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

This material safety data sheet represents a family grouping of all metal mixes that are blended with the same flux. A table is provided that lists all metal groupings. To better serve all of our customers and reduce the paperwork burden Indium Corporation has generated one MSDS, for this product, to be used within the United States as well as internationally. Some of the regulatory information contained within may not be applicable to the customer's individual state or country. Some of the metal information may not be applicable to all products. Unless otherwise stated the health and safety information is applicable.

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: **INDALLOY WITH FLUXCAKE-801 (CW-801)**

MSDS Number: MSDS- 4590 **Revised Date:** 23 APRIL 2012

Product Use: Industrial Use - Flux Cored Wire (metal mixture with 1 - 6% flux)
See alloy table for metal alloy mix.

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2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:

✳Eye ✳Inhalation ✳Skin ✳Ingestion

Carcinogen listed in

NTP IARC OSHA ✳Not Listed

See Section 11

GHS

lead and antimony containing

Signal Word: Warning

Hazard statement(s)

H302	Harmful if swallowed
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H351	Suspected of causing cancer (lead)
H360	May damage fertility or the unborn child (applicable to lead containing product)
H373	May cause damage to organs through prolonged or repeated exposure (applicable to lead containing product)
H400+H413	Very toxic to aquatic life, may cause long lasting harmful effects to aquatic life (lead containing product)
H401+H413	Toxic to aquatic life, may cause long lasting harmful effects to aquatic life (antimony containing product)
EUH201A	Warning! Contains lead (applicable only to the products listed that contain lead) Review listing.
EUH208	Contains rosin. May produce an allergic reaction

Precautionary statement(s)

P233	Keep container tightly closed
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
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)

POTENTIAL HEALTH EFFECTS:

Eye Contact: Irritating to the eyes and if not removed promptly Do not allow material to come in contact with eyes. Contact with fume from molten metal may cause irritation.

Ingestion: Harmful if swallowed.

Inhalation: Inhalation of fume or dust may cause irritation to the respiratory system. Rosin may cause occupational asthma.

Skin Contact: May cause skin irritation or dermatitis under certain conditions of use. Hot molten metal may cause burns to the skin. Wear protective equipment when handling molten metal.

Chronic: **TIN**: Has been shown to increase incidence of sarcoma in animal tests.

LEAD: Prolonged exposure to vapors and/or fumes at higher temperatures may cause respiratory irritation and systematic lead poisoning. Symptoms of lead poisoning include headache, nausea,

abdominal pain, muscle and joint pain and damage to the nervous system, blood system and kidneys.

COPPER: Overexposure to fumes of copper may cause metal fume fever (chills, muscle aches, nausea, fever; dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair.

SILVER: Chronic skin contact or ingestion of silver dusts, salts or fume can result in a condition known as Argyria, a condition with bluish pigmentation of the skin and eyes.

INDIUM: May cause damage to respiratory system. Kidney and liver damage from injection of indium compounds has been reported based on limited animal testing. Target organs: teeth and gums.

Warning: Applicable in the State of California. This product contains a chemical known to the State of California to cause cancer and/or birth defects (or other reproductive harm). (lead)

Note: The Indium Corporation does not recommend, manufacture, market or endorse any of its products for human consumption.

Warning: This product may contain lead. Lead may be harmful to your health. US Federal law prohibits the use of leaded solders in making joints or fittings in any private or public water supply system. Keep out of the reach of children.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Components	% wt	CAS Registry #/EINECS#	PEL mg/m³	TLV-TWA mg/m³	TLV-STEL mg/m³
TIN	*	7440-31-5/231-141-8	2	2	-
		(EU)	-	2	4
		(Canada)	-	2	4
		(Singapore)	2	-	-
LEAD	*	7439-92-1/231-100-4	0.05	0.05	N.E.
		(EU)	N.E.	0.15	N.E.
		(Canada)	N.E.	0.05	N.E.
		(Mexico)	0.15	N.E.	N.E.
		(China)	-	0.05(dust) 0.03(fume)	-
		(Singapore)	0.15	N.E.	N.E.
COPPER	*	7440-50-8/231-159-6			
		(US)	0.1 (fume)	0.2 (fume)	-
		(EU)	-	0.2 (fume)	-
		(Canada)	-	0.2 (fume)	0.6 (fume)
		(Singapore)	0.2(fume)	-	-

		(Mexico)	-	0.2(fume)	2
		(China)	-	0.2(fume)	0.6
SILVER	*	7440-22-4/231-131-3			
		(US)	0.01	0.1	-
		(EU)	-	0.1	-
		(Canada)	-	0.1	0.3
		(Mexico)	-	0.1	-
		(Singapore)	0.1	-	-
INDIUM	*	7440-74-6/231-180-0			
		(US)	0.1	0.1	-
		(EU)	-	0.1	0.3
		(Canada)	-	0.1	0.3
		(Singapore)	0.1	-	-
		(Mexico)	0.1	-	0.3
		(China)	0.1	-	0.3
ANTIMONY	*	7440-36-0/231-146-5			
		(US)	0.5	0.5	-
		(EU)	0.5	-	-
		(Canada)	-	0.5	1.5
		(Mexico)	N.E.	0.5	-
		(Singapore)	0.5	-	-
		(China)	-	0.5	-

ROSIN	0.1 - 2	65997-05-9	N.E	N.E.	N.E
		(EU)	0.05	N.E.	0.15
CARBOXYLIC ACID	0.5 - 2	70248-25-8	N.E.	N.E.	N.E.
PROPRIETARY	0.1 – 2	-	N.E.	N.E.	N.E.

Risk Phrases: R20, R36/37/38, R42/43 See Section 15
N.E. = Not established * See alloy table

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

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 applicable

Flammable Limits: Flammable in the form of dust when exposed to heat or flame.

Extinguishing Media: Use extinguishers appropriate for the surrounding fire conditions. Use water spray, carbon dioxide, or foam. Do not allow water run-off to enter sewers or waterways.

Special Fire Fighting Procedures: Firefighters wear an approved self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures: Wear HEPA (high efficiency particulate filter) filter respirator and other personal protective clothing. (See Exposure Controls/Personal Protection Section). Clean up spill without generating or dispersing dust into the air. Vacuum solids instead of sweeping. Reduce airborne dust and prevent scattering by moistening with water. Place spilt material in a container and dispose of in accordance with applicable regulations.

7. HANDLING AND STORAGE

Handling Precautions: Avoid breathing vapors from heated material
Follow routine safe handling procedures. Use with adequate ventilation.

Storage Precautions: Keep away from heat and flame. Store in suitable, tightly sealed, and labeled containers in cool dry, well-ventilated area. Empty containers may be hazardous as they contain product residue.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Local exhaust ventilation is recommended to control any fume or dust air contaminants. Avoid exposure to lead containing fume.

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 HEPA type Chemical cartridge is recommended under certain circumstances where airborne concentrations are

expected to be elevated.
Warning: Air purifying respirators do not protect the worker in oxygen-deficient atmospheres. Follow applicable lead work practices as established under OSHA or other comparable safety standards.

Skin: Wear protective gloves, clothing such as lab coat, coveralls, apron and boots.

Other: Eye-wash fountain/shower in work area. Avoid the use of contact lenses in high fume and dust areas.

Work/Hygienic Maintain good housekeeping. Clean up spills immediately. Good personal hygiene is essential. Avoid eating, smoking or drinking in the lead work areas. Wash hands and face thoroughly with soap and water immediately upon leaving the work area and before eating.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid, gray metal wire	**Boiling Point:**	Not available
Odor:	Odorless	**Melting Point:**	See Table
Specific Gravity:	See Table	**pH:**	Not applicable
Vapor Pressure:	Not established	**Solubility in Water:**	Insoluble
Vapor Density:	(air=1) Not applicable.		

10. STABILITY AND REACTIVITY

General:	Stable.
Conditions to Avoid:	Not established
Incompatible Materials:	Not established
Hazardous Decomposition / Combustion:	Toxic fumes are emitted at elevated temperatures.
Hazardous Polymerization:	Will not occur.

11. TOXICOLOGICAL INFORMATION

Carcinogenicity: **NTP(National Toxicity Program):** No
OSHA (Occupational Safety & Health Administration): No
IARC (International Agency for Research on Cancer): Yes (Lead and its compounds)

LD50: Not established. **LC50:** Not established.

Lead can cause potential harm to the developing fetus. Rosin fume has been known to cause occupational asthma.

12. ECOLOGICAL INFORMATION

Product not tested.

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. Not regulated under US DOT (United States Department of Transportation. Non hazardous under shipping regulations.

UN – none.

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 the hazard criteria of the Canadian Controlled Products Regulation (CPR).

Canadian WHMIS: D2A-Materials Causing Other Toxic Effects-Very Toxic Material (Chronic). (lead)
D2B –Material Causing Other Toxic Effects – irritation

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

WARNING: This product contains a chemical known to the State of California to cause cancer and/or birth defects(or other reproductive harm). (lead). California Prop 65 – Safe Drinking Water Standard.

SARA 313 Listing - 40 CFR 372.65 – Lead CAS# 7439-92-1 Copper 7440-50-8

Ingredient is listed on the EPA TSCA Inventory.

EC Classification, Packaging and Labeling Requirements:

Hazard Classification of Product

Risk Phrases:

R20	Harmful by inhalation
R36/37/38	Irritating to eyes, respiratory system and skin
R42/43	May cause sensitization by inhalation and skin contact (rosin)
R33	Danger of cumulative effects (lead)
R40	Limited evidence of carcinogenic effect (lead)
R48	Danger of serious damage to health by prolonged exposure (lead)
R61	May cause harm to the unborn child (lead)
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment (lead)
R51/53	Toxic to aquatic organisms, may cause long-term effects in the aquatic environment (antimony)

Safety Phrases:

S20/21	When using do not eat, drink or smoke
S23	Do not breathe fumes
S24/25	Avoid contact with skin and eyes
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection

16. OTHER INFORMATION

HMIS Hazard Rating:	**Health:**	2
	Fire:	1
	Reactivity:	0
Revised Date:	23 APRIL 2012	
Prepared by:	Nancy Swarts, Indium Corporation of America	
Approved by:	Nancy Swarts, Indium Corporation of America	

The information and recommendations contained herein are, to the best of The Indium Corporation of America's knowledge and belief, accurate and reliable as of the date issued. The Indium Corporation of America does not warrant or guarantee their accuracy or reliability, and The Indium Corporation of America shall not be liable for any loss or damage arising out of the user thereof. The information and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. If buyer repackages this product, legal counsel should be consulted to insure proper health, safety and other necessary information is included on the container.

ALLOY TABLE

Metal mixture with 1 – 6% flux.

INDALLOY	%LEAD Pb	%TIN Sn	%COPPER Cu	%SILVER Ag	%INDIUM In	%COBALT Co	%ANTIMONY Sb	SG	MELTING POINT	RoHS Compliance
104 Sn62.5/Pb35.1/Ag1.4	33-34.7	58.8 - 61.9	-	1.3-1.39	-	-	-	8.4	~354F	NO
106 (Sn63/Pb37)	34.8-36.6	59 - 62.4	-	-	-	-	-	8.4	~361F	NO
116 (Pb50/Sn50)	47-49.5	47-49.5	-	-	-	-	-	8.87	~414F	NO
133 (Sn95/Sb5)	-	89.3- 94	-	-	-	-	4.7 - 4.95	7.25	~464F	YES
227 (Sn77.2/In 20/Ag2.8)	-	72.6- 76.4	-	2.6 - 2.77	18.8 - 19.8	-	-	7.25	~369F	YES
241 SAC387 (Sn95.5/Ag3.8/Cu0.7)	-	89.7-94.5	0.66 - 0.69	3.57 - 3.76	-	-	-	7.40	~428F	YES
256 SAC 305 (Sn96.5/3Ag/0.5 Cu)	-	90.7 - 95.5	0.47 - 0.495	2.8 - 2.97	-	-	-	7.40	~428F	YES
Cobalt995 doped with <0.05% Cobalt (99.5Sn/0.5Cu)	-	93.5 - 98.5	0.47 – 0.495	-	-	<0.05	-	7.06	-	YES

Indium Corporation is providing this above RoHS statement as information only. Solder related products are not directly related to the EU Directive. It is the responsibility of the customer to determine compliance with the regulations. Please review any applicable exemptions that may apply.

http://www.indium.com