

# SAFETY DATA SHEET

**Date Issued :** 4/11/2012  
**MSDS No :** M-1000-005  
**Date Revised :** 7/26/2012  
**Revision No :** 1

## Silver Metal Pieces

### 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Silver 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:** Solid

**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

**ROUTES OF ENTRY:** Ingestion, Inhalation

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

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt.%	CAS
Silver	100	7440-22-4

### 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

**ACUTE TOXICITY:** Poses little or no immediate hazard.

**CHRONIC EFFECTS:** Chronic exposure to silver may cause argyria, which is characterized by a permanent blue-gray discoloration of the skin, eyes, and finger nails.

### 5. FIRE FIGHTING MEASURES

**FLAMMABLE CLASS:** Noncombustible except as a powder.

**EXTINGUISHING MEDIA:** Use a Class D dry powder extinguisher, dolomite, dry sand, graphite, or soda ash. Do not use carbon dioxide, sodium bicarbonate, halogenated extinguishing agents, foam, or water

**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.

### 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:

COMPONENT EXPOSURE LIMITS

Component	Location, Type	Value (mg/m <sup>3</sup> )
Silver	ACGIH TWA	0.1
	NIOSH TWA	0.01
	OSHA TWA	0.01
	Canada - AB, ON, PQ TWA	0.1
	Canada - BC TWA	0.01
	Denmark, Austria TWA	0.01
	Denmark STEL	0.02
	Europe TWA	0.1
	Mexico TWA	0.1
	Poland TWA	0.05
	UK WEL TWA	0.1

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**PHYSICAL STATE:** Solid

**ODOR:** None

**COLOR:** Characteristic

**PERCENT VOLATILE:** NA = Not Applicable

**FLASH POINT AND METHOD:** NA = Not Applicable

**FLAMMABLE LIMITS:** Not Available

**AUTOIGNITION TEMPERATURE:** NA = Not Applicable

**VAPOR PRESSURE:** NA = Not Applicable

**VAPOR DENSITY:** NA = Not Applicable

**BOILING POINT:** 2162°C

**MELTING POINT:** 961.76°C

**SOLUBILITY IN WATER:** Insoluble

**DENSITY:** ~ 10.5

**MOLECULAR WEIGHT:** 107.868

## 10. STABILITY AND REACTIVITY

**STABLE:** Yes

**HAZARDOUS POLYMERIZATION:** No

**HAZARDOUS DECOMPOSITION PRODUCTS:** Toxic metal fumes

**INCOMPATIBLE MATERIALS:** Strong acids, Oxidizing materials, Halogens, Ammonia, Acetylene.

## 11. TOXICOLOGICAL INFORMATION

### ACUTE

**DERMAL LD<sub>50</sub>:** > 2000 mg/kg

**Notes:** Rat

**ORAL LD<sub>50</sub>:** > 5000 mg/kg

**Notes:** Rat

**CHRONIC:** Chronic exposure to silver may cause argyria, which is characterized by a permanent blue-gray discoloration of the skin, eyes, and finger nails.

### 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)

**96-HOUR LC<sub>50</sub>:** 2.13 ug/L (Pimephales promelas)

**48-HOUR EC<sub>50</sub>:** 0.24 ug/L (Daphnia magna)

**Notes:** NOEC = 2 ug/L (Daphnia magna)

**13. DISPOSAL CONSIDERATIONS**

**DISPOSAL METHOD:** Dispose of according to applicable federal, state, provincial, and local regulations. Dispose of in accordance with US EPA 40 CFR 262 for concentrations at or above the regulatory limit. Regulatory level is equal to :5 mg/L

**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:** 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)**

**313 REPORTABLE INGREDIENTS:** Silver

**CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)**

**CERCLA RQ:** 1000 lbs No reporting of release is required if the diameter of the pieces of the solid metal is larger than 100 micrometers.

**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

Component	CAS	CA	MA	MN	NJ	PA	RI
Silver	7440-22-4	No	Yes	Yes	Yes	Yes	Yes

**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.

**RCRA STATUS:** Listed

**CLEAN WATER ACT:** Listed

## 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: Australian AICS, Canadian DSL, China IECSC, European EINECS, Korean KECL, New Zealand NZIoC, Philippines PICCS, USA TSCA]

## 16. OTHER INFORMATION

**APPROVED BY:** EHS DEPT

**PREPARED BY:** E Bolton

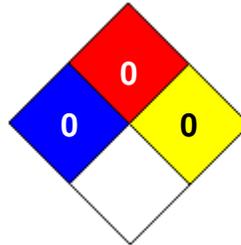
**INFORMATION CONTACT:** msds@lesker.com

**REVISION SUMMARY:** This MSDS replaces the 4/11/2012 MSDS. Revised: **Section 1:** PRODUCT CODE. **Section 7:** HANDLING. **Section 12:** GENERAL COMMENTS. **Section 13:** EMPTY CONTAINER, PRODUCT DISPOSAL.

### HMIS RATING

<b>HEALTH</b>	<input type="checkbox"/>	<b>0</b>
<b>FLAMMABILITY</b>		<b>0</b>
<b>PHYSICAL HAZARD</b>		<b>0</b>
<b>PERSONAL PROTECTION</b>		<b>B</b>

### NFPA CODES



### MANUFACTURER DISCLAIMER:

Kurt J. Lesker Company ("KJLC") believes the information contained in this Material Safety Data Sheet is accurate as of the "Date of Last Revision" specified. The information relates only to typical properties of the product. Do not use the information for product performance or specification purposes. The information is for use by technically skilled persons at their own risk. KJLC MAKES NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND, INCLUDING WITHOUT LIMITATION WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR THE INFORMATION. The information may not be valid for product use in combination with any other product or material or in any process. KJLC expressly disclaims any liability arising from any use of the product or any reliance on the information. Do not treat the information (a) as assurance that use of the product will not infringe patent or other rights or (b) as a license or grant of patent or other property rights. "KJLC" means KJLC and each of its subsidiaries.