SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

Date Issued : 3/30/2012
SDS No : M-1000-155
Date Revised : 8/27/2015
Revision No : 1

Iron metal pieces

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

1.1. Product identifier

Product name : Iron 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

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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

Chemical Name	CAS	EINECS No.	Wt.%
Iron	7439-89-6	231-096-4	100

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

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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

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.

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 : Avoid formation of dust. Provide appropriate exhaust ventilation where dust is formed.

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.

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Work hygienic practices : Practice good chemical hygiene during and after use.

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

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 : 1538°C

Boiling temperature : 2862°C

Flash point : NA = Not Applicable

Flammable limits : NA = Not Applicable

Vapor pressure : NA = Not Applicable

Vapor density : NA = Not Applicable

Density : 7.874 at 25°C

Solubility in water : Insoluble

Auto-ignition temperature : NA = Not Applicable

Molecular weight : 55.845

9.2. Other information

Percent volatile : NA = Not Applicable

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, Ammonium Nitrate.

10.6. Hazardous decomposition products

Hazardous decomposition products : Toxic metal fumes

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute

Dermal LD_{50} : Not Available

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Skin absorption	: Not Available
Oral LD_{50}	: 30000 mg/kg (oral, rat)
Inhalation LC_{50}	: Not Available
Notes	: Estimated toxic dose for humans is 20 mg/kg.
Mutagenicity	: Not Available
Reproductive effect	: Not Available

SECTION 12: Ecological information

12.1. Toxicity

Aquatic toxicity (acute)

96-hour LC_{50}	: .56 mg/L (Cyprinus carpio)

12.2. Persistence and degradability

Persistence and degradability	: Not Available

12.3. Bioaccumulative potential

Bioaccumulative potential	: 14 day Bioconcentration Factor (BCF) =1000 (Penaeus aztecus)

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

Product disposal	: Material may be recyclable.
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)

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(WGK) classification : nwg- Not hazardous

15.2. Chemical safety assessment

SECTION 16: Other information

Approved by : EHS DEPT

Prepared by : E Bolton

Information contact : msds@lesker.com

Revision summary : This MSDS replaces the 7/25/2012 MSDS.

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.