

# BENZIDINE

BZI

## CAUTIONARY RESPONSE INFORMATION

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| Common Synonyms<br>p,p'-Bianiline<br>(1,1'-Biphenyl)-4,4'-diamine<br>p,p'-Diaminobiphenyl<br>p-Diaminodiphenyl   | Solid, crystals, powder, leaflets<br><br>Sinks and very slowly mixes.  | Grayish-yellow, white, reddish gray |
| <b>AVOID CONTACT WITH SOLID AND DUST. KEEP PEOPLE AWAY.</b><br>Wear self-contained positive pressure breathing apparatus and full protective clothing.<br>Shut off ignition sources. Call fire department.<br>Evacuate area in case of large discharge.<br>Notify local health and pollution control agencies.<br>Protect water intakes. |  |                                     |
| <b>Fire</b>  | Combustible.<br><br>POISONOUS GASES ARE PRODUCED IN FIRE.<br>Wear self-contained positive pressure breathing apparatus and full protective clothing.<br>Extinguish small fires: dry chemical, CO <sub>2</sub> , water spray or foam;<br>large fires: water spray, fog or foam.<br>Move container from fire area if you can do it without risk.   |                                     |
| <b>Exposure</b>  | CALL FOR MEDICAL AID.<br><br>DUST<br>Poisonous if inhaled or absorbed through the skin.<br>May cause dermatitis, irritation or sensitization.<br>If in eyes or on skin, flush with running water for at least 15 min.; hold eyelids open if necessary.<br>Wash skin with soap and water.<br>If breathing has stopped, give artificial respiration.<br>If breathing is difficult, give oxygen.<br><br>SOLID<br>Poisonous if swallowed or absorbed through the skin.<br>May cause contact dermatitis, irritation or sensitization.<br>Ingestion may cause nausea and vomiting.<br>IF IN EYES OR ON SKIN, flush with running water for at least 15 min.; hold eyelids open if necessary.<br>Wash skin with soap and water.<br>IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm. |                                     |
| <b>Water Pollution</b>   | 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   | 2. CHEMICAL DESIGNATIONS  |
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| Stop discharge<br>Collection Systems: Pump; Dredge<br>Do not burn  | 2.1 CG Compatibility Group: Not listed.<br>2.2 Formula: NH <sub>2</sub> C <sub>6</sub> H <sub>4</sub> C <sub>6</sub> H <sub>4</sub> NH <sub>2</sub><br>2.3 IMO/UN Designation: 6.1/1885<br>2.4 DOT ID No.: 1885<br>2.5 CAS Registry No.: 92-87-5<br>2.6 NAERG Guide No.: 153<br>2.7 Standard Industrial Trade Classification: 51455 |
| <b>3. HEALTH HAZARDS</b>   |   |
| 3.1 Personal Protective Equipment: Wear self-contained positive pressure breathing apparatus and full protective clothing.   |   |
| 3.2 Symptoms Following Exposure: Poisonous if inhaled, swallowed or absorbed through skin. May cause contact dermatitis, irritation or sensitization. Ingestion may cause nausea and vomiting.   |   |
| 3.3 Treatment of Exposure: INHALATION: Move victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. EYES OR SKIN: Immediately flush with running water for at least 15 min.; hold eyelids open if necessary. Wash skin with soap and water. Remove and isolate contaminated clothing and shoes at the site. INGESTION: If victim is unconscious or having convulsions, do nothing except keep victim warm.   |   |
| 3.4 TLV-TWA: Human carcinogen; no exposure permitted.<br>3.5 TLV-STEL: Not listed.<br>3.6 TLV-Ceiling: Not listed.<br>3.7 Toxicity by Ingestion: Grade 3; LD <sub>50</sub> = 309 mg/kg (rat)<br>3.8 Toxicity by Inhalation: Currently not available.<br>3.9 Chronic Toxicity: May cause mutagenic, tumorigenic and carcinogenic effects; liver and kidney damage; hemolysis and bone marrow depressions.<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>3.13IDLH 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>   | <b>7. SHIPPING INFORMATION</b>   |
| 4.1 Flash Point:<br>Currently not available  | 7.1 Grades of Purity: Currently not available<br>7.2 Storage Temperature: Ambient<br>7.3 Inert Atmosphere: Not listed<br>7.4 Venting: Not pertinent<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 |
| 4.2 Flammable Limits in Air: Currently not available   |  |
| 4.3 Fire Extinguishing Agents: Small fires: dry chemical, CO <sub>2</sub> , water spray or foam; large fires: water spray, fog or foam.  |  |
| 4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent  |  |
| 4.5 Special Hazards of Combustion Products: Contain highly toxic NO <sub>x</sub> fumes.  |  |
| 4.6 Behavior in Fire: Produces highly toxic fumes.   |  |
| 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: 80.9 (calc.)  |  |
| 4.12 Flame Temperature: Currently not available  |  |
| 4.13 Combustion Molar Ratio (Reactant to Product): 20.0 (calc.)  |  |
| 4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed  |  |
| <b>8. HAZARD CLASSIFICATIONS</b>   |  |
| 8.1 49 CFR Category: Poison<br>8.2 49 CFR Class: 6.1<br>8.3 49 CFR Package Group: II<br>8.4 Marine Pollutant: No<br>8.5 NFPA Hazard Classification:  |  |
| Category Classification<br>Health Hazard (Blue)..... 3<br>Flammability (Red)..... 0<br>Instability (Yellow)..... 0   |  |
| 8.6 EPA Reportable Quantity: 1 pound<br>8.7 EPA Pollution Category: X<br>8.8 RCRA Waste Number: U021<br>8.9 EPA FWCNA List: Not listed   |  |
| <b>9. PHYSICAL &amp; CHEMICAL PROPERTIES</b>   |  |
| 9.1 Physical State at 15° C and 1 atm: Solid<br>9.2 Molecular Weight: 184.24<br>9.3 Boiling Point at 1 atm: 755.1°F = 401.7°C = 674.9°K<br>9.4 Freezing Point: 241.7°F = 116.5°C = 389.7°K<br>9.5 Critical Temperature: 1,220°F = 659.8°C = 933°K (est)<br>9.6 Critical Pressure: 479 psia = 32.6 atm = 3.30 MN/m <sup>2</sup> (est)<br>9.7 Specific Gravity: 2.150 at 20°C<br>9.8 Liquid Surface Tension: Not pertinent<br>9.9 Liquid Water Interfacial Tension: Not pertinent<br>9.10 Vapor (Gas) Specific Gravity: 6.4 (est)<br>9.11 Ratio of Specific Heats of Vapor (Gas): Currently not available<br>9.12 Latent Heat of Vaporization: Not pertinent<br>9.13 Heat of Combustion: Currently not available<br>9.14 Heat of Decomposition: Not pertinent<br>9.15 Heat of Solution: Currently not available<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: Not pertinent |  |

## 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       |
|                                  | NOT<br>PERTINENT      |                              | NOT<br>PERTINENT                    |                                     | NOT<br>PERTINENT                                    |                            | NOT<br>PERTINENT |

| 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 |
| 53                          | 0.040                             |                                  | NOT<br>PERTINENT       |                                 | NOT<br>PERTINENT      |                                 | NOT<br>PERTINENT                    |