Titanium metal pieces

1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Titanium metal pieces  
**GENERAL USE:** Physical vapor deposition of thin films

**MANUFACTURER**  
Kurt J Lesker Company  
United States  
1925 Route 51  
Jefferson Hills, PA 15025  
**Customer Service:** 412-387-9200  
**E-Mail:** msds@lesker.com  
Kurt J Lesker Company LTD  
United Kingdom  
15-16 Burgess Road  
Hastings, East Sussex, TN35 4NR  
England  
**Customer Service:** +44 (0) 1424 458100

**24 HR. EMERGENCY TELEPHONE NUMBERS**  
24-Hour Emergency Response provided by  
3E Global Incident Response Hotline  
When calling, refer to Kurt J Lesker Company  
Global Response Access Code: 333594  
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. HAZARDS IDENTIFICATION

**GHS CLASSIFICATIONS**

**Health:**  
This substance or mixture is not hazardous and is not classified under GHS.

**EMERGENCY OVERVIEW**

**PHYSICAL APPEARANCE:** Silvery-white metal  
**IMMEDIATE CONCERNS:** Negligible fire or explosion hazard in bulk form. Powdered material may form explosive dust-air mixtures.

**POTENTIAL HEALTH EFFECTS**

**EYES:** Contact may cause eye irritation.  
**SKIN:** May cause skin irritation.  
**INGESTION:** Low ingestion hazard in normal use.  
**INHALATION:** May cause respiratory irritation.

**REPRODUCTIVE TOXICITY**

**REPRODUCTIVE EFFECTS:** Not Available  
**TERATOGENIC EFFECTS:** Not Available  
**CARCINOGENICITY:** Not listed as a human carcinogen  
**MUTAGENICITY:** Not Available  
**MEDICAL CONDITIONS AGGRAVATED:** None expected.
ROUTES OF ENTRY: Inhalation, ingestion, eye contact, or skin contact.

SENSITIZATION: None expected.

PHYSICAL HAZARDS: This substance is not considered hazardous in the form supplied. Dusts at sufficient concentrations can form explosive mixtures with air.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Wt.%</th>
<th>CAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium</td>
<td>100</td>
<td>7440-32-6</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

EYES: Immediately flush eyes with plenty of water. Get medical attention, if irritation persists.

SKIN: Wash with soap and water. Get medical attention if irritation develops or persists.

INGESTION: Rinse mouth. Get medical advice/attention.

INHALATION: No specific treatment is necessary since this material is not likely to be hazardous by inhalation. If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

ACUTE TOXICITY: Poses little or no immediate hazard.

CHRONIC EFFECTS: Not Available

5. FIRE FIGHTING MEASURES

FLAMMABLE CLASS: Will burn if involved in a fire.

EXTINGUISHING MEDIA: Do not use water because of violent reaction. Do not use carbon dioxide or graphite. Use a Class D dry powder extinguisher, dry sand, or sodium chloride.

EXPLOSION HAZARDS: Dusts at sufficient concentrations can form explosive mixtures with air.

FIRE FIGHTING PROCEDURES: As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective gear.

HAZARDOUS DECOMPOSITION PRODUCTS: Toxic metal fumes

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Clean up spills immediately, observing precautions in Protective Equipment section.

LARGE SPILL: Collect spilled material in appropriate container. Spill may be reportable. Consult section 15 for Reportable Quantities.

GENERAL PROCEDURES: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all ignition sources if safe to do so. Avoid formation of dust. Provide appropriate exhaust ventilation where dust is formed. Avoid breathing (dust, vapor, mist, gas). Practice good chemical hygiene during and after use. Avoid release to the environment.

7. HANDLING AND STORAGE

GENERAL PROCEDURES: To avoid risks to human health and the environment, comply with the instructions for use.
HANDLING: Keep away from heat and flame. Keep container closed when not in use. Remove contaminated clothing and wash before reuse. Wash hands before eating and wash before reuse. Wash thoroughly after handling.

STORAGE: Keep container closed when not in use. Store in a cool dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Wear safety glasses.

SKIN: Wear protective gloves.

RESPIRATORY: Not normally needed. If ventilation is inadequate and this material is handled at elevated temperatures or dusts/fumes/mists are generated a NIOSH/MSHA approved air purifying respirator with a manufacturers approved cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

WORK HYGIENIC PRACTICES: Practice good chemical hygiene during and after use.

COMMENTS: There are no established workplace exposure limits for components of this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Solid

ODOR: None

COLOR: Silver-white

pH: NA = Not Applicable

PERCENT VOLATILE: NA = Not Applicable

FLASH POINT AND METHOD: NA = Not Applicable

FLAMMABLE LIMITS: NA = Not Applicable

AUTOIGNITION TEMPERATURE: 1200°C

VAPOR PRESSURE: NA = Not Applicable

VAPOR DENSITY: NA = Not Applicable

BOILING POINT: 3287°C

MELTING POINT: 1668°C

SOLUBILITY IN WATER: Insoluble

DENSITY: 4.506 at 25°C

MOLECULAR WEIGHT: 47.867

10. STABILITY AND REACTIVITY

STABLE: Yes
HAZARDOUS POLYMERIZATION: No
CONDITIONS TO AVOID: Heating in the presence of air.
HAZARDOUS DECOMPOSITION PRODUCTS: Toxic metal fumes

11. TOXICOLOGICAL INFORMATION

ACUTE
  DERMAL LD$_{50}$: Not Available
  SKIN ABSORPTION: Not Available
  ORAL LD$_{50}$: Not Available
  INHALATION LC$_{50}$: Not Available

CARCINOGENICITY
  IARC: Not listed
  NTP: Not listed
  OSHA: Not listed

REPRODUCTIVE EFFECTS: Not Available
TERATOGENIC EFFECTS: Not Available
MUTAGENICITY: Not Available

12. ECOLOGICAL INFORMATION

BIOACCUMULATION/ACCUMULATION: Not Available
AQUATIC TOXICITY (ACUTE): Not Available
CHEMICAL FATE INFORMATION: Not Available

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose of according to applicable federal, state, provincial, and local regulations.

PRODUCT DISPOSAL: Contact a licensed waste disposal company.

EMPTY CONTAINER: Follow all MSDS/label precautions even after container is emptied because it may retain product residues.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)
  PROPER SHIPPING NAME: NA = Not Applicable

ROAD AND RAIL (ADR/RID)
  PROPER SHIPPING NAME: Not Regulated

AIR (ICAO/IATA)
  SHIPPING NAME: NA = Not Applicable
VESSEL (IMO/IMDG)

SHIPPING NAME: NA = Not Applicable

CANADA TRANSPORT OF DANGEROUS GOODS

SHIPPING NAME: NA = Not Applicable

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES: None

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA STATUS: All components of this product are included in inventory, exempt, or notified

REGULATIONS

STATE REGULATIONS:

The following components appear in one or more of the following state hazardous substances lists

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
<th>RI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium</td>
<td>7440-32-6</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

CALIFORNIA PROPOSITION 65: This product is not known to contain any components for which the State of California has found to cause cancer, birth defects or other reproductive harm.

CANADA

WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM): Not Regulated

DOMESTIC SUBSTANCE LIST (INVENTORY): All components of this product are included in inventory, exempt, or notified

16. OTHER INFORMATION

APPROVED BY: EHS DEPT

PREPARED BY: E Bolton

INFORMATION CONTACT: msds@lesker.com

<table>
<thead>
<tr>
<th>HMIS RATING</th>
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<tbody>
<tr>
<td>HEALTH 0</td>
</tr>
<tr>
<td>FLAMMABILITY 0</td>
</tr>
<tr>
<td>PHYSICAL HAZARD 0</td>
</tr>
<tr>
<td>PERSONAL PROTECTION B</td>
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<table>
<thead>
<tr>
<th>NFPA CODES</th>
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<tr>
<td>0 0 1 0</td>
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MANUFACTURER DISCLAIMER:

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