

# TERT-BUTYL HYDROPEROXIDE

BHP

| CAUTIONARY RESPONSE INFORMATION  |   |  |  | 4. FIRE HAZARDS  | 7. SHIPPING INFORMATION  |                |                           |   |                         |   |                           |   |                      |    |  |
|--|---|--|--|--|--|----------------|---------------------------|---|-------------------------|---|---------------------------|---|----------------------|----|--|
| Common Synonyms<br>Cadox TBH   | Watery liquid<br>Colorless<br>Odorless<br>Floats and mixes slowly with water. |  |  |  |  |                |                           |   |                         |   |                           |   |                      |    |  |
| <p>Restrict access.<br/>Evacuate area in case of large discharge.<br/>Shut off ignition sources and call fire department.<br/>Stay upwind and flood spill area with water.<br/>Avoid contact with liquid.<br/>Notify local health and pollution control agencies.<br/>Protect water intakes.</p>   |   |  |  | 4.1 Flash Point: 100°F O.C.<br>4.2 Flammable Limits in Air: Not pertinent<br>4.3 Fire Extinguishing Agents: Dry chemical, foam or carbon dioxide.<br>4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent<br>4.5 Special Hazards of Combustion Products: Not pertinent<br>4.6 Behavior in Fire: May explode in fire<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: 26.2 (calc.)<br>4.12 Flame Temperature: Currently not available<br>4.13 Combustion Molar Ratio (Reactant to Product): 9.0 (calc.)<br>4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed   | 7.1 Grades of Purity: 70-90%<br>7.2 Storage Temperature: 65-85°F<br>7.3 Inert Atmosphere: Currently not available<br>7.4 Venting: Currently not available<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 |                |                           |   |                         |   |                           |   |                      |    |  |
| <p><b>Fire</b><br/>FLAMMABLE.<br/>May explode if subjected to heat, flame, or shock.<br/>May cause fire and explode on contact with combustibles.<br/>Vapor may explode if ignited in an enclosed area.<br/>Evacuate surrounding area.<br/>Combat fires from safe distance or protected location.<br/>Flood discharge area with water.<br/>Extinguish with dry chemical, foam or carbon dioxide.<br/>Cool exposed containers with water.</p>   |   |  |  | 8. HAZARD CLASSIFICATIONS  |  |                |                           |   |                         |   |                           |   |                      |    |  |
| <p><b>Exposure</b><br/>CALL FOR MEDICAL AID.<br/><br/>VAPOR<br/>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.<br/><br/>LIQUID<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, and have victim induce vomiting.<br/>IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.</p>   |   |  |  | 8.1 49 CFR Category: Forbidden<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:<br><table><tr><td>Category</td><td>Classification</td></tr><tr><td>Health Hazard (Blue).....</td><td>1</td></tr><tr><td>Flammability (Red).....</td><td>4</td></tr><tr><td>Instability (Yellow).....</td><td>4</td></tr><tr><td>Special (White).....</td><td>OX</td></tr></table>  | Category   | Classification | Health Hazard (Blue)..... | 1 | Flammability (Red)..... | 4 | Instability (Yellow)..... | 4 | Special (White)..... | OX |  |
| Category   | Classification  |  |  |  |  |                |                           |   |                         |   |                           |   |                      |    |  |
| Health Hazard (Blue).....  | 1   |  |  |  |  |                |                           |   |                         |   |                           |   |                      |    |  |
| Flammability (Red).....  | 4   |  |  |  |  |                |                           |   |                         |   |                           |   |                      |    |  |
| Instability (Yellow).....  | 4   |  |  |  |  |                |                           |   |                         |   |                           |   |                      |    |  |
| Special (White).....   | OX  |  |  |  |  |                |                           |   |                         |   |                           |   |                      |    |  |
| <p><b>Water Pollution</b><br/>Effect of low concentrations on aquatic life is unknown.<br/>May be dangerous if it enters water intakes.<br/>Notify local health and pollution control officials.<br/>Notify operators of nearby water intakes.</p>   |   |  |  | 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   |  |                |                           |   |                         |   |                           |   |                      |    |  |
| <p><b>1. CORRECTIVE RESPONSE ACTIONS</b><br/>Dilute and disperse<br/>Stop discharge<br/>Contain<br/>Collection Systems: Skim<br/>Salvage waterfowl</p>   |   |  |  | 9. PHYSICAL & CHEMICAL PROPERTIES  |  |                |                           |   |                         |   |                           |   |                      |    |  |
| <p><b>2. CHEMICAL DESIGNATIONS</b><br/>2.1 CG Compatibility Group: Not listed.<br/>2.2 Formula: <math>(CH_3)_2CO_2H</math><br/>2.3 IMO/UN Designation: 5.2/1949<br/>2.4 DOT ID No.: Not listed<br/>2.5 CAS Registry No.: 75-91-2<br/>2.6 NAERG Guide No.: 147<br/>2.7 Standard Industrial Trade Classification: 51699</p>  |   |  |  | 9.1 Physical State at 15°C and 1 atm: Liquid<br>9.2 Molecular Weight: 90.12<br>9.3 Boiling Point at 1 atm: Decomposes<br>9.4 Freezing Point: -31°F = -35°C = 238°K<br>9.5 Critical Temperature: Not pertinent<br>9.6 Critical Pressure: Not pertinent<br>9.7 Specific Gravity: 0.880 at 25°C (liquid)<br>9.8 Liquid Surface Tension: Currently not available<br>9.9 Liquid Water Interfacial Tension: Currently not available<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: (est.) -13,000 Btu/lb = -7200 cal/g = -300 X 10 <sup>3</sup> J/kg<br>9.14 Heat of Decomposition: -675 Btu/lb = -375 cal/g = -15.7 X 10 <sup>3</sup> J/kg<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 |  |                |                           |   |                         |   |                           |   |                      |    |  |
| <p><b>3. HEALTH HAZARDS</b><br/>3.1 Personal Protective Equipment: Goggles, well-fitting gloves, barrier creams<br/>3.2 Symptoms Following Exposure: Liquid causes severe burns of skin and eyes.<br/>3.3 Treatment of Exposure: INGESTION: induce vomiting and follow with gastric lavage. INHALATION: remove individual from contaminated atmosphere; give artificial respiration and oxygen if needed. SKIN, EYE, AND MUCOUS MEMBRANE CONTACT: flood affected tissues with water.<br/>3.4 TLV-TWA: Not listed.<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> = 50 to 500 mg/kg<br/>3.8 Toxicity by Inhalation: Currently not available.<br/>3.9 Chronic Toxicity: Currently not available<br/>3.10 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.<br/>3.11 Liquid or Solid Characteristics: Powerful irritant of skin and eyes.<br/>3.12 Odor Threshold: Odorless<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</p> |   |  |  | 6. WATER POLLUTION   |  |                |                           |   |                         |   |                           |   |                      |    |  |
|  |   |  |  | 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 |
| 52                               | 55.800                | 85                           | 0.585                               | 32                                  | 1.179   | 77                         | 7.000      |
| 54                               | 55.730                | 90                           | 0.591                               | 34                                  | 1.179   |                            |            |
| 56                               | 55.660                | 95                           | 0.597                               | 36                                  | 1.179   |                            |            |
| 58                               | 55.590                | 100                          | 0.603                               | 38                                  | 1.179   |                            |            |
| 60                               | 55.520                | 105                          | 0.610                               | 40                                  | 1.179   |                            |            |
| 62                               | 55.450                | 110                          | 0.616                               | 42                                  | 1.179   |                            |            |
| 64                               | 55.380                | 115                          | 0.622                               | 44                                  | 1.179   |                            |            |
| 66                               | 55.310                | 120                          | 0.628                               | 46                                  | 1.179   |                            |            |
| 68                               | 55.240                | 125                          | 0.635                               | 48                                  | 1.179   |                            |            |
| 70                               | 55.170                | 130                          | 0.641                               | 50                                  | 1.179   |                            |            |
| 72                               | 55.100                | 135                          | 0.647                               | 52                                  | 1.179   |                            |            |
| 74                               | 55.040                | 140                          | 0.653                               | 54                                  | 1.179   |                            |            |
| 76                               | 54.970                | 145                          | 0.660                               | 56                                  | 1.179   |                            |            |
| 78                               | 54.900                | 150                          | 0.666                               | 58                                  | 1.179   |                            |            |
| 80                               | 54.830                |                              |                                     | 60                                  | 1.179   |                            |            |
| 82                               | 54.760                |                              |                                     | 62                                  | 1.179   |                            |            |
| 84                               | 54.690                |                              |                                     | 64                                  | 1.179   |                            |            |
| 86                               | 54.620                |                              |                                     | 66                                  | 1.179   |                            |            |
|                                  |                       |                              |                                     | 68                                  | 1.179   |                            |            |
|                                  |                       |                              |                                     | 70                                  | 1.179   |                            |            |

| 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 |
| 68                          | 8.000                             | 32                               | 0.019                  | 32                              | 0.00032               |                                 | N                                   |
|                             |                                   | 34                               | 0.021                  | 34                              | 0.00036               |                                 | O                                   |
|                             |                                   | 36                               | 0.024                  | 36                              | 0.00041               |                                 | T                                   |
|                             |                                   | 38                               | 0.028                  | 38                              | 0.00047               |                                 |                                     |
|                             |                                   | 40                               | 0.032                  | 40                              | 0.00053               |                                 | P                                   |
|                             |                                   | 42                               | 0.036                  | 42                              | 0.00061               |                                 | E                                   |
|                             |                                   | 44                               | 0.041                  | 44                              | 0.00069               |                                 | R                                   |
|                             |                                   | 46                               | 0.047                  | 46                              | 0.00078               |                                 | T                                   |
|                             |                                   | 48                               | 0.054                  | 48                              | 0.00089               |                                 |                                     |
|                             |                                   | 50                               | 0.061                  | 50                              | 0.00100               |                                 | I                                   |
|                             |                                   | 52                               | 0.069                  | 52                              | 0.00113               |                                 | N                                   |
|                             |                                   | 54                               | 0.078                  | 54                              | 0.00128               |                                 | O                                   |
|                             |                                   | 56                               | 0.089                  | 56                              | 0.00145               |                                 | T                                   |
|                             |                                   | 58                               | 0.101                  | 58                              | 0.00163               |                                 |                                     |
|                             |                                   | 60                               | 0.114                  | 60                              | 0.00184               |                                 | P                                   |
|                             |                                   | 62                               | 0.129                  | 62                              | 0.00207               |                                 | E                                   |
|                             |                                   | 64                               | 0.145                  | 64                              | 0.00233               |                                 | R                                   |
|                             |                                   | 66                               | 0.164                  | 66                              | 0.00262               |                                 | T                                   |
|                             |                                   | 68                               | 0.185                  | 68                              | 0.00294               |                                 |                                     |
|                             |                                   | 70                               | 0.208                  | 70                              | 0.00330               |                                 | I                                   |