SAFETY DATA SHEET
according to Regulation (EC) No. 453/2010

Date Issued: 4/29/2015
SDS No: M-1000-310
Date Revised: 4/29/2015
Revision No: 1

Tungsten metal pieces

SECTION 1 : Identification of the substance/preparation and of the company/undertaking

1.1. Product identifier
Product name: Tungsten metal pieces

1.2. Relevant identified uses of the substance or mixture and uses advised against
Relevant identified uses: Physical vapor deposition of thin films

1.3. Details of the supplier of the safety data sheet
Manufacturer
Kurt J Lesker Company
United States
1925 Route 51
Jefferson Hills, PA 15025
Service Number: 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

1.4. Emergency telephone number
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: {+}-1-760-476-3961
Asia Pacific: {+}-1-760-476-3960
Middle East & Africa: {+}-1-760-476-3959

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification according to Directive 67/548/EEC
Classification according to Regulation (EC) No 1272/2008 [CLP]
Health: This substance or mixture is not hazardous and is not classified under GHS.

2.2. Label elements
R&S statement(s): This material is not classified as hazardous according to Directive 67/548/EEC.

2.3. Other hazards
SAFETY DATA SHEET  
according to Regulation (EC) No. 453/2010 

**Tungsten metal pieces**

**Immediate concerns**: Negligible fire or explosion hazard in bulk form. Powdered material may form explosive dust-air mixtures.

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

### SECTION 3: Composition / information on ingredients

#### 3.1. Substances

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS</th>
<th>EINECS No.</th>
<th>Wt.%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tungsten</td>
<td>7440-33-7</td>
<td>231-143-9</td>
<td>100</td>
</tr>
</tbody>
</table>

#### 3.2. Mixtures

Not Applicable

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

- **Following eyes**: Immediately flush eyes with plenty of water. Get medical attention, if irritation persists.
- **Following skin**: Wash with soap and water. Get medical attention if irritation develops or persists.
- **Following ingestion**: Rinse mouth. Get medical advice/attention.
- **Following 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.

#### 4.2. Most important symptoms and effects, both acute and delayed

#### 4.3. Indication of any immediate medical attention and special treatment needed

### SECTION 5: Fire fighting measures

#### 5.1. Extinguishing media

Extinguishing media: Use a Class D dry powder extinguisher, dolomite, dry sand, graphite, or soda ash.

#### 5.2. Special hazards arising from the substance or mixture

Explosion hazards: Dusts at sufficient concentrations can form explosive mixtures with air.

#### 5.3. Advice for firefighters

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

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

General procedures: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all ignition sources if safe to do so. Avoid
Tungsten metal pieces

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.

6.2. Environmental precautions

6.3. Methods and material for containment and cleaning up

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.

6.4. Reference to other sections

SECTION 7: Handling and storage

7.1. Precautions for safe handling

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.

7.2. Conditions for safe storage, including any incompatibilities

7.3. Specific end use(s)

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

8.2. Exposure controls

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

Eye/face protection : Wear safety glasses.

Skin protection : Wear protective gloves.

Respiratory protection : 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.
Tungsten metal pieces

Additional information:

<table>
<thead>
<tr>
<th>Component</th>
<th>Location, Type</th>
<th>Value (mg/m3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tungsten</td>
<td>ACGIH TLV TWA</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>OSHA OEL TWA</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>OSHA OEL STEL</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>NIOSH REL TWA</td>
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<td>NIOSH REL STEL</td>
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<td></td>
<td>Canada - AB, BC, ON, PQ TWA</td>
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</tr>
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<td>Canada - AB, BC, ON, PQ STEL</td>
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<tr>
<td></td>
<td>Europe TWA</td>
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<td></td>
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<td></td>
<td>Australia, NZ, Singapore STEL</td>
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<tr>
<td></td>
<td>UK WEL TWA</td>
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</tr>
<tr>
<td></td>
<td>UK WEL STEL</td>
<td>10</td>
</tr>
</tbody>
</table>

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| Physical state | Solid |
| Colour         | Grey  |
| Odour          | None  |
| pH             | NA = Not Applicable |
| Melting temperature | 3422°C |
| Boiling temperature | 5555°C |
| Flash point    | NA = Not Applicable |
| Flammable limits | NA = Not Applicable |
| Vapor pressure | NA = Not Applicable |
| Vapor density  | NA = Not Applicable |
| Density        | 19.25 at 25°C |
| Solubility in water | Insoluble  |
| Auto-ignition temperature | NA = Not Applicable |
## Tungsten metal pieces

<table>
<thead>
<tr>
<th>Molecular weight</th>
<th>183.84</th>
</tr>
</thead>
</table>

### 9.2. Other information

<table>
<thead>
<tr>
<th>Percent volatile</th>
<th>NA = Not Applicable</th>
</tr>
</thead>
</table>

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

**Stable**: Yes

#### 10.2. Chemical stability

#### 10.3. Possibility of hazardous reactions

**Hazardous decomposition**: No

#### 10.4. Conditions to avoid

#### 10.5. Incompatible materials

**Incompatible materials**: Strong acids, Oxidizing materials, Halogens.

#### 10.6. Hazardous decomposition products

**Hazardous decomposition products**: Toxic metal fumes

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Acute</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal LD&lt;sub&gt;50&lt;/sub&gt;</td>
<td>Not Available</td>
</tr>
<tr>
<td>Skin absorption</td>
<td>Not Available</td>
</tr>
<tr>
<td>Oral LD&lt;sub&gt;50&lt;/sub&gt;</td>
<td>Not Available</td>
</tr>
<tr>
<td>Inhalation LC&lt;sub&gt;50&lt;/sub&gt;</td>
<td>Not Available</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>Not Available</td>
</tr>
<tr>
<td>Reproductive effect</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

### SECTION 12: Ecological information

#### 12.1. Toxicity

**Aquatic toxicity (acute)**: Not Available

#### 12.2. Persistence and degradability

**Persistence and degradability**: Not Available

#### 12.3. Bioaccumulative potential

**Bioaccumulative potential**: Not Available

#### 12.4. Mobility in soil

#### 12.5. Results of PBT and vPvB assessment

#### 12.6. Other adverse effects

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods
**Tungsten metal pieces**

**Product disposal**: Contact a licensed waste disposal company.

**Disposal method**: Dispose of according to applicable federal, state, provincial, and local regulations.

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

### SECTION 14: Transport information

14.1. UN number

14.2. UN proper shipping name

**UN proper shipping name**: Not Regulated

14.3. Transport hazard class(es)

14.4. Packing group

14.5. Environmental hazards

14.6. Special precautions for user

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

### SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations (Germany)

**WGK classification**: nwg- Not hazardous

15.2. Chemical safety assessment

### SECTION 16: Other information

**Approved by**: EHS DEPT

**Prepared by**: E Robb

**Information contact**: msds@lesker.com

**Revision summary**: This MSDS replaces the 7/26/2012 MSDS. Revised: **Section 1**: Date Issued, PREPARED BY.

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