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 92J. A table is provided that lists all metal groupings. To better serve all of our customers and reduce paperwork 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-SMQ92J FLUX VEHICLE**

SDS Number: SDS-IN 540 **Revised Date:** 28 APRIL 2016

Product Use: Industrial use -No-clean solder paste consisting of a flux vehicle blended with an 83-92 % pre-alloyed metal powder for soldering applications. See alloy table for list of metal combinations.

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2. HAZARDS IDENTIFICATION

GHS:

applicable for lead containing products

Signal Word: Warning

Hazard statement(s)

H303	May be harmful if swallowed (lead containing)
H317	May cause an allergic skin reaction
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335	May cause respiratory irritation
H351	Suspected of causing cancer (lead containing)
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:

Skin irritant- Category 2
Specific target organ toxicity- repeated exposure – Category 2
Carcinogenicity (Category 2) (lead)
Reproductive toxicity (Category 2) (lead)
Skin sensitization – Category1B
Respiratory sensitization- Category1B
Acute toxicity, inhalation- Category 4
Acute aquatic toxicity – Category 1 for lead containing products
Chronic aquatic toxicity – Category 1 for lead containing products
For product containing both lead and antimony the Acute and Chronic Classification is (Category 2)

PRIMARY ROUTES OF ENTRY:

⊕ Eye ⊕ Inhalation ⊕ Skin ⊕ Ingestion

Carcinogen listed by agency

NTP IARC OSHA ⊕Not Listed

*See Section 11

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 alloy and organic chemicals. May be harmful.

Inhalation: Vapors or fumes from this material at typical re-flow temperatures over 100°C may cause local irritation to the respiratory system. When heated rosin may be a respiratory sensitizer.

Skin Contact: May cause skin irritation. Antimony has been known to cause dermatitis. Rosin may cause dermatitis.

Chronic: **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.

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.

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

BISMUTH: May cause kidney damage.

INDIUM: May cause damage to respiratory system.

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.

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

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
		(Canada)	-	2	4

		(Singapore)	2	-	-
LEAD	*	7439-92-1/231-100-4			
		(US)	0.05	0.05	-
		(EU)	-	0.15	-
		(Canada)	0.05	0.05	-
		(Singapore)	0.15	-	-
		(Mexico)	N.E.	0.15	-
		(China)	-	0.05(dust) 0.03(fume)	- -
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
		(Mexico)	-	0.1	0.3
		(Singapore)	0.1	-	-
		(China)	-	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	-	-
		(Canada)	-	0.5	1.5
		(Mexico)	N.E.	0.5	-
		(Singapore)	0.5	-	-
		(China)	-	0.5	-
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)
		(Mexico)	-	0.2 (fog)	2 (powder)

		(Singapore)	0.2(fume)	1(dust)	-
		(China)	-	1(dust) 0.2(fume)	2.5 0.6
ROSIN	3.0-4.0	65997-05-9	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

Alloy in flux mix = paste

Indalloy Alloy	%TIN Sn	%SILVER Ag	%LEAD Pb	%ANTIMONY Sb	%BISMUTH Bi	%INDIUM In	%COPPER Cu	RoHS* 2 Compliance
97 (43Sn/43Pb/14 Bi)	36.7-39.6	-	36.7-39.6	-	11.6-12.9	-	-	No
100 62.6Sn/37Pb/0. 4Ag)	52-57.6	0.3-0.4	30.7-34	-	-	-	-	No
(Sn62/Pb36/A g2)	51.9-57.5	1.2-1.8	29.9-33.2	-	-	-	-	No
104 (62.5Sn/36.1Pb /1.4Ag)	51.9-57.5	1.16-1.29	30-34	-	-	-	-	No
106 (Sn63/Pb37)	52.3-58	-	30.7-34	-	-	-	-	No
109 (Sn60/Pb40)	49.8-55.2	-	33.2-36.8	-	-	-	-	No
121 (96.5Sn/3.5Ag)	80.1-88.8	2.9-3.2	-	-	-	-	-	Yes
127 (60Pb/37Sn/3A g)	30.7-34	2.5-2.8	49.8-55.2	-	-	-	-	No
132 (95Sn/5Ag)	78.9-87.4	4.2-4.6	-	-	-	-	-	Yes
133 (95Sn/5Sb)	78.9-87.4	-	-	4.2-4.6	-	-	-	Yes
159 (90Pb/10Sn)	8.3-9.2	-	74.7-82.8	-	-	-	-	No
Indalloy Alloy	**%TIN Sn**	**%SILVER Ag**	**%LEAD Pb**	**%ANTIMONY Sb**	**%BISMUTH Bi**	**%INDIUM In**	**%COPPER Cu**	**RoHS 2* Compliance**
205 (60In/40Pb)	-	-	33.2-36.8	-	-	49.8-55.2	-	No

228 (88Pb/10Sn/2Ag)	8.3-9.2	1.7-1.8	73-81	-	-	-	-	No
233 (85Pb/10Sb/5Sn)	4.2-4.6	-	70.6-78.2	8.3-9.2	-	-	-	No
241 (SAC387) (95.5Sn/3.8Ag/0.7Cu)	79.3-87.9	3.2-3.5	-	-	-	-	0.6-0.7	Yes
244 (99.3Sn/0.7Cu)	82.4-91.4	-	-	-	-	-	0.58-0.64	Yes
281 (58Bi/42Sn)	34.9-38.6	-	-	-	48.1-53.4	-	-	Yes
703	8.3-9.2	-	74.7-82.8	-	-	-	-	No
NS (Sn62.6/Pb37/Ag0.4)	52-57.6	0.33-0.37	30.7-34	-	-	-	-	No

***RoHS 2 = Restriction on Hazardous Substances (review applicable exemptions) (2011/65/EU)**

NS = Non Standard alloy

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.

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. Consult Product Data Sheet for additional information.

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 exposure levels are not exceeded. Use exhaust ventilation.

Personal protection:

Eyes: Chemical safety glasses/goggles. Face shield for splash hazards.

Respirator: An authority approved or EU compliant CE 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 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 standard lead work standards as specified and applicable under Federal standards.

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 Organic Compounds:**	<133,800 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 / Harmful organic fumes and toxic oxide fumes may form at elevated

Combustion: temperatures.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Carcinogenicity:
NTP: Reasonably anticipated to be a human carcinogen (lead)
OSHA: 29 CFR 1910.1025 (lead)
IARC: Yes 2B: Group 2B. Possibly carcinogenic to humans (lead)

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

Other: Chronic Toxicity: Prolonged or repeated exposure to rosin flux fume may cause workers to develop occupational asthma. Lead can cause potential harm to the developing fetus.

RTECS: OF7525000 (lead)

Lead
reproductive toxicity – rat –inhalation
reproductive toxicity – rat – oral
reproductive toxicity – mouse-oral

Teratogencity
Developmental toxicity – rat- inhalation
Developmental toxicity- rat- oral
Suspected human reproductive toxicant

GHS- Specific target organ toxicity- repeated exposure
May cause damage to organs through prolonged or repeated exposure

Lead- OSHA Hazards- carcinogen/target organ effect/harmful by ingestion/teratogen.

12. ECOLOGICAL INFORMATION

Product not tested.

Lead:

Toxicity to fish:

Rainbow trout- 1.19mg/l-96h

LC50 micropterus dolomieui- 2.2 mg/l-96h

Mortality NOEC-salvelinus fontinalis-1.7 mg/l-10d

Toxicity to algae

Mortality EC50-skeletonema costatum-7.94mg/l-10d

An environmental hazard cannot be excluded in the event of unprofessional handling, use and or disposal of this product.

Contains a substance (lead) that is very toxic to aquatic life with long lasting effects.

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 waste assessment rules.

14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements. Not regulated under US Department of Transportation.

Non - hazardous under all shipping regulations. (DOT/IATA/IMDG)

UN – none

Non – hazardous under IATA. Not regulated.

North American Emergency Response Guidebook – 2012 Not Applicable

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.).

California PROP 65 (Safe Drinking Water Standard): WARNING:
This product contains a chemical 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.

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

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 the Mexican Standards: NOM-010-STPS-2015 and NOM-018-STPS-2014.

Regulatory Information China:
GB/T 16483-2008, GB/T 17519-2013, Safety Data Sheets for Chemical Products
GB 30000.2-29-2013, Rules for classification and labeling of chemicals (GHS)

Decree No. 591: Regulations on the Control Over Safety of Hazardous Chemicals.

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

For Compliance with EU Directive 2011/65/EU, Restriction on Hazardous Substances (RoHS 2) - See Alloy Table.

This product has been classified in accordance with: Malaysian – OCCUPATIONAL SAFETY AND HEALTH (CLASSIFICATION, LABELING AND SAFETY DATA SHEET OF HAZARDOUS CHEMICALS) REGULATION OCTOBER 2013 – (CLASS).

16. OTHER INFORMATION

HMIS Hazard Rating:	**Health:**	2
	Fire:	1
	Physical Hazard:	0
Revised Date:	28 APRIL 2016	
Prepared by:	Nancy Swarts, Indium Corporation of America	
Approved by:	Nancy Swarts, Indium Corporation of America	

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