1. Product and Company Identification

Trade Name: Lithium cobalt oxide  
Chemical Formula: LiCoO$_2$  
Recommended Use: Scientific research and development  
Manufacturer/Supplier: LTS Research Laboratories, Inc.  
Street: 37 Ramland Road  
City: Orangeburg  
State: New York  
Zip Code: 10962  
Country: USA  
Tel #: 855-587-2436 / 855-lts-chem  
24-Hour Emergency Contact: 800-424-9300 (US & Canada)  
+1-703-527-3887 (International)

2. Hazards Identification

Signal Word: Warning

Hazard Statements:  
H317: May cause an allergic skin reaction  
H351: Suspected of causing cancer

Precautionary Statements:  
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.  
P280: Wear protective gloves/protective clothing/eye protection/face protection  
P363: Wash contaminated clothing before reuse  
P405: Store locked up  
P501: Dispose of contents/container in accordance with local/regional/national/international regulations

HMIS Health Ratings (0-4):  
Health: 1  
Flammability: 0  
Physical: 0

3. Composition

Chemical Family: Ceramic  
Additional Names: Lithium cobaltite, Lithium(III) cobalt oxide  
Lithium cobalt oxide (LiCoO$_2$):  
Percentage: 100 wt%  
CAS #: 12190-79-3  
EC #: 235-362-0
4. First Aid Procedures

- **General Treatment:** Seek medical attention if symptoms persist.
- **Special Treatment:** None
- **Important Symptoms:** None

- **Inhalation:** Remove victim to fresh air. Supply oxygen if breathing is difficult.
- **Ingestion:** Seek Medical Attention.
- **Skin:** Wash affected area with mild soap and water. Remove any contaminated clothing.
- **Eyes:** Flush eyes with water, blinking often for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

5. Firefighting Measures

- **Flammability:** Non-flammable
- **Extinguishing Media:** No special restrictions – use suitable extinguishing agent for surrounding material and type of fire.
- **Spec. Fire Fighting Procedure:** Use full-face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. See section 10 for decomposition products.

6. Accidental Release Measures

- **If Material Is Released/Spilled:** Wear appropriate respiratory and protective equipment specified in special protection information. Isolate spill area and provide ventilation. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for disposal. Take care not to raise dust.
- **Environmental Precautions:** Isolate runoff to prevent environmental pollution.

7. Handling and Storage

- **Handling Conditions:** Wash thoroughly after handling.
- **Storage Conditions:** Store in a cool dry place in a tightly sealed container. Store apart from materials and conditions listed in section 10.
- **Work/Hygienic Maintenance:** Do not use tobacco or food in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air.
- **Ventilation:** Provide sufficient ventilation to maintain concentration at or below threshold limit.

8. Exposure Controls and Personal Protection

- **Permissible Exposure Limits:** 0.1 mg/m³ as Co, long-term value
- **Threshold Limit Value:** 0.02 mg/m³ as Co, long-term value

- **Special Equipment:** None
- **Respiratory Protection:** Dust Respirator
- **Protective Gloves:** Rubber gloves
- **Eye Protection:** Safety glasses or goggles
- **Body Protection:** Protective work clothing. Wear close-toed shoes and long sleeves/pants.
9. Physical and Chemical Characteristics

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Dark blue</td>
</tr>
<tr>
<td>Form:</td>
<td>Powder, Granules</td>
</tr>
<tr>
<td>Odor:</td>
<td>Odorless</td>
</tr>
<tr>
<td>Water Solubility:</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>N/A</td>
</tr>
<tr>
<td>Melting Point:</td>
<td>&gt;1000 °C</td>
</tr>
<tr>
<td>Flash Point:</td>
<td>N/A</td>
</tr>
<tr>
<td>Autoignition Temperature:</td>
<td>N/A</td>
</tr>
<tr>
<td>Density:</td>
<td>N/A</td>
</tr>
<tr>
<td>Molecular weight:</td>
<td>97.88 g/mol</td>
</tr>
</tbody>
</table>

10. Reactivity

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability:</td>
<td>Stable under recommended storage conditions</td>
</tr>
<tr>
<td>Reacts With:</td>
<td>Oxidizing agents</td>
</tr>
<tr>
<td>Incompatible Conditions:</td>
<td>None</td>
</tr>
<tr>
<td>Hazardous Decomposition Products:</td>
<td>Metal oxide fume</td>
</tr>
</tbody>
</table>

11. Toxicological Information

Potential Health Effects:

<table>
<thead>
<tr>
<th>Route</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyes:</td>
<td>Causes irritating effect</td>
</tr>
<tr>
<td>Skin:</td>
<td>Irritant to skin and mucous membranes</td>
</tr>
<tr>
<td>Ingestion:</td>
<td>May cause irritation</td>
</tr>
<tr>
<td>Inhalation:</td>
<td>May cause irritation</td>
</tr>
<tr>
<td>Chronic:</td>
<td>Cobalt is an experimental neoplastigen and tumorigen. It is an experimental carcinogen of the connective tissue and lungs. Cobalt metal and inorganic compounds are classified as an animal carcinogen by the ACGIH. Ingestion may cause burning in the mouth, esophagus and stomach. Inhalation of ducts and fumes may cause irritation of the respiratory tract and labored breathing and coughing. Sensitization, nausea, flushing of the face and ringing of the ears is also possible. Chronic ingestion may result in pericardia effusion, polycythemia, cardiac failure, vomiting, convulsions, and thyroid enlargement. Large amounts of lithium compounds may cause vomiting, diarrhea, ataxia, intestinal irritation, kidney injury, central nervous system depression and drop in blood pressure. Central nervous system effects may include, slurred speech, blurred vision, dizziness, sensory loss, convulsions and stupor. Chronic intake may cause neuromuscular effects such as tremor, ataxia, weakness, clonus and hyperactive reflexes. Lithium can cause kidney damage, gastrointestinal disturbances, fatigue, dehydration, weight loss, dermatological effects and thyroid damage. Lithium ion has shown teratogenic effects in rats and mice.</td>
</tr>
</tbody>
</table>
### Signs & Symptoms
N/A

### Aggravated Medical Conditions
N/A

### Median Lethal Dose
N/A

### Carcinogen
IARC-2B: Possibly carcinogenic to humans: limited evidence in human in the absence of sufficient evidence in experimental animals.
ACGIH A3: Animal carcinogen: Agent is carcinogenic in experimental animals at a relatively high dose, by routes of administration, at sites, of histologic types, or by mechanisms not considered relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or level of exposure.

#### Aquatic Toxicity:
Low

#### Persistent Bioaccumulation Toxicity:
No

#### Very Persistent, Very Bioaccumulative:
No

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The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.

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**Document Last Revised:** 07/13/2015