



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

SAFETY DATA SHEET

This safety data sheet represents a family grouping of all metal mixes that are blended with the same flux known as NC-SMQ 90. A table is provided that lists all metal groupings. To better serve all of our customers Indium Corporation has generated one SDS, 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. Unless otherwise stated the health and safety information provided within is applicable to all products.

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: INDALLOY WITH NC-SMQ90 FLUX VEHICLE

SDS Number: SDS-IN 458

Revised Date: 28 JANUARY 2016

Product Use: Industrial use - No-clean solder paste consisting of a flux vehicle blended with an 82.5-92 % pre-alloyed metal powder.

MANUFACTURER:

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2. HAZARDS IDENTIFICATION**PRIMARY ROUTES OF ENTRY:**

X Eye X Inhalation X Skin X Ingestion NTP

CARCINOGEN LISTED IN:

IARC OSHA X Not Listed
See Section 11

GHS:



for lead containing products

Signal Word: Warning

Hazard statement(s)

H303 May be harmful if swallowed (lead)
 H317 May cause an allergic skin reaction
 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
 H351 Suspected of causing cancer (lead)
 H361 Suspected of damaging 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)
 H410 Very toxic to aquatic life with long lasting effects (lead)
 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
 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:

Carcinogenicity (Category 2) (lead)
 Reproductive toxicity (Category 2) (lead)
 Skin sensitizer-Category 1B
 Respiratory sensitizer-Category 1B
 Skin irritant- Category 2
 Acute toxicity, oral- Category 5
 Specific target organ toxicity- repeated exposure (Category 2) (lead)
 Acute aquatic toxicity – Category 1 for lead containing products (H400)
 Chronic aquatic toxicity – Category 1 for lead containing products (H410)

POTENTIAL HEALTH EFFECTS:

Eye Contact: Contact with material at room temperature or fume from material at typical re-flow temperatures over 100°C may cause eye irritation.

Ingestion:	Contains metal alloys and organic chemicals. May be harmful if swallowed. May cause irritation.
Inhalation:	Vapors or fumes from this material at typical re-flow temperatures over 100°C may cause local irritation to the respiratory system. Rosin may cause occupational asthma.
Skin Contact:	May cause skin irritation. Antimony/Rosin has been known to cause dermatitis.
Chronic:	<p>LEAD: Prolonged exposure to vapors 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.</p> <p>SILVER: Chronic skin contact or ingestion of silver dust, salts, or fume can result in a condition known as Argyria, a condition with bluish pigmentation of the skin and eyes.</p> <p>TIN: Has been shown to increase incidence of sarcoma in animal tests.</p> <p>BISMUTH: May cause kidney damage.</p> <p>INDIUM: May cause damage to respiratory system.</p> <p>COPPER: Overexposure to fumes may cause metal fume fever (chills, muscle aches, nausea, fever; dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair.</p>
WARNING:	Applicable to 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			
		(US)	2	2	-
		(EU)	-	2	4
		(Singapore)	2	-	-
		(Canada)	-	2	4
LEAD	*	7439-92-1/231-100-4			

		(US)	0.05	0.05	-
		(EU)	-	0.15	-
		(Singapore)	0.15	-	-
		(Mexico)	-	0.15	-
		(China)	-	0.05(dust) 0.03(fume)	-
		(Canada)	0.05	0.05	-
SILVER	*	7440-22-4/231-131-3			
		(US)	0.01	0.1	-
		(EU)	-	0.1	-
		(Canada)	-	0.1	0.3
		(Singapore)	0.1	-	-
		(Mexico)	-	0.1	-
INDIUM	*	7440-74-6/231-180-0			
		(US)	0.1	0.1	-
		(EU)	-	0.1	0.3
		(Singapore)	0.1	-	-
		(Mexico)	-	0.1	0.3
		(China)	-	0.1	0.3
		(Canada)	-	0.1	0.3
BISMUTH	*	7440-69-9 /231-177-4	N.E.	N.E.	N.E.
ANTIMONY	*	7440-36-0/231-146-5			
		(US)	0.5	0.5	-
		(EU)	0.5	-	-
		(Singapore)	0.5	-	-
		(Mexico)	-	0.5	-
		(China)	-	0.5	-
		(Canada)	N.E.	0.5	1.5
COPPER	*	7440-50-8/231-159-6			
		(US)	0.1 (fume)	0.2 (fume)	-
		(EU)	-	0.2 (fume)	-
		(Singapore)	0.2(fume)	1(dust)	-
		(China)	-	0.2(fume)	0.6
		(Mexico)	-	0.2	2

		(Canada)	-	0.2 (fume)	0.6 (fume)
ROSIN	3.0-4.0	65997-05-9 (US)	N.E.	N.E.	N.E.
		(EU)	0.05	N.E.	0.15 (sensitiser)
PROPRIETARY	4.0-14.0		N.E.	N.E.	N.E.

N.E. = Not established * See alloy table

ALLOY TABLE

%Metal mix with flux

Indalloy (METAL)	%TIN Sn	%SILVER Ag	%LEAD Pb**	%ANTIMONY Sb	%BISMUTH Bi	%INDIUM In	%COPPER Cu	RoHS 2* Compliance
7 (In50/Pb50)	-	-	41.3-46	-	-	41.3-46	-	NO
97 (S43/Pb43/Bi14)	35.5-39.6	-	35.5-39.6	-	11.6-12.9	-	-	NO
104 (Sn62/Pb36/Ag2)	51.2-57.5	1.65-1.8	29.7-33.2	-	-	-	-	NO
106 (Sn63/Pb37)	52-58	-	30.5-34	-	-	-	-	NO
121 (Sn96.5/Ag 3.5)	79.6-88.8	2.8-3.2	-	-	-	-	-	YES
128 (100 Sn)	82.5-92	-	-	-	-	-	-	YES
133 (Sn95/Sb5)	78.4-87.4	-	-	4.1-4.6	-	-	-	YES
151 (Pb92.5/Sn 5/Ag2.5)	4.1-4.6	2.1-2.3	76.3-85.1	-	-	-	-	YES
161 (Pb97.5/Ag 2.5)	-	2.1-2.3	80-89.7	-	-	-	-	YES
171 (Pb95/Sn5)	4.1-4.6	-	78-87.4	-	-	-	-	YES
227 (Sn77.2/In20/Ag2.8)	63.7-71	2.3-2.6	-	-	-	16.5-18.4	-	YES
228 (Pb88/Sn10/Ag2)	8.25-9.2	1.65-1.8	72.6-81	-	-	-	-	YES
241 (SAC387)	78.8-87.9	3.1-3.5	-	-	-	-	0.58-0.64	YES

(Sn95.5/Ag 3.8/Cu0.7)								
Indalloy (METAL)	%TIN Sn	%SILVER Ag	%LEAD Pb**	%ANTIMONY Sb	%BISMUTH Bi	%INDIUM In	%COPPER Cu	RoHS* Compliance
244 (Sn99.3/Cu0.7)	81.9-91.4	-	-	-	-	-	0.58-0.64	YES
246 (Sn95.5/Ag 4.0/Cu0.5)	78.8-87.9	3.3-3.7	-	-	-	-	0.41-0.46	YES
249 (91.8Sn/4.8Bi/3.4Ag)	75.7 – 84.5	2.8 – 3.1	-	-	4 – 4.4	-	-	YES
252 (Sn95.5/Ag 3.9/Cu0.6)	78.8-87.9	3.2-3.6	-	-	-	-	0.5-0.6	YES
256 (SAC305) (Sn96.5/Ag 3/Cu0.5)	79.6-88.8	2.5-2.8	-	-	-	-	.041-0.46	YES
258 (Sn98.5/Ag1/Cu0.5)	81.2-90.6	0.825-0.92	-	-	-	-	0.41-0.46	YES
281 (Bi58/Sn42)	34.7-38.6	-	-	-	47.8-53.4	-	-	YES
NS Non-Std (91.5Sn 8.5Sb)	75.5-84.2	-	-	7.0-7.8	-	-	-	YES

RoHS 2= Restriction of Hazardous Substances (**REVIEW APPLICABLE EXEMPTIONS) (2011/65/EU)

http://europa.eu.int/comm/environment/waste/weee_index.tm

4. FIRST AID MEASURES

- Eye Contact:** Hold eyelids apart and flush eyes with plenty of tepid 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.		
Extinguishing Media:	Use extinguishers appropriate for the surrounding fire conditions.		
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:	Using a spatula, scoop up paste and place in a plastic or glass jar and tightly cap. Remove traces of paste residue using cloth rags or paper towels moistened with ethyl or isopropyl alcohol. Dispose contaminated cloth rags or paper towels following all Federal, State and Local regulations. In the EU refer to the Special Waste Regulations.
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7. HANDLING AND STORAGE

Handling Precautions:	Keep containers tightly closed when not in use. Use care to avoid spills. Use only with production equipment specifically designed for use with solder paste. Wear appropriate personal protective equipment when working or handling solder paste. Always thoroughly wash your hands after handling this product. DO NOT touch or rub eyes until hands are washed.
Storage Precautions:	Store product in tightly capped original containers in a cool, dry area. Refer to product label for specific storage temperature requirements. Rotate stock to ensure use before expiration date on the label.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:	Use only with production equipment (such as stencil printers and re-flow furnaces) with adequate ventilation and other safety features specifically designed for use with solder paste. Control concentration of all components so that the permissible exposure levels are not exceeded.
Personal protection:	
Eyes:	Chemical safety glasses/goggles. Face shield for splash hazards.
Respirator:	An approved or compliant marked air-purifying respirator with a fume/organic chemical cartridge is recommended under certain circumstances (i.e. when re-flowing manually on a plate instead of a ventilated re-flow furnace) where airborne concentrations are expected to be elevated or exceed exposure limits.
Skin:	Compatible chemical resistant gloves. Latex disposable not recommended.
Other:	Lab coat, eyewash fountain in work area. Avoid the use of contact lenses in high fume areas.
Work/Hygienic Practices:	Maintain good housekeeping. Clean up spills immediately. DO NOT allow rags or paper towels contaminated with solder paste to accumulate in the work area. 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. Follow proper lead work practices when applicable.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Grey colored paste.	Boiling Point:	Not applicable.
Odor:	Mild characteristic odor.	Melting Point:	Not applicable
Specific Gravity:	Not applicable.	pH:	Not applicable
Vapor Pressure:	Not applicable.	Solubility in Water:	Insoluble (paste)
Vapor Density:	(air=1) Not applicable.	Volatile Organics:	<149,000 ug/kg

10. STABILITY AND REACTIVITY

General:	Stable.
Conditions to Avoid:	Not established.
Incompatible Materials:	Avoid contact with acids, bases or oxidizing agents.
Hazardous Decomposition / Combustion:	Harmful organic fumes and toxic oxide fumes may form at elevated temperatures.
Hazardous Polymerization:	Will not occur.

11. TOXICOLOGICAL INFORMATION

Carcinogenicity:	NTP: No (National Toxicology Program)
	OSHA: No (Occupational Safety and Health Administration) 29CFR1910.1025
	IARC: Yes (International Agency on Research for Cancer) Lead and lead compounds are listed as possible carcinogens.
	Product is not listed as a carcinogen.

LD50:	Not established.	LC50:	Not established.
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Other: Chronic Toxicity: Prolonged or repeated exposure to rosin flux fume may cause workers to develop occupational asthma.

Copper - LD50 – intraperitoneal mouse 3.5 mg/kg.

Silver – LD50 oral – rat > 5,000 mg/kg

Bismuth – LD50 oral-rat 5,000 mg/kg

Antimony - LD50 oral – rat 7,000 mg/kg

Lead – Suspected human reproductive toxicant. May cause damage to organs through prolonged or repeated exposure. Reproductive toxicity – rat –inhalation, oral/ effects on newborn.

12. ECOLOGICAL INFORMATION

Product not tested.

Lead – Toxicity to fish – mortality LOEC – rainbow trout – 1.19 mg/l – 96h. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Bioaccumulation – *Oncorhynchus kisutch* – 2 weeks
Bioconcentration factor (BCF): 12

Copper – Toxicity to daphnia and other aquatic invertebrates mortality NOEC – *Daphnia* 0.004 mg/l – 24h.

Antimony – Toxicity to fish – mortality NOEC (*sheepshead minnow*) 6.2 mg/l – 96h. Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.

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 (Department of Transportation).

Not hazardous under all shipping regulations.

UN – none

Non-hazardous- ground/IATA/IMDG

15. REGULATORY INFORMATION

The information in this 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 Materials Causing Other Toxic Effects -irritant

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

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

This product has been classified using the Chinese Occupational Exposure Limit of Hazardous Agents in the Workplace, GBZ2-2002.

Applicable to California Only - California PROP 65(Safe Drinking Water Standard): WARNING:

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

SARA 313 Listing - 40 CFR 372.65

Lead CAS# 7439-92-1

Silver CAS# 7440-22-4

Antimony CAS# 7440-36-0

Copper CAS# 7440-50-8

EPA Genetic Toxicology Program – Lead CAS# 7439-92-1

All ingredients are listed on the EPA TSCA Inventory.

All ingredients are listed on the Canadian Domestic Substance List.

16. OTHER INFORMATION

HMIS Hazard Rating:	Health:	2
	Fire:	1
	Reactivity:	0

Revised Date: 28 JANUARY 2016

Prepared by: Nancy Swarts, Indium Corporation of America

Approved by: Nancy Swarts, Indium Corporation of America

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