

# FLUOROBENZENE

FLB

## CAUTIONARY RESPONSE INFORMATION

|   |  |  |           |              |
|---|--|--|-----------|--------------|
| <b>Common Synonyms</b>  |  | Watery liquid  | Colorless | Benzene odor |
| Benzene fluoride<br>MFB<br>Monofluorobenzene<br>Phenyl fluoride   |  | May float or sink in water. Flammable vapor is produced. |           |              |
| <p>Keep people away. Avoid contact with liquid and vapor.<br/>Avoid inhalation.<br/>Shut off ignition sources. Call fire department.<br/>Stay upwind and use water spray to "knock down" vapor.<br/>Protect water intakes.<br/>Extinguish with dry chemical, foam, or carbon dioxide.</p> |  |  |           |              |
| <b>Fire</b>   | <p><b>FLAMMABLE</b><br/>Flashback along vapor trail may occur.<br/>Vapor may explode if ignited in an enclosed area.<br/>Wear goggles and self-contained breathing apparatus.<br/>Extinguish with dry chemical, foam, or carbon dioxide.</p>   |  |           |              |
| <b>Exposure</b>   | <p>Call for medical aid.</p> <p><b>VAPOR</b><br/>If inhaled will cause coughing or dizziness.<br/>Not irritating to eyes, nose and throat.<br/>Move to fresh air.<br/>If breathing has stopped, give artificial respiration.<br/>If breathing is difficult, give oxygen.</p> <p><b>LIQUID</b><br/>Irritating to skin and eyes.<br/>Harmful if swallowed.<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.</p> |  |           |              |
| <b>Water Pollution</b>  | <p>HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.<br/>May be dangerous if it enters water intakes.<br/>Notify local health and wildlife officials.<br/>Notify operators of nearby intakes.</p>  |  |           |              |

### 1. CORRECTIVE RESPONSE ACTIONS

Stop discharge  
Contain  
Collection Systems: Skim; Pump (as appropriate)  
Do not burn

### 2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** Not listed.  
2.2 **Formula:** C<sub>6</sub>H<sub>5</sub>F  
2.3 **IMO/UN Designation:** 3.2/2387  
2.4 **DOT ID No.:** 2387  
2.5 **CAS Registry No.:** 462-06-6  
2.6 **NAERG Guide No.:** 130  
2.7 **Standard Industrial Trade Classification:** 51129

### 3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Organic vapor-acid gas respirator where appropriate; neoprene or vinyl gloves; chemical safety spectacles, plus face shield where appropriate; rubber footwear; apron or impervious clothing for splash protection; hard hat.
- 3.2 **Symptoms Following Exposure:** Irritating to skin, eyes and mucous membranes. Repeated exposure of skin may cause dermatitis due to defatting action. Chronic inhalation of vapors or mist may result to damage to lungs, liver and kidneys. Acute vapor exposures can cause symptoms ranging from coughing to transient anesthesia and central nervous system depression.
- 3.3 **Treatment of Exposure:** Get medical attention for all eye exposures and any serious over-exposures. Treat the symptoms. **INHALATION:** Remove to clean air; administer oxygen as needed. **INGESTION:** Dilute by drinking water, if vomiting occurs, administer more water. Administer saline laxative. **EYES:** Flush thoroughly with water. **SKIN:** Remove contaminated clothing, wash exposed area with soap and water.
- 3.4 **TLV-TWA:** Not listed.  
3.5 **TLV-STEL:** Not listed.  
3.6 **TLV-Ceiling:** Not listed.  
3.7 **Toxicity by Ingestion:** Grade 2; LD<sub>50</sub> = 4.4 g/kg (rat)  
3.8 **Toxicity by Inhalation:** Currently not available.  
3.9 **Chronic Toxicity:** Currently not available  
3.10 **Vapor (Gas) Irritant Characteristics:** Vapors are nonirritating to the eyes and throat.  
3.11 **Liquid or Solid Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.  
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:** 9°F C.C.  
4.2 **Flammable Limits in Air:** Currently not available  
4.3 **Fire Extinguishing Agents:** Carbon dioxide, dry chemical, foam or water spray  
4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent  
4.5 **Special Hazards of Combustion Products:** Burning in open flame can form toxic hydrogen fluoride gases.  
4.6 **Behavior in Fire:** Heavy vapor can travel a considerable distance to a source of ignition and flash back.  
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:** 33.3 (calc.)  
4.12 **Flame Temperature:** Currently not available  
4.13 **Combustion Molar Ratio (Reactant to Product):** 9.0 (calc.)  
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):** Currently not available  
6.4 **Food Chain Concentration Potential:** Currently not available  
6.5 **GESAMP Hazard Profile:**  
Bioaccumulation: 0  
Damage to living resources: 2  
Human Oral hazard: 1  
Human Contact hazard: 1  
Reduction of amenities: XX

### 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 99%  
7.2 **Storage Temperature:** Ambient  
7.3 **Inert Atmosphere:** No requirement  
7.4 **Venting:** Pressure-vacuum  
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:** Flammable liquid  
8.2 **49 CFR Class:** 3  
8.3 **49 CFR Package Group:** II  
8.4 **Marine Pollutant:** No  
8.5 **NFPA Hazard Classification:**
- | Category             | Classification |
|----------------------|----------------|
| Health Hazard (Blue) | 2              |
| Flammability (Red)   | 3              |
| Instability (Yellow) | 0              |
- 8.6 **EPA Reportable Quantity:** Not listed.  
8.7 **EPA Pollution Category:** Not listed.  
8.8 **RCRA Waste Number:** Not listed  
8.9 **EPA FWPCA List:** Not listed

### 9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid  
9.2 **Molecular Weight:** 96.10  
9.3 **Boiling Point at 1 atm:** 185.2°F = 85.1°C = 358.3°K  
9.4 **Freezing Point:** -42.2°F = -41.2°C = 232°K  
9.5 **Critical Temperature:** 546.8°F = 286°C = 559.2°K  
9.6 **Critical Pressure:** 656 psia = 44.6 atm = 4.52 MN/m<sup>2</sup>  
9.7 **Specific Gravity:** 1.0225 at 20°C (liquid)  
9.8 **Liquid Surface Tension:** Currently not available  
9.9 **Liquid Water Interfacial Tension:** Currently not available  
9.10 **Vapor (Gas) Specific Gravity:** 3.31  
9.11 **Ratio of Specific Heats of Vapor (Gas):** Currently not available  
9.12 **Latent Heat of Vaporization:** Currently not available  
9.13 **Heat of Combustion:** (est.) -13,995 Btu/lb = -7,775 cal/g = -325 x 10<sup>3</sup> J/kg  
9.14 **Heat of Decomposition:** Not pertinent  
9.15 **Heat of Solution:** Not pertinent  
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:** 2.8 psia

### 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                               | 63.830                | 77                           | 0.370                               |                                     | C<br>U<br>R<br>R<br>E<br>N<br>T<br>L<br>Y<br><br>N<br>O<br>T<br><br>A<br>V<br>A<br>I<br>L<br>A<br>B<br>L<br>E | 70<br>80<br>90<br>100<br>110<br>120<br>130<br>140<br>150<br>160<br>170<br>180<br>190<br>200<br>210 | 0.587<br>0.549<br>0.516<br>0.486<br>0.459<br>0.434<br>0.412<br>0.391<br>0.371<br>0.353<br>0.336<br>0.320<br>0.304<br>0.290<br>0.276 |

| 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   |
|                             | I<br>N<br>S<br>O<br>L<br>U<br>B<br>I<br>L<br>E | -40<br>-20<br>0<br>20<br>40<br>60<br>80<br>100<br>120<br>140<br>160 | 0.039<br>0.069<br>0.120<br>0.210<br>0.369<br>0.646<br>1.132<br>1.983<br>3.475<br>6.089<br>10.670 |                                 | C<br>U<br>R<br>R<br>E<br>N<br>T<br>L<br>Y<br><br>N<br>O<br>T<br><br>A<br>V<br>A<br>I<br>L<br>A<br>B<br>L<br>E | 0<br>25<br>50<br>75<br>100<br>125<br>150<br>175<br>200<br>225<br>250<br>275<br>300<br>325<br>350<br>375<br>400<br>425<br>450<br>475<br>500<br>525<br>550<br>575<br>600 | 0.193<br>0.203<br>0.212<br>0.222<br>0.231<br>0.241<br>0.250<br>0.259<br>0.269<br>0.278<br>0.288<br>0.297<br>0.307<br>0.316<br>0.326<br>0.335<br>0.344<br>0.354<br>0.363<br>0.373<br>0.382<br>0.392<br>0.401<br>0.410<br>0.420 |