

# BENZOYL CHLORIDE

BZC

## CAUTIONARY RESPONSE INFORMATION

|   |   |
|---|---|
| Common Synonyms<br>Benzene carbonyl chloride  | Watery liquid<br>Colorless to slightly brown<br><br>Sinks and reacts slowly with water producing a poisonous gas.   |
| <p>Keep people away. Evacuate area in case of large discharge.<br/>Avoid contact with liquid and vapor.<br/>Wear goggles and self-contained breathing apparatus.<br/>Call fire department.<br/>Notify local health and pollution control agencies.<br/>Protect water intakes.</p> |   |
| Fire  | Combustible.<br>POISONOUS GASES ARE PRODUCED IN FIRE AND WHEN HEATED.<br>Wear goggles and self-contained breathing apparatus.<br>DO NOT USE WATER.<br>Extinguish with foam, dry chemical, or carbon dioxide.  |
| Exposure  | CALL FOR MEDICAL AID.<br><br>LIQUID<br>Will burn 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.<br>DO NOT INDUCE VOMITING. |
| Water Pollution   | 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 water intakes.   |

## 1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse  
Stop discharge  
Contain  
Do not add water to undissolved material  
Do not burn

## 2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed.  
2.2 Formula: C<sub>6</sub>H<sub>5</sub>COCl  
2.3 IMO/UN Designation: 8/1736  
2.4 DOT ID No.: 1736  
2.5 CAS Registry No.: 98-88-4  
2.6 NAERG Guide No.: 137  
2.7 Standard Industrial Trade Classification: 51139

## 3. HEALTH HAZARDS

- 3.1 Personal Protective Equipment: Full protective clothing, including full-face respirator for acid gases and organic vapors (yellow GMC canister), close-fitting goggles, nonslip rubber gloves, plastic apron, face shield.  
3.2 Symptoms Following Exposure: INHALATION: may irritate eyes, nose and throat. INGESTION: causes acute discomfort. SKIN: causes irritation and burning.  
3.3 Treatment of Exposure: INHALATION: remove to fresh air; administer oxygen with patient in sitting position. INGESTION: give water; call physician at once; give milk. EYES: flush with water for 15 min.; get medical attention. SKIN: wash with plenty of soap and water.  
3.4 TLV-TWA: Not listed.  
3.5 TLV-STEL: Not listed.  
3.6 TLV-Ceiling: 0.5 ppm.  
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: Vapors cause severe irritation of eyes and throat and can cause eye and lung injury. They cannot be tolerated even at low concentrations.  
3.11 Liquor or Solid Characteristics: Severe skin irritant. Causes second-and third-degree burns on short contact and is very injurious to the eyes.  
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: 162°F O.C.  
4.2 Flammable Limits in Air: Currently not available  
4.3 Fire Extinguishing Agents: Foam, carbon dioxide, dry chemical, water, fog  
4.4 Fire Extinguishing Agents Not to Be Used: Water spray. Do not allow water to enter containers.  
4.5 Special Hazards of Combustion Products: Highly poisonous phosgene gas may be formed in fires.  
4.6 Behavior in Fire: At fire temperatures the compound may react violently with water or steam.  
4.7 Auto Ignition Temperature: Currently not available  
4.8 Electrical Hazards: Not pertinent  
4.9 Burning Rate: Currently not available  
4.10 Adiabatic Flame Temperature: Currently not available  
4.11 Stoichiometric Air to Fuel Ratio: 35.7 (calc.)  
4.12 Flame Temperature: Currently not available  
4.13 Combustion Molar Ratio (Reactant to Product): 10.0 (calc.)  
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed

## 5. CHEMICAL REACTIVITY

- 5.1 Reactivity with Water: Slow reaction with water to produce hydrochloric acid fumes. Reaction much faster with steam.  
5.2 Reactivity with Common Materials: Slow corrosion of metals, but no immediate hazard.  
5.3 Stability During Transport: Not pertinent  
5.4 Neutralizing Agents for Acids and Caustics: Soda ash and water; lime  
5.5 Polymerization: Does not occur  
5.6 Inhibitor of Polymerization: Not pertinent

## 6. WATER POLLUTION

- 6.1 Aquatic Toxicity: 200 ppm/7 hr/goldfish/lethal/fresh water 500 ppm/1 hr/sunfish/lethal/fresh water  
6.2 Waterfowl Toxicity: Currently not available  
6.3 Biological Oxygen Demand (BOD): 165%, 5 days  
6.4 Food Chain Concentration Potential: None  
6.5 GESAMP Hazard Profile:  
Bioaccumulation: 0  
Damage to living resources: 1  
Human Oral hazard: 1  
Human Contact hazard: II  
Reduction of amenities: XX

## 7. SHIPPING INFORMATION

- 7.1 Grades of Purity: 99+%; special grade  
7.2 Storage Temperature: Store in cool, dry area  
7.3 Inert Atmosphere: Currently not available  
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: Corrosive material

- 8.2 49 CFR Class: 8

- 8.3 49 CFR Package Group: II

- 8.4 Marine Pollutant: No

- 8.5 NFPA Hazard Classification:

| Category                  | Classification |
|---------------------------|----------------|
| Health Hazard (Blue)..... | 3              |
| Flammability (Red).....   | 2              |
| Instability (Yellow)..... | 1              |
| Special (White).....      | W              |

- 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: Liquid  
9.2 Molecular Weight: 140.57  
9.3 Boiling Point at 1 atm: 387°F = 197.3°C = 470.5°K  
9.4 Freezing Point: 30.9°F = -0.6°C = 272.6°K  
9.5 Critical Temperature: Not pertinent  
9.6 Critical Pressure: Not pertinent  
9.7 Specific Gravity: 1.211 at 25°C (liquid)  
9.8 Liquid Surface Tension: 36.3 dynes/cm = 0.0363 N/m at 20°C  
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: Currently not available  
9.13 Heat of Combustion: -10,030 Btu/lb = -5570 cal/g = -233.2 X 10<sup>6</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: Currently not available

## 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 |
| 36                               | 76.809                | 85                           | 0.301                               |                                     | N   | 45                         | 1.754      |
| 38                               | 76.750                | 90                           | 0.306                               |                                     | T   | 50                         | 1.671      |
| 40                               | 76.700                | 95                           | 0.311                               |                                     |   | 55                         | 1.594      |
| 42                               | 76.639                | 100                          | 0.317                               |                                     | P   | 60                         | 1.522      |
| 44                               | 76.580                | 105                          | 0.322                               |                                     | E   | 65                         | 1.454      |
| 46                               | 76.520                | 110                          | 0.327                               |                                     | R   | 70                         | 1.390      |
| 48                               | 76.459                | 115                          | 0.332                               |                                     | I   | 75                         | 1.331      |
| 50                               | 76.389                | 120                          | 0.338                               |                                     | N   | 80                         | 1.275      |
| 52                               | 76.320                | 125                          | 0.343                               |                                     | E   | 85                         | 1.222      |
| 54                               | 76.259                | 130                          | 0.348                               |                                     | T   | 90                         | 1.172      |
| 56                               | 76.190                | 135                          | 0.354                               |                                     |   | 95                         | 1.125      |
| 58                               | 76.110                | 140                          | 0.359                               |                                     | N   | 100                        | 1.081      |
| 60                               | 76.040                | 145                          | 0.364                               |                                     | T   | 105                        | 1.039      |
| 62                               | 75.959                | 150                          | 0.369                               |                                     |   | 110                        | 1.000      |
| 64                               | 75.889                |                              |                                     |                                     |   | 115                        | 0.963      |
| 66                               | 75.809                |                              |                                     |                                     |   |                            |            |
| 68                               | 75.730                |                              |                                     |                                     |   |                            |            |
| 70                               | 75.639                |                              |                                     |                                     |   |                            |            |
| 72                               | 75.559                |                              |                                     |                                     |   |                            |            |
| 74                               | 75.469                |                              |                                     |                                     |   |                            |            |
| 76                               | 75.389                |                              |                                     |                                     |   |                            |            |
| 78                               | 75.299                |                              |                                     |                                     |   |                            |            |
| 80                               | 75.200                |                              |                                     |                                     |   |                            |            |

| 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 |
| R                           |                                   | 60                               | 0.006                  | 60                              | 0.00014               |                                 | N                                   |
| E                           |                                   | 70                               | 0.008                  | 70                              | 0.00021               |                                 | O                                   |
| A                           |                                   | 80                               | 0.012                  | 80                              | 0.00030               |                                 | T                                   |
| C                           |                                   | 90                               | 0.018                  | 90                              | 0.00042               |                                 |                                     |
| T                           |                                   | 100                              | 0.025                  | 100                             | 0.00059               |                                 | P                                   |
| S                           |                                   | 110                              | 0.035                  | 110                             | 0.00082               |                                 | E                                   |
| S                           |                                   | 120                              | 0.049                  | 120                             | 0.00112               |                                 | R                                   |
| L                           |                                   | 130                              | 0.068                  | 130                             | 0.00151               |                                 | T                                   |
| O                           |                                   | 140                              | 0.093                  | 140                             | 0.00202               |                                 | I                                   |
| W                           |                                   | 150                              | 0.125                  | 150                             | 0.00268               |                                 | N                                   |
| L                           |                                   | 160                              | 0.167                  | 160                             | 0.00353               |                                 | O                                   |
| Y                           |                                   | 170                              | 0.221                  | 170                             | 0.00459               |                                 | T                                   |
|                             |                                   | 180                              | 0.290                  | 180                             | 0.00593               |                                 | E                                   |
|                             |                                   | 190                              | 0.377                  | 190                             | 0.00760               |                                 | R                                   |
|                             |                                   | 200                              | 0.487                  | 200                             | 0.00966               |                                 | T                                   |
|                             |                                   | 210                              | 0.623                  | 210                             | 0.01219               |                                 | I                                   |