



SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier: INDALLOY WITH NC-SMQ75 FLUX VEHICLE

SDS Number: SDS-IN 494

Revised Date: 16 OCTOBER 2018

1.2 Relevant identified uses of the substance or mixture and uses advised against

Product Use: Industrial Use (Mixture) - Solder paste consisting of a flux vehicle blended with 83-92 weight percent pre-alloyed metal powder used for soldering applications. Review alloy table for exact product identification. Note: this SDS covers various metal mixtures using the same flux.

See alloy table for listing of products included under this SDS.

1.3 Details of the supplier of the safety data sheet

MANUFACTURER/SUPPLIER/IMPORTER:

In America:

The Indium Corporation of America®
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Technical & Safety Information: (315) 853-4900 (8AM-5PM, EST)
Safety & SDS Information: nswarts@indium.com
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1.4 Emergency Telephone Number**FOR CHEMICAL EMERGENCY ONLY PHONE *:****CHEMTREC 24 hrs.****USA: 1 (800) 424-9300****Outside USA: +1 (703) 527-3887****China: Emergency 86+ 4008417580***** Used only for spill/leak/fire/exposure/accident****ALL OTHER INQUIRIES: TOLL FREE: +1-800-448-9240 Indium Corporation****SECTION 2. HAZARDS IDENTIFICATION****PRIMARY ROUTES OF ENTRY:** Eye Inhalation Skin Ingestion

NTP

Carcinogen listed in

IARC

OSHA

 Not Listed**2.1 Classification:****2.2 Label Elements**

GHS:

Lead containing products



Signal Word: Warning

Hazard statement(s)

H303 May be harmful if swallowed (lead)

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 harmful effects (lead containing product)

EUH201A Warning! Contains lead (applicable only to the products listed that contain lead) Review listing.

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 + P364 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 + P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing

P305 + P351 IF IN EYES: Rinse continuously with water for several minutes (15 mins)

All other products (lead-free):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 + P364	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 + P341	IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
P305 + P351	IF IN EYES: Rinse continuously with water for several minutes (15 mins)

Classification:

Acute toxicity,- Category 4 (lead)
 Specific target organ toxicity- repeated exposure – Category 2
 Carcinogenicity (Category 2) (lead)
 Reproductive toxicity (Category 2) (lead)
 Acute aquatic toxicity – Category 1 for lead containing products
 Chronic aquatic toxicity – Category 1 for lead containing products

2.3 OTHER HAZARDS:

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 serious eye irritation.

Ingestion: This product contains metal alloy powders and organic chemicals. May be harmful if swallowed.

Inhalation: Vapors or fumes from this material at typical re-flow temperatures over 100°C may cause local irritation to the respiratory system. May be harmful if inhaled.

Skin Contact: May cause skin irritation. Antimony may cause dermatitis.

Chronic: SILVER: Chronic skin contact or ingestion of silver powder, 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.

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. Signs and symptoms of exposure – anemia. Possible carcinogenic to humans.

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.

INDIUM: Harmful if inhaled, swallowed or in contact with skin. Indium may cause damage to respiratory system. Kidney and liver damage from injection of indium compounds has been reported based on limited animal testing.

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

BISMUTH: May cause kidney damage.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS**3.2 Mixture:**

Components	% wt	CAS Registry #/ EINECS#
TIN	*	7440-31-5/231-141-8
SILVER	*	7440-22-4/231-131-3
INDIUM	*	7440-74-6/231-180-0
LEAD	*	7439-92-1/231-100-4
BISMUTH	*	7440-69-9/231-177-4
ANTIMONY	*	7440-36-0/231-146-5
COPPER	*	7440-50-8 /231-159-6
GOLD	*	7440-57-5/231-165-9
GERMANIUM	*	7440-56-4/231-164-3
MANGANESE	*	7439-96-5
NICKEL	*	7440-02-0/231-111-4
POLYGLYCOL ETHER	5 - 13	9038-95-3
CARBOXYLIC ACID	0.5 – 1.0	-
PROPRIETARY (NON CLASSIFIED)	2.5- 3.0	-

N.E. = Not established

* See Alloy Table for breakdown of percentages of alloy mixtures

<http://www.indium.com>

SECTION 4. FIRST AID MEASURES**4.1 Description of 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.

4.2 Most important symptoms and effect, both acute and delayed:

Skin contact may cause irritation.

Exposure to metal fumes may cause irritation to the respiratory system. Long term exposure by inhalation to metal fumes may cause illness such as metal fume fever.

Exposure to lead fume may cause harm. Sign of overexposure is anemia. Signs or symptoms of over exposure to antimony is headache, vomiting, nausea or dizziness. Target organs (antimony) – heart and respiratory system.

4.3 Indication of any immediate medical attention and special treatment needed:

No specific special treatment information is available on this mixture. Review data provided in this document to understand the hazards when working with the product. No other information is available at this time.

SECTION 5. FIRE FIGHTING MEASURES

5.1 Extinguishing Media: Use extinguishers appropriate for the surrounding fire conditions. Water, CO2, foam media.

5.2 Special hazards arising from the substance or mixture:

May produce toxic fumes of carbon monoxide if burning or metal oxide fumes.

5.3 Advice for Firefighters

Firefighters must wear approved self-contained breathing apparatus and full protective clothing.

Material product is not flammable. No other information is available.

SECTION 6. ACCIDENTAL RELEASE MEASURES**6.1 Personal precautions, protective equipment and emergency procedures:****For non-emergency personnel:**

Keep away from the spill. Remove sources of ignition. Keep exhaust ventilation system running. In the event of a fire evacuate area.

For emergency responders:

Wear safety glasses, gloves when cleaning up any spill. Other equipment may be necessary based on the immediate area and other chemicals unrelated to the product that may be in use. Adequate ventilation should be available. Keep unnecessary personnel away from area during clean up. Avoid direct skin exposure to material.

6.2 Environmental Precautions:

Dispose contaminated cloth rags or paper towels following all applicable governmental regulations. Material may have reclaim value. Material is non - hazardous. It however does contain metals and organic chemicals which may not be suited for release to any body of water including drains. Some products may contain lead or antimony which are hazard to the aquatic life.

6.3 Methods and material for containment and cleaning up:

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.

6.4 Reference to other sections: See Section 8 for exposure levels.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions For Safe Handling:

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. Do not eat, drink or smoke when handling this product. Utilize exhaust ventilation when heating product. Emissions may contain metal fumes, rosin and organic compounds.

7.2 Conditions for Safe Storage, including any incompatibilities:

Storage Precautions: Store product in tightly capped original containers in a cool, dry area. Refer to product label and product data sheet for specific storage temperature requirements. Rotate stock to ensure use before expiration date.

7.3 Specific End Use(s): Soldering applications

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters:

			<u>TWA</u>	<u>STEL</u>
		<u>CAS#/EINECS#</u>	mg/m3	mg/m3
TIN	*	7440-31-5/231-141-8		
		(UK)	2	4
		(Belgium)	2	-
		(Germany)	2	-
		(Netherlands)	2	-
		(Spain)	2	-
		(Poland)	2	-
SILVER	*	7440-22-4/231-131-3		
		(UK)	0.1	0.3
		(Belgium)	0.1	-
		(France)	0.1	-
		(Germany)	0.1	-
		(Netherlands)	0.1	-
		(Spain)	0.1	-
	(Poland)	0.05	-	
INDIUM	*	7440-74-6/231-180-0		
		(UK)	0.1	0.3
	(Belgium)	0.1	-	

		(Spain)	0.1	-
		(Portugal)	0.1	-
		(Finland)	0.1	-
		(Denmark)	0.1	-
		(Austria)	0.1	0.2
		(Switzerland)	0.1	-
		(Norway)	0.1	-
		(Ireland)	0.1	0.3
LEAD	*	7439-92-1/231-100-4		
		(UK)	0.15	-
		(France)	0.1	-
		(Spain)	0.15	-
		(Italy)	0.15	-
		(Portugal)	0.05	-
		(Finland)	0.1	-
		(Denmark)	0.05	-
		(Austria)	0.1	0.4
		(Switzerland)	0.1	0.8
		(Poland)	0.05	-
		(Norway)	0.05	-
		(Ireland)	0.15	-
BISMUTH	*	7440-69-9/231-177-4		
		(UK)	N.E.	N.E.
ANTIMONY	*	7440-36-0/231-146-5		
		(UK)	0.5	-
		(France)	0.5	-
		(Belgium)	0.5	-
		(Spain)	0.5	-
		(Portugal)	0.5	-
		(The Netherlands)	0.5	-
		(Finland)	0.5	-

		(Denmark)	0.5	-
		(Austria)	0.5	5
		(Switzerland)	0.5	-
		(Poland)	0.5	-
		(Norway)	0.5	-
		(Ireland)	0.5	-
COPPER	*	7440-50-8 /231-159-6		
		(UK)	0.2 (fume)	-
		(France)	2	0.2(fume)
		(Belgium)	1	-
			0.2(fume)	
		(Spain)	1	-
			0.2(fume)	
		(Portugal)	1	0.2(fume)
		(Netherlands)	0.1	-
		(Finland)	1	-
			0.1	
		(Denmark)	1	-
			0.1	
		(Austria)	1	4
			0.1(fume)	0.4
		(Switzerland)	0.1	0.2
		(Norway)	1	0.1
		(Ireland)	1	2
			0.2 (fume)	
		(Poland)	0.2	-
GERMANIUM	*	7440-56-4/231-164-3	N.E.	-
GOLD	*	7440-57-5/231-165-9	N.E.	-
MANGANESE	*	7439-96-5	N.E.	N.E.
NICKEL	*	7440-02-0/231-111-4	N.E.	N.E.

POLYGLYCOL ETHER	5 - 13	9038-95-3	N.E.	N.E.
CARBOXYLIC ACID	0.5 – 1.0	-	N.E.	N.E.
PROPRIETARY	2.5- 3.0	-	N.E.	N.E.

N.E. = Not established TWA = time weighted average STEL= short term exposure limit

8.2 Exposure Controls:

Engineering Controls: Use only with production equipment (stencil printers and re-flow furnaces) with adequate exhaust ventilation and other safety features specifically designed for use with solder paste. Control concentration of all components with established exposure limits so they are not exceeded. Use exhaust ventilation when heating product. Air emission control equipment may be necessary based on the local governmental requirements for contaminants entering the atmosphere. Emissions may contain metal fume such as lead and antimony and organic compounds.

Personal protection:

- Eyes:** Chemical safety glasses/goggles. Face shield for splash hazards.
- Respiratory:** An 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. Recommend a nitril disposable or other chemical glove.
- Other:** Lab coat, eye-wash 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 practices, if applicable.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance:	Grey colored solid paste	Boiling Point/Range:	Not determined
Odor:	Mild characteristic odor.	Melting Point/Freezing Point:	Not applicable
Odor Threshold:	Not established	Evaporation Rate:	Not applicable
Specific Gravity:	0.92	pH:	4 – 8 (flux)
Vapour Pressure:	Not applicable.	Solubility in Water:	Insoluble (paste)
Vapour Density:	(air=1) Not applicable.	Partition coefficient:	Not established
Relative Density:	Not established	Flammability:	Not applicable
Flash Point:	Not applicable	Method:	Not applicable
Auto-ignition Temperature:	Not applicable	Flammable Limits:	Limits not established
UEL/LEL Limits:	Not applicable	Decomposition Temp:	Not applicable
Viscosity:	Not established	Explosive properties:	Not applicable

Oxidizing Properties: Not established

9.2 Other Information: Above data for the whole mixture.

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity: Stable.

10.2 Chemical Stability: Stable

10.3 Possibility of Hazardous Reactions: Not established

10.4 Conditions To Avoid: None known

10.5 Incompatible Materials: Avoid contact with acids, bases or oxidizing agents.

10.6 Hazardous Decomposition / Combustion: Harmful organic fumes and toxic oxide fumes may form at elevated temperatures. Metal oxide fumes.

10.7 Hazardous Polymerization: Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

Acute toxicity: Not established

Irritation: Not established

Corrosivity: Not applicable

Sensitization: Not available

Repeated dose toxicity: Not established

Carcinogenicity: Not established

Likely Routes of Entry: eyes (irritation) /skin (irritation) /inhalation (irritation) ingestion (may be harmful)

Interactive effects: None known

Mutagenicity: Not established

Toxicity for Reproduction: Not Established

Absence of specific data: None available (not tested)

11.2 Symptoms related to the physical, chemical and toxicological characteristics:

May cause irritation by skin and inhalation.

11.3 Delayed and immediate effects as well as chronic effects from short and long-term exposure:

Exposure to lead fume, if applicable, may cause harm by inhalation and ingestion. Chronic exposures to lead fume, if applicable, can cause potential harm to the developing fetus. Lead exposure can be toxic. Target organs: CNS/eyes/kidneys/blood.

Mixture verses substance information: None known

Other Information:

Carcinogenicity: NTP: No (National Toxicity Program)

Listing OSHA: No (US Occupational Safety & Health Administration)

IARC: Yes - Lead and lead compounds are listed as possible carcinogens. (International Agency for Research on Cancer).

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.

SECTION 12. ECOLOGICAL INFORMATION

Product mixtures not tested.

12.1 Toxicity: No information available

12.2 Persistence and degradability: No information available

12.3 Bioaccumulative potential: No information available

12.4 Mobility in soil: No information available

12.5 Results of PBT and vPvB assessments: No data is available

12.6 Other adverse effects: No information is available for mixture. Avoid release to environment.

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.

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

SECTION 13. DISPOSAL CONSIDERATION

13.1 Waste treatment method: Scrap metal alloy usually has value. Contact a commercial reclaimer for recycling. Otherwise, dispose of in accordance with environmental regulations. Containerize material and classify according to applicable regulations. No pre-treatment on site is recommended. Do not dispose of down any drain or waterway. Utilize the same personal protective equipment as the user when handling for disposal. Do not dispose of in regular trash.

RoHS (Restriction of Hazardous Substances): some of the product mixtures are RoHS compliant because they are lead free. Product mixtures do not contain any PBB or PBDB brominated compounds.

RoHS – Note that some of the product mixtures do contain lead and are therefore not compliant with RoHS. Users should review their particular use for any applicable exemptions that may apply. Review alloy table for products.

SECTION 14. TRANSPORT INFORMATION

Transport in accordance with applicable international regulations and requirements.

Solder Paste is non - hazardous.

Not regulated/non - hazardous under US DOT (United States Department of Transportation).

Not regulated/non - hazardous under IATA.

Ground/IATA

14.1 UN Number: None

14.2 UN proper shipping name: None

14.3 Transport hazard class(s): None

14.4 Packing group: None

14.5 Environmental hazards: None

14.6 Special precautions for user: None

14.7 Transport in bulk: Not applicable

IMDG:

UN 3077, Environmentally Hazardous Substances, Solid, N.O.S., 9, PG III (alkylphenol)

Marine Pollutant: contains a severe marine pollutant.



SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

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.).

All ingredients are listed on the USEPA TSCA Inventory.

All ingredients are listed on EINECS.

Safety data sheet was developed using EC 1907/2006 amended as of 20 May 2010 EU No 453/2010 and information as stated under regulation EC No 1272/2008 CLP Regulation.

GHS = Global Harmonized System

CLP= Classification, labeling and packaging

Product does not contain any substances ozone depleting substances and therefore not subject to EC 2037/2000.

15.2 Chemical safety assessment: None performed for mixture.

SECTION 16. OTHER INFORMATION

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

Revised Date: 16 OCTOBER 2018

Prepared by: Nancy Swarts, The Indium Corporation of America, nswarts@indium.com

Approved by: Nancy Swarts, The Indium Corporation of America

Changes provided on this SDS were based on the requirements of EU No. 453/2010 of May 20, 2010 regarding amendments to EC No. 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

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

Metals mixed with 8-17% flux

Indalloy Metal Mixture	%Tin Sn	%Silver Ag	%Lead Pb	%Antimony Sb	%Indium In	%Copper Cu	%Gold Au	%Germanium Ge	%Bismuth Bi	RoHS 2/3* Compliance
9 (70Sn/18Pb/12In)	56-65.1	-	14.4-16.7	-	9.6-11	-	-	-	-	NO
42 (46Bi/34Sn/20Pb)	27.2-31.6	-	16-18.6	-	-	-	-	-	36.8-42.8	NO
97 (43Sn/43Pb/14Bi)	34.4-40	-	34.4-40	-	-	-	-	-	11-13	NO
100 (62.6Sn/37Pb/0.4Ag)	50-58.2	0.32-0.37	29.6-34.0	-	-	-	-	-	-	NO
104 (Sn62/36Pb/2Ag))	49.6-57.7	1.6-1.9	28.8-33.5	-	-	-	-	-	-	NO
106 (Sn63/37Pb)	50.4-58.6	-	29.6-34.4	-	-	-	-	-	-	NO
109 (60Sn/40Pb)	48-55.8	-	32-37.2	-	-	-	-	-	-	NO
118 (90Sn/10Pb)	72-83.7	-	8-9.3	-	-	-	-	-	-	NO
121 (96.5Sn/3.5Ag)	77.2-89.7	2.8-3.3	-	-	-	-	-	-	-	YES
122 (95Sn/5Pb)	76-88	-	4-4.7	-	-	-	-	-	-	NO
127 (60Pb/37Sn/3Ag)	29.6-34.4	2.4-2.8	48-55.8	-	-	-	-	-	-	NO
130 (60Pb/40Sn)	32-37.2	-	48-55.8	-	-	-	-	-	-	NO
131 (97Sn/3Sb)	77.6-90	-	-	2.4-2.8	-	-	-	-	-	YES
132 (95Sn/5Ag)	76-88	4-4.7	-	-	-	-	-	-	-	YES

Indalloy Metal Mixture	%Tin Sn	%Silver Ag	%Lead Pb	%Antimony Sb	%Indium In	%Copper Cu	%Gold Au	%Germanium Ge	%Bismuth Bi	RoHS 2/3* Compliance
133 (95Sn/5Sb)	76-88	-	-	4-4.7	-	-	-	-	-	YES
133 (95Sn/5Sb) doped w/Nickel	76-88	-	-	4-4.7	-	-	-	-	-	YES
141 (70Pb/30Sn)	24-27.9	-	56-65	-	-	-	-	-	-	NO
143 (90Pb/10Sb)	-	-	72-83.7	8-9.3	-	-	-	-	-	YES
149 (80Pb/20Sn)	16-18.6	-	64-74.4	-	-	-	-	-	-	NO
151 (92.5Pb/5Sn/2.5Ag)	4-4.7	2-2.3	74-86	-	-	-	-	-	-	YES
155 (90Pb/5Ag/5Sn)	4-4.7	4-4.7	72-83.7	-	-	-	-	-	-	YES
156 (90Sn/10Ag)	72-83.7	8.3-9.2	-	-	-	-	-	-	-	YES
159 (90Pb/10Sn)	8-9.3	-	72-83.7	-	-	-	-	-	-	YES
160 (97Sn/3Cu)	77.6-90.2	-	-	-	-	2.4-2.8	-	-	-	YES
161 (97.5Pb/2.5Ag)	-	2-2.3	78-90.7	-	-	-	-	-	-	YES
163 (95.5Pb/2.5Ag/2Sn)	1.6-1.9	2-2.3	76.4-88.8	-	-	-	-	-	-	YES
164 (92.5Pb/5In/2.5Ag)	-	2-2.3	74-86	-	4-4.7	-	-	-	-	YES
165 (97.5Pb/1.5Ag/1Sn)	0.80-0.93	1.2-1.4	78-90.6	-	-	-	-	-	-	YES
171 (95Pb/5Sn)	4-4.7	-	76-88	-	-	-	-	-	-	YES

Indalloy Metal Mixture	%Tin Sn	%Silver Ag	%Lead Pb	%Antimony Sb	%Indium In	%Copper Cu	%Gold Au	%Germanium Ge	%Bismuth Bi	RoHS 2/3* Compliance
175 (95Pb/5Ag)	-	4-4.7	76-88	-	-	-	-	-	-	YES
182 (80Au/20Sn)	16-18.6	-	-	-	-	-	64-74.4	-	-	YES
183 (88Au/12Ge)	-	-	-	-	-	-	70-81.8	9.6-11.2	-	YES
209 (65Sn/25Ag/10 Sb)	52.0-60.5	20-23.3	-	8.0-9.3	-	-	-	-	-	YES
228 (88Pb/10Sn/2Ag)	8-9.3	1.6-1.9	70-82	-	-	-	-	-	-	YES
233 (85Pb/10Sb/5Sn)	4-4.7	-	68-79	8-9.3	-	-	-	-	-	YES
240 (46Sn/46Pb/8Bi)	36.8-42.8	-	36.8-42.8	-	-	-	-	-	6.4-7.4	NO
241 (SAC387) (95.5Sn/3.8Ag/0.7Cu)	76.4-88.8	3-3.5	-	-	-	0.56-0.65	-	-	-	YES
242 (89.5Pb/10.5Sn)	8.4-9.8	-	71.6-83	-	-	-	-	-	-	YES
244 99.3Sn/0.7Cu	79.4-91.4	-	-	-	-	0.56-0.65	-	-	-	YES
246 (SAC405) (95.5Sn/4Ag/0.5Cu)	76.4-88.8	3.2-3.7	-	-	-	0.4-0.47	-	-	-	YES
254 (86.9Sn/10In/3.1Ag)	69.5-8.80	2.48-2.88	-	-	8.0-9.3	-	-	-	-	YES
255 (55.5Bi/44.5Pb)	-	-	35.6-41.4	-	-	-	-	-	44.4-51.6	NO

Indalloy Metal Mixture	%Tin Sn	%Silver Ag	%Lead Pb	%Antimony Sb	%Indium In	%Copper Cu	%Gold Au	%Germanium Ge	%Bismuth Bi	RoHS 2/3* Compliance
256 (SAC305) (96.5Sn/3Ag/0.5Cu)	77.2-89.7	2.4-2.8	-	-	-	0.4-0.47	-	-	-	YES
258 (SAC105) (98.5Sn/1Ag/0.5Cu) doped with Mn	81.8-90.6	0.83-0.92	-	-	-	0.42-0.46	-	-	-	YES
259 (Sn90/Sb10)	72-83.7	-	-	8-9.3	-	-	-	-	-	YES
281 (58Bi/42Sn)	33.6-39	-	-	-	-	-	-	-	46.4-53.9	YES
282 (57Bi/42Sn/1Ag)	33.6-39	0.8-0.93	-	-	-	-	-	-	45.6-53	YES
Indalloy	%Tin	%Silver	%Lead	%Antimony	%Indium	%Copper	%Gold	%Germanium	%Bismuth	RoHS*
Non Standard Alloy Mixture										
NS (Sn96/Ag4)	76.8-89.3	3.2-3.7	-	-	-	-	-	-	-	YES
NS (97Sn/2.5Ag/0.5Cu)	77.6-90.2	2-2.3	-	-	-	0.4-0.47	-	-	-	YES
NS (83.1Bi/11.9Ag/4.3Sn/0.7Sb)	3.6-4	9.9-10.9	-	0.58-0.64	-	-	-	-	69-76.5	YES
NS 83.2Bi/10.51Ag /6.29Sn)	5-5.8	8.4-9.8	-	-	-	-	-	-	66.6-77	YES
NS (85.44Bi/4.67Sn/9.89Ag)	3.88-4.3	8.2-9.1	-	-	-	-	-	-	70.9-78.6	YES
NS (86.2Bi/3.7Sn/10.1Ag)	3.1-3.4	8.4-9.3	-	-	-	-	-	-	71.5-79.3	YES
NS (86.24Bi/10.02Ag/3.74Sn)	3-3.4	8-9.3	-	-	-	-	-	-	71.6-79.3	YES

Indalloy Metal Mixture	%Tin Sn	%Silver Ag	%Lead Pb	%Antimony Sb	%Indium In	%Copper Cu	%Gold Au	%Germanium Ge	%Bismuth Bi	RoHS 2/3* Compliance
NS (90.8Bi/5.5Ag/3.7Sn)	3.07-3.4	4.57-5.06	-	-	-	-	-	-	75.4-83.5	YES
NS (96Pb/3Sn/1Ag)	2.4-2.79	0.8-0.93	76.8-89.3	-	-	-	-	-	-	YES+
NS (92.2Pb/5Sn/Ag2.5/Cu0.3)	4-4.7	2-2.3	73.8-85.7	-	-	0.24-0.28	-	-	-	YES+
Other										
Range of metal mixtures from 80-95Sn/1-3Ag/2-4Cu Not specifically stated. Some may contain a dopent Co										YES

*RoHS 2 Compliance (2011/65/EU)

*RoHS 3- products do not contain any listed phthalates

+Check any applicable lead exemptions that may apply