INDIUM CORPORATION OF AMERICA
®\EUROPE®\ASIA-PACIFIC®\INDIUM CORPORATION (SUZHOU) ®

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: METAL MIX CONTAINING ALUMINUM AND NICKEL POWDER

SDS Number: SDS-5860

Revised Date: 14 JANUARY 2014

Product Use: INDUSTRIAL USE - METAL CONSISTING OF ALUMINUM AND NICKEL

MANUFACTURER:

In America:
The Indium Corporation of America
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Information: (315) 853-4900
nswarts@indium.com

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Asia-Pacific Operations-Singapore
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Singapore 628908
Information: +65 6268-8678

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Suchun Industrial Square
Unit No. 14-C
Jiangsu Province, China 215126
Information: (86) 512-6283-4900
2. HAZARDS IDENTIFICATION

**PRIMARY ROUTES OF ENTRY:**
- \( X_{\text{Eye}} \)
- \( X_{\text{Inhalation}} \)
- \( X_{\text{Skin}} \)
- \( X_{\text{Ingestion}} \)

**Carcinogen Listed In:**
- NTP
- IARC
- OSHA
- \( X_{\text{Not Listed}} \)

GHS:

Signal Word: Danger

Hazard statement(s)
- H228  Flammable Solid
- H317  May cause an allergic skin reaction
- H351  Suspected of causing cancer (nickel)
- H372  Causes damage to organs through prolonged or repeated exposure if inhaled
- H400  Very toxic to aquatic life (nickel)

Precautionary statement(s)
- P210  Keep away from heat/sparks/open flames/hot surfaces.- No smoking
- P233  Keep container tightly closed
- P240  Ground/bond container and receiving equipment
- P261  Avoid breathing dust/fume/gas/mist/vapors/spray
- P270  Do not eat, drink or smoke when using this product
- P273  Avoid release to the environment
- P280  Wear protective gloves/protective clothing/eye protection/face protection
- P362  Take off contaminated clothing and wash before reuse
- P301 + P314  IF SWALLOWED: Get Medical advice/attention if you feel unwell
- P302 + P352  IF ON SKIN: Wash with plenty of soap and water
- P304 + 341  IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
- P305 + 351  IF IN EYES: Rinse continuously with water for several minutes (15 mins)

Classification
- Flammable solid- Category 1
- Skin sensitization- Category 1
- Carcinogenicity- Category 2
- Specific target organ toxicity-repeated exposure, inhalation – Category 1

**POTENTIAL HEALTH EFFECTS:**

**Eye Contact:** May cause eye irritation. Aluminum particles may cause corneal necrosis.

**Ingestion:** Ingestion of dust may cause irritation or harm.

**Inhalation:** Inhalation of fume or dust may cause local irritation to the respiratory system. Fumes may cause metal fume fever, which is characterized by flu-like symptoms. Breathing of nickel dust or fume can cause irritation or harm to the nasal passages.

**Skin Contact:** May cause skin irritation. May be harmful if absorbed through the skin. Causes “nickel itch” which is dermatitis resulting from sensitization to nickel.

**Chronic:** Possible cancer hazard based on testing of laboratory animals. Chronic inhalation of fine dusts may
cause lung damage. Chronic inhalation of nickel dusts may cause perforation of the nasal septum.

**WARNING:** This product contains a chemical known to the State of California to cause cancer and/or birth defects (or other reproductive harm). (nickel, trace levels of lead)

**NOTE:** The Indium Corporation does not recommend, manufacturer, market or endorse any of its products for human consumption.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
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<tr>
<th>Components</th>
<th>% wt</th>
<th>CAS Registry #/EINECS#</th>
<th>PEL mg/m³</th>
<th>TLV-TWA mg/m³</th>
<th>TLV-STEL mg/m³</th>
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<td><strong>ALUMINUM</strong></td>
<td>35-45</td>
<td>7429-90-5/231-072-3</td>
<td>15</td>
<td>10</td>
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<tr>
<td>(EU)</td>
<td>-</td>
<td>10*</td>
<td>-</td>
<td></td>
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<td>10</td>
<td>20</td>
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<tr>
<td>(Mexico)</td>
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<td>5</td>
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<tr>
<td><strong>NICKEL</strong></td>
<td>55 – 65</td>
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<tr>
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<td>(Canada)</td>
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<td>(Mexico)</td>
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</tbody>
</table>

PRODUCT DOES NOT CONTAIN ANY LISTED EU SUBSTANCES OF VERY HIGH CONCERN (SVHC)

**Symbol:** Xn, F  
**Risk Phrases:** R15/R40/R43

N.E. = Not established  
EU = European Union Occupational Exposure Limits  
*Respirable dust 4 mg/c³*

### 4. FIRST AID MEASURES

**Eye Contact:** Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Seek medical attention if irritation persists.

**Ingestion:** If patient is conscious, ONLY induce vomiting as directed by trained personnel. NEVER give anything by mouth to an unconscious person. Seek medical attention immediately.

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

**Skin Contact:** Remove contaminated clothing. Wash affected area with soap and water. Wash clothing before reuse. If irritation persists, obtain medical attention.

### 5. FIRE FIGHTING MEASURES

**Flash Point:** Not established.  
**Method:** Not established.  
**Auto-ignition Temperature:** Not established.
Flammable Limits: Limits not established. Dust or powder is flammable.
Extinguishing Media: Use extinguishers appropriate for the surrounding fire conditions.
Use sand, Class D extinguisher, carbon dioxide or dry powder.
Special Fire Fighting Procedures: Firefighters must wear NIOSH approved self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES
Spill or Leak Procedures: Contain spill. If molten, cool to allow metal to solidify. Dust, wear recommended personal protective equipment. Keep away from sources of ignition.
DO NOT SWEET. Use an electrically protected vacuum, place in barrels and return to process if applicable.
Otherwise, dispose of following all Federal, State and Local regulations. In the EU refer to the Special Waste Regulations. Metal may have reclaim value.

7. HANDLING AND STORAGE
Handling Precautions: Only dry metals should be added to molten bath. If working with molten metals, or exposed to fume or dust, use appropriate personal protective equipment. Powder mix is flammable. Keep away from sources of ignition-No Smoking.
Storage Precautions: Store product in a cool, dry area away from incompatible materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION
Engineering Controls: Local exhaust ventilation is recommended to control any air contaminants. Control concentration of all components so that the exposure levels are not exceeded. Do not breathe dust. Work in well ventilated areas. Take measures to prevent the build-up of electrostatic charge. Avoid formations of dust and aerosols.
Personal protection:
Eyes: Chemical safety glasses/goggles and face shield with molten metal.
Respirator: A NIOSH approved or EU compliant CE marked air-purifying respirator with a fume/dust chemical cartridge is recommended under certain circumstances where airborne concentrations are expected to be elevated.
Skin: Gloves-leather or impervious (vinyl) type. Heat resistant gloves if handling hot metal. Safety type boots. Personal protective equipment is recommended when working with molten metal to avoid burns. Wear gloves to avoid direct contact with powder.
Other: Flame retardant, antistatic lab coat or other work clothes, safety shower and eye-wash fountain in work area. Avoid the use of contact lenses in high fume/dusty areas.
Work/Hygienic Practices: Maintain good housekeeping. Clean up spills immediately. Good personal hygiene is essential.
Avoid eating, smoking or drinking in the work area. Wash hands thoroughly with soap and water immediately upon leaving the work area. Wear proper PPE.

9. PHYSICAL AND CHEMICAL PROPERTIES
Appearance: Silver gray powder
Odor: Odorless
Boiling Point: Not applicable.
Melting Point: Not available.
Specific Gravity: Not available
Vapor Pressure: Not applicable.
Vapor Density: (air=1) Not applicable.

10. STABILITY AND REACTIVITY
General: Stable on storage conditions. Risk of dust hazard.
Conditions to Avoid: Dust generation, contact with water
Incompatible Materials: Strong oxidizing agents, strong acids
Hazardous Decomposition / Combustion:
Aluminum oxide/nickel oxide
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION
Carcinogenicity: National Toxicity Program (NTP): Yes, nickel. Reasonably anticipated to be a human carcinogen (nickel, powder particle diameter <1 mm)
Occupational Safety & Health Administration (OSHA): No
U.N. International Agency for Research on Cancer (IARC): Yes, Nickel. 2B-Group 2B: Possibly carcinogenic to humans (nickel powder particle diameter <1 mm)

Aluminum:
LD50-oral/rat-2000 mg/kg
LC50-inhalation-rat-4h-888 mg/l

12. ECOLOGICAL INFORMATION
Product mixture not tested.
Nickel:
Toxicity to fish- L50-cyprinus carpio (carp) – 1.3 mg/l – 96h
Toxicity to daphnia- EC50-daphnia magna (water flea) – 1 mg/l-48h
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal of the metal powders.
Nickel is very toxic to aquatic life.

13. DISPOSAL CONSIDERATION
Waste Disposal Method: Scrap metal alloy usually has value. Contact a commercial reclaimer for recycling. Otherwise, dispose of in accordance with all Federal, State and Local environmental regulations. In Europe follow the Special Waste Regulations.
14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements.

UN3089, Metal Powders, Flammable, N.O.S., 4.1, PG II


Nickel reportable spill quantity = 100 lbs if pieces are smaller than 100 micrometers (0.004 inches)

Marine pollutant: No

15. REGULATORY INFORMATION

The information in this Material Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated hereunder (29 CFR 1910.1200 ET. SEQ.).

This product has been classified in accordance with Mexican regulations: NOM-018-STPS-2000 and NOM-010-STPS-1999.

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation (CPR).

WHMIS: flammable solid

This product has been classified in accordance with the guidelines set by the Dept of Industrial Health of the Republic of Singapore.

California PROP 65: WARNING : This product contains a chemical known to the State of California to cause cancer and/or birth defects (or other reproductive harm). (Nickel, Trace levels of lead).

SARA 313 Listing - 40 CFR 372.65: aluminum and nickel

All ingredients are listed on the EPA TSCA Inventory.
All ingredients are listed on the Canadian Domestic Substance List.
EC Classification, Packaging and Labeling Requirements:
Symbol and Hazard Classification of Product
Xn, F

**Risk Phrases:**
- R15  Contact with water liberates extremely flammable gases (aluminum)
- R40  Limited evidence of carcinogenic effect
- R43  May cause sensitization by skin contact

**Safety Phrases:**
- S20/21 When using do not eat, drink or smoke
- S22  Do not breathe dust
- S23  Do not breathe fumes
- S24/25 Avoid contact with skin and eyes
- S27  Take off immediately all contaminated clothing
- S28  After contact with skin wash immediately with plenty of soap and water
- S36/37/39 Wear suitable protective clothing, gloves and eye/face protection
- S62  If swallowed, do not induce vomiting seek medical advice immediately and show container or label

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**16. OTHER INFORMATION**

**HMIS Hazard Rating:**
- Health: 2
- Fire: 2
- Reactivity: 3

**Revised Date:** 14 JANUARY 2014

**Prepared by:** Nancy Swarts, Indium Corporation of America

**Approved by:** Nancy Swarts, Indium Corporation of America

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