br>I<br>N<br>E<br>N<br>T |