1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Aluminum Metal Pieces  
**GENERAL USE:** Physical vapor deposition of thin films  
**GENERIC NAME:** Aluminium

**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 be harmful if inhaled. 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.

IRRITANCY: May cause irritation of skin, eyes, and respiratory tract.

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>Aluminum</td>
<td>100</td>
<td>7429-90-5</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. Low ingestion hazard in normal use.

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

SKIN: May cause dermatitis.

CHRONIC EFFECTS: Not Available

5. FIRE FIGHTING MEASURES

FLAMMABLE CLASS: Noncombustible except as a powder.

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.

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.

ENVIRONMENTAL PRECAUTIONS

WATER SPILL: This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water.

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. Avoid formation of dust. Provide appropriate exhaust ventilation where dust is formed. Do not breath (dust, vapor, mist, gas). Avoid contact with eyes, skin, and clothing. 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:

<table>
<thead>
<tr>
<th>Component</th>
<th>Location, Type</th>
<th>Values (mg/m3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>ACGIH TWA (Total)</td>
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</tr>
<tr>
<td></td>
<td>ACGIH TWA (Respirable)</td>
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</tr>
<tr>
<td></td>
<td>ACGIH TLV-TWA (Respirable)</td>
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<tr>
<td></td>
<td>NIOSH REL TWA (Total)</td>
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<tr>
<td></td>
<td>NIOSH REL TWA (Respirable)</td>
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</tr>
<tr>
<td></td>
<td>OSHA OEL TWA (Total)</td>
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<td>OSHA OEL TWA (Respirable)</td>
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<tr>
<td></td>
<td>Europe TWA (Inhalable)</td>
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<td>Denmark TWA (Inhalable)</td>
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<td>Australia, NZ, Singapore TWA</td>
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<td></td>
<td>UK WEL TWA (Inhalable)</td>
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<tr>
<td></td>
<td>UK WEL TWA (Respirable)</td>
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</tr>
</tbody>
</table>
9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Solid
ODOR: None
COLOR: Silver-white
PERCENT VOLATILE: NA = Not Applicable
FLASH POINT AND METHOD: NA = Not Applicable
FLAMMABLE LIMITS: NA = Not Applicable
AUTOIGNITION TEMPERATURE: NA = Not Applicable
BOILING POINT: 2327°C
MELTING POINT: 660°C
SOLUBILITY IN WATER: Insoluble
DENSITY: 2.70
MOLECULAR WEIGHT: 26.98

10. STABILITY AND REACTIVITY

STABLE: Yes
HAZARDOUS POLYMERIZATION: No
HAZARDOUS DECOMPOSITION PRODUCTS: Toxic metal fumes
INCOMPATIBLE MATERIALS: Mercury, Halocarbons, Halogens, Oxidizing materials, Strong acids, Strong bases. Powder is incompatible with water.

11. TOXICOLOGICAL INFORMATION

ACUTE

DERMAL LD$_{50}$: 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: 56 day Bioconcentration Factor (BCF) = 36 (Salvelinus fontinalis)
AQUATIC TOXICITY (ACUTE)
96-HOUR LC$_{50}$: .120 mg/L (Oncorhynchus mykiss)

**CHEMICAL FATE INFORMATION:** Not Available

### 13. DISPOSAL CONSIDERATIONS

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

**PRODUCT DISPOSAL:** Material may be recyclable.

**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:** Not Regulated

**ROAD AND RAIL (ADR/RID)**

**PROPER SHIPPING NAME:** Not Regulated

**AIR (ICAO/IATA)**

**SHIPPING NAME:** Not Regulated

**VESSEL (IMO/IMDG)**

**SHIPPING NAME:** Not Regulated

**CANADA TRANSPORT OF DANGEROUS GOODS**

**SHIPPING NAME:** Not Regulated

### 15. REGULATORY INFORMATION

**UNITED STATES**

**SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)**

**FIRE:** No  **PRESSURE GENERATING:** No  **REACTIVITY:** No  **ACUTE:** No  **CHRONIC:** No

**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>Aluminum</td>
<td>7440-90-5</td>
<td>No</td>
<td>Yes</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

GENERAL COMMENTS: All components of this product are included in inventory, exempt, or notified: USA TSCA, Philippines PICCS, Korean KECL, European EINECS, Canadian DSL

16. OTHER INFORMATION

APPROVED BY: EHS DEPT
PREPARED BY: E Bolton
INFORMATION CONTACT: msds@lesker.com
REVISION SUMMARY: This MSDS replaces the 4/23/2012 MSDS.

HMIS RATING

| HEALTH | 0 |
| FLAMMABILITY | 1 |
| PHYSICAL HAZARD | 0 |
| PERSONAL PROTECTION | B |

NFPA CODES

MANUFACTURER DISCLAIMER:

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