

SAFETY DATA SHEET

Date Issued : 5/29/2012
MSDS No : M-2511-157

Permalloy Pieces

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Permalloy Pieces

GENERAL USE: Physical vapor deposition of thin films

GENERIC NAME: Nickel-Iron-Chromium-Molybdenum-Copper Alloy

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:

Target Organ Toxicity (Repeated exposure), Category 1

Skin Sensitization, Category 1

Carcinogenicity, Category 2

GHS LABEL



Health
hazard



Exclamation
mark

HAZARD STATEMENTS

H372: Causes damage to organs through prolonged or repeated exposure .

H351: Suspected of causing cancer .

H317: May cause an allergic skin reaction.

PRECAUTIONARY STATEMENT(S)

Prevention:

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P314: Get medical advice/attention if you feel unwell.

EMERGENCY OVERVIEW

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. Allergic reactions are possible.

INGESTION: May be harmful if swallowed.

INHALATION: May be harmful if inhaled. May cause respiratory irritation.

REPRODUCTIVE TOXICITY

REPRODUCTIVE EFFECTS: Not Available

TERATOGENIC EFFECTS: Not Available

CARCINOGENICITY: IARC Group 2B - Possibly carcinogenic to humans.

MUTAGENICITY: Not Available

MEDICAL CONDITIONS AGGRAVATED: None expected.

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

TARGET ORGAN STATEMENT: Lungs, Respiratory tract

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

SENSITIZATION: May cause skin sensitization, an allergic reaction, which becomes evident on re exposure to this material.

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
Nickel	50 - 99	7440-02-0
Iron	0 - 50	7439-89-6
Chromium	0 - 50	7440-47-3
Molybdenum	0 - 30	7439-98-7
Copper	0 - 6	7440-50-8

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

ACUTE TOXICITY: May cause skin irritation. Allergic reactions are possible.

CHRONIC EFFECTS: Not Available

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.

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: Toxic metal fumes

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.

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

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/m3)
Nickel	ACGIH TLV TWA	1.5
	OSHA OEL TWA	1
	NIOSH REL TWA	0.015
	Canada TWA	1
	Canada - British Columbia TWA	0.05
	Austria, Denmark, Norway TWA	0.05
	Germany, Sweden TWA	0.5
	Aus, Japan, NZ, Singapore TWA	1
	UK MEL	0.5

Component	Location, Type	Value (mg/m3)
Chromium	ACGIH TLV TWA	0.5
	OSHA OEL TWA	1
	NIOSH REL TWA	0.5
	Canada - AB, BC, ON, PQ TWA	0.5
	Europe TWA	0.5
	Hungary TWA	2
	UK WEL TWA	0.5

Component	Location, Type	Value (mg/m3)
Molybdenum	ACGIH TLV TWA (Respirable)	3
	OSHA OEL TWA (Total)	15
	Canada - AB, BC, ON TWA (Respirable)	3
	Canada - PQ	10
	Europe TWA	10
	Poland TWA (Respirable)	4
	Poland STEL (Respirable)	10
	Spain TWA (Respirable)	3
	Sweden TWA (Respirable)	5
	Australia, NZ, Singapore TWA	10
	UK WEL TWA	10
	UK WEL STEL	20

Component	Location, Type	Value (mg/m3)
Copper	ACGIH TLV TWA	0.2
	OSHA OEL TWA	0.1
	NIOSH REL TWA	1
	Canada - AB, BC, ON, PQ TWA	0.2
	Europe TWA	0.2
	Austria, Denmark, Hungary, Poland TWA	0.1
	Australia, New Zealand, Singapore TWA	0.1
	UK WEL TWA	0.2

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Solid

ODOR: None

COLOR: 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: Extremely low at 25C

VAPOR DENSITY: NA = Not Applicable

BOILING POINT: Not Available

MELTING POINT: 2500°C to 2600°C

SOLUBILITY IN WATER: Insoluble

DENSITY: Not Available

10. STABILITY AND REACTIVITY

STABLE: Yes

HAZARDOUS POLYMERIZATION: No

HAZARDOUS DECOMPOSITION PRODUCTS: Toxic metal fumes

INCOMPATIBLE MATERIALS: Strong acids, Oxidizing materials, Aluminum, Methanol, Selenium, Ammonium Nitrate, Sulphur compounds.

11. TOXICOLOGICAL INFORMATION

ACUTE

EYES: May cause mild transient irritation but there is no evidence of long term harmful effects from available information.

DERMAL LD₅₀: Not Available

SKIN ABSORPTION: Not Available

ORAL LD₅₀: Not Available

INHALATION LC₅₀: Not Available

SKIN EFFECTS: May cause an allergic skin reaction.

CARCINOGENICITY

IARC: Group 2B - Possibly carcinogenic to humans.

NTP: Reasonably anticipated to be a human carcinogen.

OSHA: Not Regulated

SENSITIZATION: May cause skin sensitization.

REPRODUCTIVE EFFECTS: Not Available

TARGET ORGANS: Lungs, Respiratory tract

TERATOGENIC EFFECTS: Not Available

MUTAGENICITY: Not Available

12. ECOLOGICAL INFORMATION

BIOACCUMULATION/ACCUMULATION: Not Available

AQUATIC TOXICITY (ACUTE)

96-HOUR LC₅₀: .06 mg/L (Oncorhynchus mykiss)

48-HOUR EC₅₀: 1 mg/L (Daphnia magna)

CHEMICAL FATE INFORMATION: Not Available

COMMENTS: The preceding data is for nickel.

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)

PRIMARY HAZARD CLASS/DIVISION: Not Regulated

ROAD AND RAIL (ADR/RID)

PROPER SHIPPING NAME: Not Regulated

AIR (ICAO/IATA)

PRIMARY HAZARD CLASS/DIVISION: Not Regulated

VESSEL (IMO/IMDG)

PRIMARY HAZARD CLASS/DIVISION: Not Regulated

CANADA TRANSPORT OF DANGEROUS GOODS**PRIMARY HAZARD CLASS/DIVISION:** Not Regulated**15. REGULATORY INFORMATION****UNITED STATES****SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)****311/312 HAZARD CATEGORIES:** Chronic health hazard.**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
Nickel	7440-02-0	Yes	Yes	Yes	Yes	Yes	Yes
Chromium	7440-47-3	Yes	Yes	Yes	Yes	Yes	Yes
Iron	7439-89-6	No	No	No	Yes	Yes	No
Molybdenum	7439-98-7	No	No	Yes	Yes	Yes	Yes
Copper	7440-50-8	No	Yes	No	Yes	Yes	Yes

CALIFORNIA PROPOSITION 65: This material may contain the following components which are known to the State of California to cause cancer, birth defects or other reproductive harm and may be subject to the requirements of California Proposition 65 (CA Health and Safety Code section 25249.5) : Nickel

CANADA**WHMIS HAZARD SYMBOL AND CLASSIFICATION**

Toxic

D2A

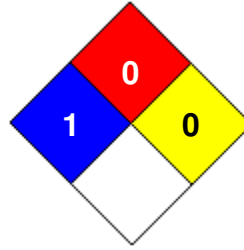
D2B

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

HMIS RATING

HEALTH	*	1
FLAMMABILITY		0
PHYSICAL HAZARD		0
PERSONAL PROTECTION		F

NFPA CODES**MANUFACTURER DISCLAIMER:**

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