### CAUTIONARY RESPONSE INFORMATION

**Common Synonyms**
- Benzylchloroformate
- Chloroformic acid, benzyl ester
- Benzyl chlorocarbonate
- Carbonyl chloride

**Properties**
- **Liquid**: Colorless, sharp, irritating odor
- **Solubility**: Sinks in water. Reacts with water.

**Restrict access.**
- Close fire department.
- Avoid contact with liquid.
- Stop discharge if possible.
- Notify local health and pollution control agencies.
- Protect water intakes.

**Fire**
- **Combustible**: POISONOUS GASES ARE PRODUCED IN FIRE.
- Containers may explode in fire.
- Wear chemical protective suit with self-contained breathing apparatus.
- Edgewise with dry chemicals, foam or carbon dioxide.

**Exposure**
- **Liquids**: Harmful if inhaled, swallowed, or absorbed through the skin.
- **Gloves**: Rubber gloves; protective clothing.

**Water Pollution**
- Effect of low concentrations on aquatic life is 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
- Chemical and Physical Treatment: Neutralize
- Do not burn

### 2. CHEMICAL DESIGNATIONS

- **CG Compatibility Group**: Not listed
- **DOT No.**: 1739
- **CAK Registry No.**: 501-53-1
- **NAERSI Guide No.**: 137
- **Standard Industrial Trade Classification**: 51374

### 3. HEALTH HAZARDS

#### 3.1 Personal Protective Equipment
- Self-contained breathing apparatus or acid-type canister mask; goggles or face shield; rubber gloves; protective clothing.

#### 3.2 Symptoms Following Exposure
- Inhalation: Causes mucus membrane irritation. Eyes are irritated by excessive exposure to vapor. Liquid causes severe irritation of eyes and irritates skin. Ingestion causes irritation of mouth and stomach.

#### 3.3 Treatment of Exposure
- **Inhalation**: Remove from exposure; support respiration; call physician. EYES: Irrigate with copious amounts of water for 15 min. SKIN: Flush with large quantities of water; wash with soap and water. INGESTION: Give large amounts of water; do NOT induce vomiting.

#### 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
- Currently not available.

#### 3.10 Vapor (Gas) Irritant Characteristics
- Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary.

#### 3.11 Liquid or Solid Characteristics
- Causes smearing of the skin and first-degree burns on short exposure and may cause second-degree burns on long exposure.

#### 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 AELG
- Not listed.

### 4. FIRE HAZARDS

#### 4.1 Flash Point
- 176°F C. 227°F C. Vigorous decomposition occurs at these temperatures; thus these values are anomalous due to the effect of the decom products (benzyl chloride and CO).

#### 4.2 Flammable Limits
- In Air: Not pertinent

#### 4.3 Fire Extinguishing Agents
- Dry chemical, foam and carbon dioxide.

#### 4.4 Fire Extinguishing Agents Not to Be Used
- Currently not available

#### 4.5 Special Hazards of Combustion Products
- Toxic phosphorus, hydrogen chloride, and benzyl chloride vapors may form.

#### 4.6 Behavior in Fire
- Containers may explode.

#### 4.7 Auto Ignition Temperature
- Currently not available

#### 4.8 Electrical Hazards
- Currently not available

#### 4.9 Burning Rate
- 4.0 mm/min

#### 4.10 Adiabatic Flame Temperature
- Currently not available

#### 4.11 Stoichiometric Air to Fuel Ratio
- 40.5 (calc.)

#### 4.12 Flame Temperature
- Currently not available

#### 4.13 Combustion Molar Ratio (Reactant to Product)
- 12.3 (calc.)

#### 4.14 Minimum Oxygen Concentration for Combustion (MOCC)
- Not listed

### 5. CHEMICAL REACTIVITY

#### 5.1 Reactivity with Water
- Forms hydrogen chloride hydrochloric acid. The reaction is not very vigorous in cold water.

#### 5.2 Reactivity with Common Materials
- Slow corrosion of metal.

#### 5.3 Stability During Transport
- Stable

#### 5.4 Neutralizing Agents for Acids and Caustics
- Flush with water, rinse with sodium bicarbonate or lime solution.

#### 5.5 Polymerization
- Exothermic

#### 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
- None

#### 6.5 GESAMP Hazard Profile
- Bioaccumulation: 0
- Damage to living resources: 4
- Human Oral hazard: 1
- Human Contact hazard: 1
- Reduction of amenities: XXX

### 7. SHIPPING INFORMATION

- **Grades of Purity**: 95+%
- **Storage Temperature**: Ambient, in cool place
- **Inert Atmosphere**: No requirement
- **Venting**: Pressure-vacuum
- **IMO Pollution Category**: Currently not available
- **Ship Type**: Currently not available
- **Barge Hull Type**: Currently not available

### 8. HAZARD CLASSIFICATIONS

#### 8.1 49 CFR Class: 8
- **49 CFR Package Group**: I
- **49 CFR Category**: Not listed
- **49 CFR Package**: Not available
- **49 CFR Class**: II
- **49 CFR Grade**: Not listed
- **49 CFR G parameter**: Not listed
- **49 CFR B parameter**: Not listed
- **49 CFR A parameter**: Not listed
- **49 CFR B parameter**: Not listed
- **49 CFR A parameter**: Not listed
- **49 CFR G parameter**: Not listed

### 9. PHYSICAL & CHEMICAL PROPERTIES

#### 9.1 Physical State at 15°C and 1 atm: Liquid
- **Molecular Weight**: 170.6
- **Boiling Point at 1 atm**: 306°F
- **Freezing Point**: Not pertinent
- **Critical Temperature**: Not pertinent
- **Critical Pressure**: Not pertinent
- **Specific Gravity**: 1.22 at 20°C (liquid)
- **Liquid Surface Tension**: 0.025 N/m at 20°C
- **Liquid Water Interfacial Tension**: Not pertinent
- **Vapor (Gas) Specific Gravity**: > 1
- **Ratio of Specific Heats of Vapor (Gas)**: Not pertinent
- **Latent Heat of Vaporization**: (est.) 90 Btu/lb = 50 cal/g = 21.1 X 10³ J/kg
- **Heat of Combustion**: (est.) ~10,000 Btu/lb = ~5.700 cal/g = ~240 X 10³ J/kg
- **Heat of Decomposition**: Not pertinent
- **Heat of Solution**: Not pertinent
- **Heat of Polymerization**: Not pertinent
- **Limiting Value**: Currently not available
- **Heat of Vapor Pressure**: Currently not available

### NOTES

- **BCF**: Not available
- **JUNE 1999**
### SOLUBILITY IN WATER

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<th>Pounds per square inch</th>
<th>Temperature (degrees F)</th>
<th>Pounds per cubic foot</th>
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### SATURATED VAPOR PRESSURE

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### IDEAL GAS HEAT CAPACITY