# SAFETY DATA SHEET
Lithium Cobalt Oxide (powder and pieces)

## 1. Identification

<table>
<thead>
<tr>
<th>Product identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product name</strong></td>
</tr>
<tr>
<td><strong>Internal identification</strong></td>
</tr>
<tr>
<td><strong>CAS number</strong></td>
</tr>
</tbody>
</table>

**Recommended use of the chemical and restrictions on use**
- **Application**: Exterior surface coating.
- **Uses advised against**: No specific uses advised against are identified.

**Details of the supplier of the safety data sheet**
- **Supplier**: Kurt J Lesker Company
- **Manufacturer**: Kurt J Lesker Company
  - 1925 Route 51
  - Jefferson Hills, PA 15025
  - +1 412-387-9200
  - Kurt J Lesker Company LTD
  - United Kingdom
  - 15-16 Burgess Road
  - Hastings, East Sussex, TN35 4NR
  - England
  - Customer Service: +44 (0) 1424 458100
  - msds@lesker.com

**Emergency telephone number**
- **Emergency telephone**: North America [USA, Canada, Mexico]: 1-866-519-4752
  - Mainland China: (+86) 4001 2001 74
  - Europe: (int'l call prefix)-1-760-476-3961
  - Asia Pacific: (int'l call prefix)-1-760-476-3960
  - Middle East & Africa: (int'l call prefix)-1-760-476-3959

## 2. Hazard(s) identification

**Classification of the substance or mixture**
- **Physical hazards**: Not Classified
- **Health hazards**: Skin Sens. 1 - H317
- **Environmental hazards**: Not Classified

**Label elements**
Lithium Cobalt Oxide (powder and pieces)

Pictogram

Warning

Hazard statements
H317 May cause an allergic skin reaction.

Precautionary statements
P261 Avoid breathing vapor/spray.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with plenty of water.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.

Contains
Lithium Cobalt Oxide (powder and pieces)

Other hazards
This substance is not classified as PBT or vPvB according to current EU criteria.

3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Lithium Cobalt Oxide (powder and pieces)</th>
<th>0 - 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS number: 12190-79-3</td>
<td></td>
</tr>
</tbody>
</table>

Classification
Skin Sens. 1 - H317

The Full Text for all Hazard Statements are Displayed in Section 16.

4. First-aid measures

Description of first aid measures

General information
Get medical attention if any discomfort continues. Show this Safety Data Sheet to the medical personnel.

Inhalation
Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Loosen tight clothing such as collar, tie or belt. Get medical attention if symptoms are severe or persist.

Ingestion
Rinse mouth thoroughly with water. Get medical advice/attention if you feel unwell. Do not induce vomiting unless under the direction of medical personnel.

Skin Contact
It is important to remove the substance from the skin immediately. In the event of any sensitization symptoms developing, ensure further exposure is avoided. Remove contamination with soap and water or recognized skin cleansing agent. Get medical attention if symptoms are severe or persist after washing.

Eye contact
Rinse with water. Get medical attention if any discomfort continues.

Protection of first aiders
First aid personnel should wear appropriate protective equipment during any rescue.

Most important symptoms and effects, both acute and delayed

General information
The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation
No specific symptoms known.
Lithium Cobalt Oxide (powder and pieces)

Ingestion
May cause sensitization or allergic reactions in sensitive individuals.

Skin contact
May cause skin sensitization or allergic reactions in sensitive individuals. Prolonged contact may cause dryness of the skin.

Eye contact
No specific symptoms known. May be slightly irritating to eyes.

Indication of immediate medical attention and special treatment needed

Notes for the doctor
Treat symptomatically. May cause sensitization or allergic reactions in sensitive individuals.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media
The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire.

Special hazards arising from the substance or mixture

Specific hazards
None known.

Hazardous combustion products
Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors.

Advice for firefighters

Protective actions during firefighting
Avoid breathing fire gases or vapors. Evacuate area. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.

Special protective equipment for firefighters
Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Standard Firefighter's clothing including helmets, protective boots and gloves will provide a basic level of protection for chemical incidents.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions
Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Avoid contact with skin and eyes.

Environmental precautions

Environmental precautions
Avoid discharge into drains or watercourses or onto the ground.

Methods and material for containment and cleaning up

Methods for cleaning up
Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Collect spillage with a shovel and broom, or similar and reuse, if possible. Collect and place in suitable waste disposal containers and seal securely. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. For waste disposal, see Section 13.

Reference to other sections
For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

7. Handling and storage
## Lithium Cobalt Oxide (powder and pieces)

### Precautions for safe handling

**Usage precautions**
Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Keep container tightly sealed when not in use. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not reuse empty containers.

**Advice on general occupational hygiene**
Wash promptly if skin becomes contaminated. Take off contaminated clothing and wash before reuse. Wash contaminated clothing before reuse.

### Conditions for safe storage, including any incompatibilities

**Storage precautions**
Keep only in the original container. Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect containers from damage.

**Storage class**
Chemical storage.

### Specific end uses(s)

The identified uses for this product are detailed in Section 1.2.

---

### 8. Exposure Controls/personal protection

**Exposure controls**

**Protective equipment**

**Appropriate engineering controls**
Provide adequate ventilation. Observe any occupational exposure limits for the product or ingredients.

**Eye/face protection**
Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Tight-fitting safety glasses.

**Hand protection**
It is recommended that chemical-resistant, impervious gloves are worn. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with OSHA 1910.138 and be demonstrated to be impervious to the chemical and resist degradation. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended.

**Other skin and body protection**
May cause skin sensitization or allergic reactions in sensitive individuals. Wear appropriate clothing to prevent repeated or prolonged skin contact.

**Hygiene measures**
Wash hands thoroughly after handling. Wash at the end of each work shift and before eating, smoking and using the toilet. Do not eat, drink or smoke when using this product.

**Respiratory protection**
Ensure all respiratory protective equipment is suitable for its intended use and is NIOSH approved. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges should comply with OSHA 1910.134. Full face mask respirators with replaceable filter cartridges should comply with OSHA 1910.134. Half mask and quarter mask respirators with replaceable filter cartridges should comply with OSHA 1910.134.

**Environmental exposure controls**
Keep container tightly sealed when not in use.

---

### 9. Physical and Chemical Properties

**Information on basic physical and chemical properties**
Lithium Cobalt Oxide (powder and pieces)

Appearance  Solid.
Color  Black.
Odor  No characteristic odor.
Odor threshold  Not applicable.
pH  Not applicable.
Melting point  Not available.
Initial boiling point and range  Not available.
Flash point  Not applicable.
Evaporation rate  Not applicable.
Flammability (solid, gas)  Not applicable.
Upper/lower flammability or explosive limits  Not applicable.
Vapor pressure  Not available.
Vapor density  Not available.
Relative density  ~ 4.8 @ 25°C
Bulk density  Not available.
Solubility(ies)  Insoluble in water.
Partition coefficient  Not applicable.
Auto-ignition temperature  Not applicable.
Decomposition Temperature  Not available.
Viscosity  Not applicable.
Molecular weight  97.87

10. Stability and reactivity

Reactivity  There are no known reactivity hazards associated with this product.
Stability  Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.
Possibility of hazardous reactions  No potentially hazardous reactions known.
Conditions to avoid  There are no known conditions that are likely to result in a hazardous situation.
Materials to avoid  No specific material or group of materials is likely to react with the product to produce a hazardous situation.
Hazardous decomposition products  Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors.

11. Toxicological information

Information on toxicological effects
Lithium Cobalt Oxide (powder and pieces)

**Acute toxicity - oral**
Notes (oral LD₅₀) Based on available data the classification criteria are not met.

**Acute toxicity - dermal**
Notes (dermal LD₅₀) Based on available data the classification criteria are not met.

**Acute toxicity - inhalation**
Notes (inhalation LC₅₀) Based on available data the classification criteria are not met.

**Skin corrosion/irritation**
Animal data Based on available data the classification criteria are not met.

**Serious eye damage/irritation**
Based on available data the classification criteria are not met.

**Respiratory sensitization**
Based on available data the classification criteria are not met.

**Skin sensitization**
May cause skin sensitization or allergic reactions in sensitive individuals.

**Germ cell mutagenicity**
Genotoxicity - in vitro Based on available data the classification criteria are not met.

**Carcinogenicity**
Carcinogenicity Based on available data the classification criteria are not met.

**IARC carcinogenicity**
None of the ingredients are listed or exempt.

**Reproductive toxicity**
Reproductive toxicity - fertility Based on available data the classification criteria are not met.

**Reproductive toxicity - development**
Based on available data the classification criteria are not met.

**Specific target organ toxicity - single exposure**
STOT - single exposure Not classified as a specific target organ toxicant after a single exposure.

**Specific target organ toxicity - repeated exposure**
STOT - repeated exposure Not classified as a specific target organ toxicant after repeated exposure.

**Aspiration hazard**
Not relevant. Solid.

**General information**
The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

**Inhalation**
No specific symptoms known.

**Ingestion**
May cause sensitization or allergic reactions in sensitive individuals.

**Skin Contact**
May cause skin sensitization or allergic reactions in sensitive individuals. Prolonged contact may cause dryness of the skin.

**Eye contact**
No specific symptoms known.

**Route of entry**
Ingestion Inhalation Skin and/or eye contact

**Target Organs**
No specific target organs known.

**Medical considerations**
Skin disorders and allergies.
Lithium Cobalt Oxide (powder and pieces)

12. Ecological Information

Ecotoxicity
Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment.

Toxicity
Based on available data the classification criteria are not met.

Persistence and degradability
The degradability of the product is not known.

Bioaccumulative potential
Bio-Accumulative Potential
No data available on bioaccumulation.

Partition coefficient
Not applicable.

Mobility in soil

Mobility
No data available.

Other adverse effects
None known.

13. Disposal considerations

Waste treatment methods
General information
The generation of waste should be minimized or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous.

Disposal methods
Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labeled with their contents. Incineration or landfill should only be considered when recycling is not feasible.

14. Transport information

General
The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, DoT).

UN Number
Not applicable.

UN proper shipping name
Not applicable.

Transport hazard class(es)
No transport warning sign required.

Packing group
Not applicable.

Environmental hazards
Lithium Cobalt Oxide (powder and pieces)

Environmentally Hazardous Substance
No.

Special precautions for user
Not applicable.

Transport in bulk according to Not applicable.
Annex II of MARPOL 73/78
and the IBC Code

15. Regulatory information

US Federal Regulations
SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities
None of the ingredients are listed or exempt.

CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)
None of the ingredients are listed or exempt.

SARA Extremely Hazardous Substances EPCRA Reportable Quantities
None of the ingredients are listed or exempt.

SARA 313 Emission Reporting
None of the ingredients are listed or exempt.

CAA Accidental Release Prevention
None of the ingredients are listed or exempt.

FDA - Essential Chemical
None of the ingredients are listed or exempt.

FDA - Precursor Chemical
None of the ingredients are listed or exempt.

SARA (311/312) Hazard Categories
None of the ingredients are listed or exempt.

OSHA Highly Hazardous Chemicals
None of the ingredients are listed or exempt.

US State Regulations
California Proposition 65 Carcinogens and Reproductive Toxins
None of the ingredients are listed or exempt.

California Air Toxics "Hot Spots" (A-I)
None of the ingredients are listed or exempt.

California Air Toxics "Hot Spots" (A-II)
None of the ingredients are listed or exempt.

California Directors List of Hazardous Substances
None of the ingredients are listed or exempt.

Massachusetts "Right To Know" List
None of the ingredients are listed or exempt.
Lithium Cobalt Oxide (powder and pieces)

Rhode Island "Right To Know" List
None of the ingredients are listed or exempt.

Minnesota "Right To Know" List
None of the ingredients are listed or exempt.

New Jersey "Right To Know" List
None of the ingredients are listed or exempt.

Pennsylvania "Right To Know" List
None of the ingredients are listed or exempt.

Inventories
US - TSCA
None of the ingredients are listed or exempt.

US - TSCA 12(b) Export Notification
None of the ingredients are listed or exempt.

16. Other Information
Training advice
Only trained personnel should use this material.

Revision date
3/15/2017

Revision
5

Supersedes date
12/21/2015

SDS No.
4597

Hazard statements in full
H317 May cause an allergic skin reaction.

End of SDS

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.