SAFETY DATA SHEET
Indium Tin Oxide (powder and pieces)

1. Identification

Product identifier
Product name Indium Tin Oxide (powder and pieces)
Internal identification Replaces M-2201-145, M-2201-146

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 Not Classified
Environmental hazards Not Classified

Label elements
Hazard statements NC Not Classified

Other hazards
Indium Tin Oxide (powder and pieces)

This product does not contain any substances classified as PBT or vPvB. Based on available knowledge of this material, it has been determined to be non-hazardous and will not pose a risk to persons or the environment in its provided form. However, any cutting, welding, melting, grinding, or use for deposition will produce dust, fume, or particulates containing component elements of this material. Exposure to these components may present significant health hazards. Note: Fine particulate may be a combustible dust which, when dispersed in air, may present an explosion hazard.

### 3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Mixtures</th>
<th>0 - 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tin Oxide (pieces)</td>
<td>0 - 100%</td>
</tr>
<tr>
<td>CAS number: 18282-10-5</td>
<td>Not Classified</td>
</tr>
<tr>
<td>Indium Oxide</td>
<td>0 - 100%</td>
</tr>
<tr>
<td>CAS number: 1312-43-2</td>
<td>Not Classified</td>
</tr>
</tbody>
</table>

The full text for all hazard statements is displayed in Section 16.

### 4. First-aid measures

#### Description of first aid measures

**General information**

If in doubt, get medical attention promptly. 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**

Rinse with water.

**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.

**Ingestion**

No specific symptoms known.

**Skin contact**

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.

### 5. Fire-fighting measures
# Indium Tin Oxide (powder and pieces)

## 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

<table>
<thead>
<tr>
<th>Personal precautions</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental precautions</td>
<td>Avoid discharge into drains or watercourses or onto the ground. Avoid discharge to the aquatic environment.</td>
</tr>
</tbody>
</table>

### Methods and material for containment and cleaning up

<table>
<thead>
<tr>
<th>Methods for cleaning up</th>
<th>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. Dangerous for the environment. Do not empty into drains. For waste disposal, see Section 13.</th>
</tr>
</thead>
</table>

### 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

### Precautions for safe handling

<table>
<thead>
<tr>
<th>Usage precautions</th>
<th>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. Avoid discharge to the aquatic environment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advice on general occupational hygiene</td>
<td>Wash promptly if skin becomes contaminated. Take off contaminated clothing and wash before reuse. Wash contaminated clothing before reuse.</td>
</tr>
</tbody>
</table>

### Conditions for safe storage, including any incompatibilities

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### Extinguishing media

<table>
<thead>
<tr>
<th>Suitable extinguishing media</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsuitable extinguishing media</td>
<td>Do not use water jet as an extinguisher, as this will spread the fire.</td>
</tr>
</tbody>
</table>

### Special hazards arising from the substance or mixture

<table>
<thead>
<tr>
<th>Specific hazards</th>
<th>None known.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous combustion products</td>
<td>Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors.</td>
</tr>
</tbody>
</table>

### Advice for firefighters

<table>
<thead>
<tr>
<th>Protective actions during firefighting</th>
<th>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. Avoid discharge to the aquatic environment. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special protective equipment for firefighters</td>
<td>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.</td>
</tr>
</tbody>
</table>
Indium Tin Oxide (powder and pieces)

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
Miscellaneous hazardous material storage.

Specific end uses(s)
The identified uses for this product are detailed in Section 1.

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
No specific hand protection recommended. Avoid contact with skin.

Other skin and body protection
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. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Appearance
Solid.

Color
Greenish to Black.

Odor
No characteristic odor.

Odor threshold
Not applicable.

pH
Not applicable.

Melting point
~1900°C

Initial boiling point and range
Not available.

Flash point
Not applicable.

Evaporation rate
Not applicable.
Indium Tin Oxide (powder and pieces)

Flammability (solid, gas) Not applicable.
Upper/lower flammability or explosive limits Not applicable.
Vapor pressure Not available.
Vapor density Not available.
Relative density Not available.
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 Not available.

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

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

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

Acute toxicity - inhalation Based on available data the classification criteria are not met.
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.
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### Respiratory sensitization
Based on available data the classification criteria are not met.

### Skin sensitization
Based on available data the classification criteria are not met.

### Germ cell mutagenicity
Based on available data the classification criteria are not met.

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

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

### Reproductive toxicity
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
No specific symptoms known.

### Skin Contact
Prolonged contact may cause dryness of the skin.

### Eye contact
No specific symptoms known.

### Route of exposure
Ingestion Inhalation Skin and/or eye contact

### Target Organs
No specific target organs known.

### 12. Ecological Information

#### Toxicity
Aquatic Chronic 4 - H413 May cause long lasting harmful effects to aquatic life.

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

#### Bioaccumulative potential
No data available on bioaccumulation.

#### Partition coefficient
Not applicable.

#### Mobility in soil
No data available.
Indium Tin Oxide (powder and pieces)

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 waste via a licensed waste disposal contractor.

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

Environmentally Hazardous Substance

No.

Special precautions for user

Not applicable.

Transport in bulk according to

Annex II of MARPOL 73/78
and the IBC Code

Not applicable.

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.
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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.

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
The following ingredients are listed or exempt:
Tin Oxide (pieces)
Present.

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
3/16/2017
### Indium Tin Oxide (powder and pieces)

<table>
<thead>
<tr>
<th>Revision</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supersedes date</td>
<td>6/3/2016</td>
</tr>
<tr>
<td>SDS No.</td>
<td>4630</td>
</tr>
<tr>
<td>End of SDS</td>
<td></td>
</tr>
</tbody>
</table>