MATERIAL SAFETY DATA SHEET
2,3-DICHLORO-5,6 DICYANO-1,4-BENZOQUINONE

1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS Name: 2,3-Dichloro-5,6 Dicyano-1,4-Benzoquinone
Synonyms: DDQ; 4,5-Dichloro-3,6-dioxo-1,4-cyclohexadiene-1,2-carbonitrile
Company Identification: Sisco Research Laboratories Pvt. Ltd.
Andheri (East), Mumbai – 400 099.
Tel : +91 22 2687 2601
Fax : +91 22 2687 8241
Website : www.srlchem.com

2 - COMPOSITION, INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>%</th>
<th>EINECS#</th>
</tr>
</thead>
<tbody>
<tr>
<td>84-58-2</td>
<td>2,3-Dichloro-5,6-dicyano-1,4-benzoquinone</td>
<td>98%</td>
<td>201-542-2</td>
</tr>
</tbody>
</table>

3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Caution! The toxicological properties of this material have not been fully investigated. May cause eye and skin irritation. May cause respiratory and digestive tract irritation.

Target Organs: None.

Potential Health Effects

Eye: Dust may cause mechanical irritation.
Skin: No information regarding skin irritation and other potential effects was found. May be metabolized to cyanide which in turn acts by inhibiting cytochrome oxidase impairing cellular respiration.
Ingestion: The toxicological properties of this substance have not been fully investigated. Metabolism may release cyanide, which may result in headache, dizziness, weakness, collapse, unconsciousness and possible death. Ingestion may result in symptoms similar to cyanide poisoning which is characterized by asphyxiation.
Inhalation: Inhalation of dust may cause respiratory tract irritation. May be metabolized to cyanide which in turns act by inhibiting cytochrome oxidase impairing cellular respiration.
Chronic: No information found.

4 - FIRST AID MEASURES

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately. Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated
### Skin:
clothing and shoes.

### Ingestion:
If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

### Inhalation:
Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

### Notes to Physician:

#### 5 - FIRE FIGHTING MEASURES

**General Information:**
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

**Extinguishing Media:**
Use water spray, dry chemical, carbon dioxide, or appropriate foam.

#### 6 - ACCIDENTAL RELEASE MEASURES

**General Information:**
Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:**
Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Avoid generating dusty conditions. Provide ventilation.

#### 7 – HANDLING AND STORAGE

**Handling:**
Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

**Storage:**
Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

#### 8 – EXPOSURE CONTROLS, PERSONAL PROTECTION

**Engineering Controls:**
Use adequate ventilation to keep airborne concentrations low.

**Exposure Limits**

**Personal Protective Equipment**

**Eyes:**
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:**
Wear appropriate protective gloves to prevent skin exposure.

**Clothing:**
Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

### 9 - PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Physical State:</th>
<th>Crystals Powder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>Yellow orange</td>
</tr>
<tr>
<td>Melting Point:</td>
<td>205 - 210 deg C</td>
</tr>
<tr>
<td>Molecular Formula:</td>
<td>C₈Cl₂N₂O₂</td>
</tr>
<tr>
<td>Molecular Weight:</td>
<td>227.01</td>
</tr>
</tbody>
</table>

### 10 - STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Chemical Stability:</th>
<th>Stable under normal temperatures and pressures.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions to Avoid:</td>
<td>Incompatible materials, dust generation.</td>
</tr>
<tr>
<td>Incompatibilities with Other Materials :</td>
<td>Not available</td>
</tr>
<tr>
<td>Hazardous Polymerization :</td>
<td>Has not been reported.</td>
</tr>
</tbody>
</table>

### 11 - TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>RTECS#:</th>
<th>CAS# 84-58-2: GU4825000</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50/LC50:</td>
<td>RTECS: Not available.</td>
</tr>
<tr>
<td>Carcinogenicity:</td>
<td>2,3-Dichloro-5,6-dicyano-1,4-benzoquinone - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.</td>
</tr>
<tr>
<td>Other:</td>
<td>Not available</td>
</tr>
</tbody>
</table>

### 12 - ECOLOGICAL INFORMATION

Not available

### 13 - DISPOSAL CONSIDERATIONS

Not available

### 14 - TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>IATA</th>
<th>IMO</th>
<th>RID/ADR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping Name:</td>
<td>Toxics Solids, Organic, N.O.S.</td>
<td>Toxics Solids, Organic, N.O.S.</td>
</tr>
<tr>
<td>Hazard Class:</td>
<td>6.1</td>
<td>6.1</td>
</tr>
<tr>
<td>UN Number:</td>
<td>2811</td>
<td>2811</td>
</tr>
<tr>
<td>Packing Group:</td>
<td>III</td>
<td>III</td>
</tr>
</tbody>
</table>
European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: Not available
Risk Phrases: 
Safety Phrases: S 28A After contact with skin, wash immediately with plenty of water. S 36/37 Wear suitable protective clothing and gloves. S 37 Wear suitable gloves. S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)CAS# 84-58-2: Not available
Canada CAS# 84-58-2 is listed on Canada's DSL List

US Federal
TSCA CAS# 84-58-2 is listed on the TSCAInventory.
Health & Safety Reporting List None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules None of the chemicals in this product are under a Chemical Test Rule.
Section 12b None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances None of the chemicals in this product have a TPQ.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act: This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act: None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA: STATE 2,3-Dichloro-5,6-dicyano-1,4-benzoquinone is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65 California No Significant Risk Level: None of the chemicals in this product are listed.
SISCO RESEARCH LABORATORIES provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.