MATERIAL SAFETY DATA SHEET

MONO TERTIARY BUTYL HYDROQUINONE [MTBHQ]

Section 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION:

Chemical Name:  MONO TERTIARY BUTYL HYDROQUINONE

Company Identification:  Ratnagiri Chemicals Pvt. Ltd.

Head Office:  611/612 Raheja Arcade, Sector 11, CBD Belapur, Navi Mumbai – 400614. Maharashtra, INDIA

Tel Nos  +91-22-2757 0191
         +91-22-2757 0236

Fax Nos  +91-22-2757 0060

Factory:  C-39, MIDC Lote-Parshuram Indl Area Lote - 415722 Maharashtra, INDIA

Tel Nos  +91-2356-272650

Fax Nos  +91-2356-272117

Chemical Name:  Mono Tertiary Butyl Hydroquinone

Product Use:  Antioxidant [Technical Grade]

Molecular Formula:  C10H14O2

Molecular Weight:  166.22

Synonym(s):  2 tert-butyl-1,4 –dihydroxy benzene

Section 2 – COMPOSITION, INFORMATION ON INGREDIENTS:

<table>
<thead>
<tr>
<th>Weight</th>
<th>Component</th>
<th>CAS Registry No</th>
</tr>
</thead>
<tbody>
<tr>
<td>98 - 99%</td>
<td>2-Tert-butylhydroquinone</td>
<td>1948-33-0</td>
</tr>
<tr>
<td>1-2%</td>
<td>2,5 di-tert-butyl hydroquinone</td>
<td>88-58-4</td>
</tr>
</tbody>
</table>
Section 3. HAZARD IDENTIFICATION:
Harmful if swallowed. Irritating to eyes. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Section 4. FIRST AID INFORMATION:
After inhalation: fresh air.
After skin contact: wash off with plenty of water. Remove contaminated clothing.
After eye contact: rinse out with plenty of water with the eyelid held wide open. Call in ophtalmologist if necessary.
After swallowing: immediately make victim drink plenty of water, induce vomiting. Call in physician.

Section 5. FIRE FIGHTING MEASURES:
Suitable extinguishing media: Spray Water, CO₂, foam, powder.
Special risks: Combustible. Vapours heavier than air. Forms explosive mixtures with air or intense heating. Development of hazardous combustion gases or vapours possible in the event of fire.
Special protective equipment for fire fighting: Do not stay in dangerous zone without self-contained breathing apparatus.
Other information: Prevent fire-fighting water from entering surface water or groundwater

Section 6. ACCIDENTAL RELEASE MEASURES:
Wear appropriate personal protective equipment. Sweep up and place in a clearly labeled container for chemical waste.

For Large Spills: Flush spill area with water spray. Prevent runoff from entering drains, sewers, or streams. Dike for later disposal.

Section 7. HANDLING AND STORAGE:
Personal Precautionary Measures: Avoid breathing dust or vapor from heated material. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash thoroughly after handling.
Prevention of Fire and Explosion: Keep from contact with oxidizing materials. Minimize dust generation and accumulation.
Storage: Keep container closed. Protect from contamination. Do not store or ship together with odorous substances, toxic substances.
Section 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION:

**Ventilation:** Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Respiratory Protection:** If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

**Eye Protection:** Wear safety glasses with side shields (or goggles).

**Skin Protection:** Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

**Recommended Decontamination Facilities:** eye bath, safety shower, washing facilities.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES:

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Property</th>
<th>Typical Value,Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Form</td>
<td>Powder, fine crystalline</td>
</tr>
<tr>
<td>02</td>
<td>Color</td>
<td>White to light tan</td>
</tr>
<tr>
<td>03</td>
<td>Odour</td>
<td>weak</td>
</tr>
<tr>
<td>04</td>
<td>pH Value</td>
<td>Not available</td>
</tr>
<tr>
<td>05</td>
<td>Melting Point</td>
<td>127-129 °C</td>
</tr>
<tr>
<td>06</td>
<td>Boiling Point</td>
<td>295 °C</td>
</tr>
<tr>
<td>07</td>
<td>Ignition temperature</td>
<td>457 °C</td>
</tr>
<tr>
<td>08</td>
<td>Flash Point</td>
<td>171 °C</td>
</tr>
<tr>
<td>09</td>
<td>Explosion limits</td>
<td>Not available</td>
</tr>
<tr>
<td></td>
<td>Lower upper</td>
<td>Not available</td>
</tr>
<tr>
<td>10</td>
<td>Density [20°C]</td>
<td>1.05 g/cm³</td>
</tr>
<tr>
<td>11</td>
<td>Solubility in</td>
<td>Insoluble</td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>Soluble</td>
</tr>
<tr>
<td></td>
<td>Ethanol</td>
<td>Soluble</td>
</tr>
<tr>
<td></td>
<td>Acetone</td>
<td>Soluble</td>
</tr>
<tr>
<td></td>
<td>Ethylacetate</td>
<td>Soluble</td>
</tr>
</tbody>
</table>

Section 10. STABILITY:

**Stability:** stable.

**Incompatibility:** Material reacts with strong oxidizing agents.

**Hazardous Polymerization:** Will not occur.
Section 11. TOXICOLOGICAL INFORMATION:

Oral LD-50: (rat)  700 mg/kg
Oral LD-50: (mouse)  790 mg/kg
Dermal LD-50: (guinea pig)  > 1,000 mg/kg
Skin Irritation (guinea pig)  moderate
Eye Irritation (rabbit)  strong
Skin Sensitization (guinea pig)  slight

Section 12. ECOLOGICAL INFORMATION:

Behavior in environmental compartments:
log p(o/w): 2.94 (calculated)
No appreciable bioaccumulation potential is to be expected (log P(o/w) 1-3).
Ecotoxic effects:
Biological effects: Highly toxic for aquatic organisms.
Fish toxicity: P.promelas LC50: 0.6 mg/l /96 h
Daphnia toxicity: Daphnia LC50: 3.2 mg/1 /96 h
Further ecologic data:
COD: 2.20 g/g
BOD5: 0.07 g/g
May cause long-term adverse effects in the aquatic environment. Do not allow to enter waters, waste water, or soil.

Section 13. DISPOSAL INFORMATION:

Discharge, treatment, or disposal may be subject to national, state, or local laws. Incinerate. Since emptied containers retain product residue, follow label warnings even after container is emptied.

Section 14. TRANSPORTATION INFORMATION:

Road & Rail ADR, RID
UN 3077 UMWELTGEFAEHRDERNDER STOFF, FEST, N.A.G.
(TERT-BUTYLHYDROCHINON), 9, III.

Inland waterway ADN, ADNR not tested

Sea IMDG-Code

UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(TERT-BUTYLHYDROQUINONE), 9, III.
Ems F-A S-F
Air CAO, PAX
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (TERT - BUTYLHYDROQUINONE), 9, UN 3077, III

DOT [USA] – Class not regulated
The transport regulations are cited according to international regulations and in the form applicable in Europe. Possible national deviations in other countries are not considered.

Section 15. REGULATORY INFORMATION:

Labelling according to EC directives:

<table>
<thead>
<tr>
<th>Symbol:</th>
<th>Xn</th>
<th>Harmful</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Dangerous for the environment</td>
</tr>
<tr>
<td>R-phrases</td>
<td>22-36-50/53</td>
<td>Harmful if swallowed. Irritating to eyes. Very toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.</td>
</tr>
</tbody>
</table>

| S-phrases: | 24-61 | Avoid contact with skin. Avoid release to the environment. Refer to special instructions / Safety data sheets. |

Reduced labelling [1999/45/EC,Art.10,4]

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<td>22</td>
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| S-phrases: | -- |

**TSCA (US Toxic Substances Control Act):** All components of this product are listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

**DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act):** All components of this product are listed on the DSL. Any impurities present in this product are exempt from listing.

**EINECS (European Inventory of Existing Commercial Chemical Substances):** This product is listed on EINECS requirements. EINECS Number 217-752-2.
Section 16. OTHER INFORMATION
For additional information concerning this product, contact the following:

PRODUCT EMERGENCIES

RATNAGIRI CHEMICALS PVT LTD

Maharashtra, INDIA
Tel Nos +91-22-2757 0191
+91-22-2757 0236
Fax Nos +91-22-2757 0060

Factory: C-39, MIDC Lote-Parshuram Indl Area
Lote - 415722
Maharashtra, INDIA
Tel Nos +91-2356-272650
Fax Nos +91-2356-272117

The data and recommendations presented in this data sheet concerning the use of our product and the materials contain therein are believed to be accurate and are based on information which is considered reliable as of the date hereof. However, the customer should determine the suitability of such material for his purpose before adopting them on a commercial scale. Since the use our products by others is beyond our control, no guarantee, express or implied, is made and no responsibility assumed for the use of this material or the results to be obtained therefrom. Information on this form is furnished for the purpose of compliance with Government Health and Safety Regulations and shall not be used for any other purposes. Moreover, the recommendations contained in this data sheet are not to be constructed as a license to operate under, or a recommendation to infringe, any existing patents, nor should they be confused with state, municipal or insurance requirements, or with national safety codes.