

# SAFETY DATA SHEET

Date Issued : 4/4/2012

MSDS No : M-1000-250

## Selenium pieces

### 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Selenium 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:

Acute Toxicity (Inhalation), Category 3

Acute Toxicity (Oral), Category 3

Target Organ Toxicity (Repeated exposure), Category 2

##### Environmental:

Chronic Hazards to the Aquatic Environment, Category 4

#### GHS LABEL



Skull and  
crossbones



Health  
hazard

#### HAZARD STATEMENTS

H331: Toxic if inhaled.

H301: Toxic if swallowed.

H373: May cause damage to organs through prolonged or repeated exposure .

H412: Harmful to aquatic life with long lasting effects.

#### PRECAUTIONARY STATEMENT(S)

##### Prevention:

P260: Do not breathe dust/fume/gas/mist/vapours/spray.

P264: Wash ... thoroughly after handling.  
 P273: Avoid release to the environment.

### **Response:**

P304+P340: IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.  
 P301+A1600: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.  
 P391: Collect spillage.

### **Storage:**

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

## **EMERGENCY OVERVIEW**

**PHYSICAL APPEARANCE:** Dark grey

**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:** Toxic if swallowed.

**INHALATION:** Toxic if inhaled. May cause respiratory irritation.

## **REPRODUCTIVE TOXICITY**

**REPRODUCTIVE EFFECTS:** Not Available

**TERATOGENIC EFFECTS:** Not Available

**CARCINOGENICITY:** IARC Group 3 - Not classifiable as to its carcinogenicity to humans.

**MUTAGENICITY:** Not Available

**ROUTES OF ENTRY:** Inhalation, ingestion, eye contact, or skin contact.

**TARGET ORGAN STATEMENT:** Lungs, Liver

**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**

Chemical Name	Wt. %	CAS
Selenium	100	7782-49-2

## **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:** Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.

## **SIGNS AND SYMPTOMS OF OVEREXPOSURE**

**INGESTION:** Nausea, vomiting, diarrhea.

**INHALATION:** Coughing, nosebleed, loss of sense of smell.

**CHRONIC EFFECTS:** Chronic ingestion results in discoloration of the skin, deformation and loss of nails, hair loss, excessive tooth decay, a garlic odor to the breath, weakness, lack of mental alertness, and listlessness.

## 5. FIRE FIGHTING MEASURES

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

**EXTINGUISHING MEDIA:** Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.

**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:** Selenium oxides

## 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. 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 with side shields (or goggles) and a face shield.

**SKIN:** Wear protective gloves/protective clothing/eye protection/face protection. Wash contaminated clothing before reuse.

**RESPIRATORY:** 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> )
Selenium	ACGIH TLV TWA	0.2
	OSHA OEL TWA	0.2
	NIOSH REL TWA	0.2
	Canada - AB, ON, PQ TWA	0.2
	Canada - BC TWA	0.1
	Europe TWA	0.1
	Germany, Switzerland TWA	0.05
	Australia, New Zealand TWA	0.1
	Singapore TWA	0.2
	UK WEL TWA	0.1

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**PHYSICAL STATE:** Solid

**ODOR:** Not Available

**COLOR:** Dark grey

**pH:** NA = Not Applicable

**PERCENT VOLATILE:** NA = Not Applicable

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

**FLAMMABLE LIMITS:** NA = Not Applicable

**AUTOIGNITION TEMPERATURE:** NA = Not Applicable

**VAPOR PRESSURE:** NA = Not Applicable

**VAPOR DENSITY:** NA = Not Applicable

**BOILING POINT:** 685°C

**MELTING POINT:** 221°C

**SOLUBILITY IN WATER:** Insoluble

**DENSITY:** 4.81 at 25°C

**MOLECULAR WEIGHT:** 78.96

## 10. STABILITY AND REACTIVITY

**STABLE:** Yes

**HAZARDOUS POLYMERIZATION:** No

**HAZARDOUS DECOMPOSITION PRODUCTS:** Selenium oxides

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

## 11. TOXICOLOGICAL INFORMATION

### ACUTE

**DERMAL LD<sub>50</sub>:** Not Available

**SKIN ABSORPTION:** Not Available

**ORAL LD<sub>50</sub>:** 6700 mg/kg (oral, rat)

**INHALATION LC<sub>50</sub>:** Not Available

### CARCINOGENICITY

**IARC:** Group 3 - Not classifiable as to its carcinogenicity to humans.

**NTP:** Not listed

**OSHA:** Not listed

**REPRODUCTIVE EFFECTS:** Not Available

**TERATOGENIC EFFECTS:** Not Available

**MUTAGENICITY:** Not Available

## 12. ECOLOGICAL INFORMATION

**BIOACCUMULATION/ACCUMULATION:** 96 day Bioconcentration Factor (BCF) =29 (Pimephales promelas)

### AQUATIC TOXICITY (ACUTE)

**96-HOUR LC<sub>50</sub>:** 1 mg/L (Pimephales promelas)

**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:** 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)****311/312 HAZARD CATEGORIES:** Acute health hazard. Chronic health hazard.**313 REPORTABLE INGREDIENTS:** Selenium**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
Selenium	7782-49-2	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.

**CANADA****WHMIS HAZARD SYMBOL AND CLASSIFICATION**

D1B

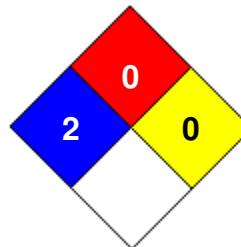
D2B

**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

<b>HMIS RATING</b>	
<b>HEALTH</b>	*
<b>FLAMMABILITY</b>	2
<b>PHYSICAL HAZARD</b>	0
<b>PERSONAL PROTECTION</b>	0

### 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.