SAFETY DATA SHEET

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

1.1 **Product Identifier:** INDALLOY WITH INDIUM8.9HF FLUX VEHICLE (LEAD FREE) SOLDER PASTE

SDS Number: SDS-4771LF **Revised Date:** 5 APRIL 2021

Version 1.6

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®
34 Robinson Rd, Clinton NY 13323
Technical & Safety Information: (315) 853-4900
Safety & SDS Information: nswarts@indium.com
Corporation web page: http://www.indium.com

In Europe:
Indium Corporation of America (European Operations)
7 Newmarket Ct.
Kingston, Milton Keynes, UK, MK 10 OAG
Information: (normal business hours) +44 [0] 1908 580400
EU Contact: aday@indium.com

In China:
Indium Corporation (Suzhou) Co., Ltd.
No. 428 Xinglong Street
Suzhou Industrial Park
Suchun Industrial Square
Unit No. 14-C
Jiangsu Province, China 215126
Information: (86) 512-6283-4900

In Asia:
The Indium Corporation of America®
Asia-Pacific Operations-Singapore
29 Kian Teck Avenue
Singapore 628908
Information: +65 6268-8678

1.4 Emergency Telephone Number

FOR CHEMICAL EMERGENCY ONLY PHONE *:
CHEMTREC 24 hrs. global response
USA: 1 (800) 424-9300
Outside USA: +1 (703) 527-3887
*** Used only for spill/leak/fire/exposure/accident**
France: 33-975181407
In France emergency information (French poison center): INRS (ORFILA) +33 (0) 1 45 42 59 59
Germany: toll free- 0800-181-7059 or (Frankfurt) 49-69643508409
Italy: toll free- 800-789-767
Poland: (Warsaw) 48-223988029
Portugal: 351-308801773
Hungary: (Budapest) 36-18088425
Romania: 40-37-6300026
United Kingdom: (London) 44-870-8200418 and 44-2038073798

ALL OTHER INQUIRIES: TOLL FREE: +1-800-448-9240 Indium Corporation

SECTION 2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY: **Carcinogen listed in**

⊗Eye ⊗Inhalation ⊗Skin ⊗Ingestion NTP IARC OSHA ⊗Not Listed

2.1 Classification of substance or mixture: (mixture)

Classification:
Skin sensitizer-Category 1B
Respiratory sensitizer-Category 1B
Eye irritation-Category 2A
Reproductive Toxicity- Category 1B

2.2 Label Elements

Labeling according to Regulation (EC) No. 1272/2008

GHS:

Lead Free Products:

Signal Word: Danger

Hazard statement(s)

H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H360	May damage fertility or the unborn child

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 + 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)

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 severe 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. Rosin may cause occupational asthma.

Skin Contact: May cause skin irritation or dermatitis. Rosin may cause skin sensitization.

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.

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.

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

INDIUM: May cause damage to respiratory system if inhaled over long exposure.

NICKEL: May cause allergic skin reaction. Suspected of causing cancer. Causes damage to organs through prolonged or repeated exposure.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.2 Mixture:

Components	% wt	CAS Registry #/ EINECS#	ECHA Registration #	
TIN	64-91.3	7440-31-5/231-141-8	01-2119486474-28-0077	
SILVER	0 – 9.2	7440-22-4/231-131-3	01-2119555669-21-0093	
INDIUM	0 – 18.4	7440-74-6/231-180-0	01-2120756870-48-0015	(H335)

COPPER	0 – 1.8	7440-50-8 /231-159-6	01-2119480154-42-0208	
ANTIMONY	0 – 9.2	7440-36-0/231-146-5		
ROSIN	4.0-6.0	65997-05-9	01-2119964093-37-0008	(H317/334)
POLYGLYCOL ETHER	3.0 – 5.0	9038-95-3	X	(H319)
BISMUTH	0 – 5.5	7440-69-9	01-2119560575-33--0017	
CARBOXYLIC ACID	1.0 -6.0	68937-72-4	X	(H319)
MANGANESE	0.05 (dopant)	7439-96-5	X	
CESIUM	0.05(dopant)	7440-46-2	X	
COBALT	0.05(dopant)	7440-48-4	X	(H317/334/413)
NICKEL	0 – 0.9	7440-02-0/231-111-4	X	(H317/351/372)
GERMANIUM	0 – 0.0092	7440-56-4/231-164-3	01-2120761271-61-0007	
BIS(2-(2-METHOXYETHOXY)ETHYL)ETHER (TETRAETHYLENE GLYCOL DIMETHYL ETHER)	0.58 – 1.2	143-24-8/205-594-7	01-2119958965-16-0006	(H360)

N.E. = Not established

* See Alloy Table for breakdown of percentages of alloy mixtures

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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 effects, both acute and delayed:**

Skin contact may cause irritation. Long term contact may cause dermatitis. Inhalation of decomposed rosin fume may cause irritation or occupational asthma. 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 can cause eye irritation and can cause serious irritation especially during fuming.

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 or 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

Fire fighters 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.

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.

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.
6.2 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:

			TWA	STEL
		CAS#/EINECS#	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	-
COPPER	*	7440-50-8 /231-159-6		
		(UK)	0.2 (fume)	0.6(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	-
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	-
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
BISMUTH	*	7440-69-6		N.E.	N.E.
ROSIN	4.0-6.0	65997-05-9			
		(EU)	0.05	N.E.	0.15 (sensitizer)
POLYGLYCOL ETHER	3.0 – 5.0	9038-95-3		N.E.	N.E.
CARBOXYLIC ACID	1.0 - 6.0	68937-72-4		N.E.	N.E.
MANGANESE	0.05 (dopant)	7439-96-5		N.E.	N.E.
CESIUM	0.05(dopant)	7440-46-2		N.E.	N.E.
COBALT	0.05(dopant)	7440-48-4		N.E.	N.E.
NICKEL	*****	7440-02-0/231-111-4			
		(EU)		0.5	1.5
		(France)		1	-
		(Belgium)		1	-
		(Spain)		1	-
		(Portugal)		1.5	-
		(Finland)		1	-
		(Austria)		-	2
		(Poland)		0.25	-
		(Norway)		0.05	0.15
		(Bulgaria)		0.05	-
		(Croatia)		0.5	-
		(Ireland)		0.5	-
		(Estonia)		0.5	-
		(Greece)		1	-
		(Hungary)		0.1	0.1
		(Romania)		0.1	0.5
		(Lithuania)		0.5	-

		(Slovenia)	-	2
		(Russia)	0.05	-
		(Czech Republic)	0.5	1
GERMANIUM	*	7440-56-4/231-164-3	N.E.	N.E.
BIS(2-(2-METHOXYETHOXY)ETHYL)ETHER (TETRAETHYLENE GLYCOL DIMETHYL ETHER)	0.58 – 1.2	143-24-8/205-594-7	N.E.	N.E.

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

* Review Alloy Table for alloy mixtures.

8.2 Exposure Controls:

Engineering Controls: Use only with production equipment (such as 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 contaminates entering the atmosphere. Emissions may contain metal fume, rosin and organic compounds.

Personal protection:

Follow requirements for proper equipment as outlined under 2016/425.

Eyes: Chemical safety glasses/goggles in conformance to EN166. 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 nitrile 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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Solder paste mixtures not tested

Appearance:	Grey colored solid paste	**Boiling Point/Range:**	Not determined
Odor:	Mild characteristic odor.	**Melting Point/Freezing Point:**	Not applicable
Odor Threshold:	Not established-NA	**Evaporation Rate:**	Not applicable
Specific Gravity:	Not applicable.	**pH:**	Not applicable to paste
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, not flammable

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 hazard classes as defined in Regulation (EC) No 1272/2008:

Solder paste mixtures not tested.

Acute toxicity: Not established

Irritation: Not established

Corrosivity: Not applicable

Sensitization: Contains rosin

Repeated dose toxicity: Not established

Carcinogenicity: Not established

Mutagencity: Not established

Toxicity for Reproduction: Contains a substance

Absence of specific data: None available (not tested)

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

Interactive effects: None known

11.2 Information on other hazards:

May cause irritation or sensitization by skin and inhalation.

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

Exposure to rosin fume has been known to cause occupational asthma

Mixture verses substance information: None known

Carcinogenicity Listing:

NTP: No (National Toxicity Program), **OSHA:** No (US Occupational Safety & Health Administration)
IARC: No (International Agency for Research on Cancer).

Copper - LD50 – intraperitoneal mouse 3.5 mg/kg.

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

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

Tetraethylene glycol dimethyl ether – LD50 Oral rat- female-3,640-4,160 mg/kg

LD50 Dermal-rat-male>6,900 mg/kg

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 Endocrine disrupting properties: No information available-none

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

Copper – Toxicity to daphia and other aquatic invertibrates mortality NOEC – Daphnia 0.004 mg/l – 24h.

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.

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 PBDT brominated compounds.
RoHS – Review alloy table for products.

SECTION 14. TRANSPORT INFORMATION

Transport in accordance with applicable 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 international shipping requirements (IATA/Ocean).
Not a marine pollutant.

14.1 UN Number or ID number Not applicable

14.2 UN proper shipping name: Not applicable

14.3 Transport hazard class(s): No Applicable

14.4 Packing group: Not Applicable

14.5 Environmental hazards: Not Applicable

14.6 Special precautions for user: Not Applicable

14.7 Maritime transport in bulk according to IMO instruments: Not applicable

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. Note Rosin was recently listed under the No Longer Polymer List, Notification of New Chemical Substances in Accordance with Directive 67/548/EEC.

Safety data sheet was developed using guidance from EC 1907/2006 amended as of Feb 2020 EU No 453/2010, 2015/830 changes under 2020/878 June 2020 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.

WKG German Water Hazard: 1

Product contains an EU REACH Substance of Very High Concern (SVHC): Tetraethylene glycol dimethyl ether- CAS# 143-24-8

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:	5 APRIL 2021
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 Feb 2020 and 2020/878 June 2020 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).

ALLOY TABLE (DATA)

%Metal Mix in Flux

Indalloy Mixture (%Metal)	% TIN Sn	% SILVER Ag	% COPPER Cu	% INDIUM In	% ANTIMONY Sb	% CESIUM Cs	% MANGANESE Mn	% COBALT Co	% BISMUTH Bi	% NICKEL Ni	% Germanium Ge	RoHS 2/3 Compliance
121 (96.5Sn/3.5Ag)	80.1-88.8	2.9-3.2	-	-	-	-	-	-	-	-	-	YES
128 (100Sn)	100	-	-	-	-	-	-	-	-	-	-	YES
132 (95Sn/5Ag)	78.9-87	4.2-4.6	-	-	-	-	-	-	-	-	-	YES
133 (95Sn/5Sb)	78.9-87	-	-	-	4.2-4.6	-	-	-	-	-	-	YES
156 (90Sn/10Ag)	74.7-82.8	8.3-9.2	-	-	-	-	-	-	-	-	-	YES
227 (77.2Sn/20In/2.8Ag)	64-71	2.3-2.6	-	16.6-18.4	-	-	-	-	-	--	-	YES
241 (SAC 387) (95.5Sn/3.8Ag/0.7Cu)	79.2-87.9	3.2-3.5	0.58-0.64	-	-	-	-	-	-	-	-	YES
244 (99.3Sn/0.7Cu)	82-91.3	-	0.58-0.64	-	-	-	-	-	-	-	-	YES
246 (95.5Sn/4Ag/0.5Cu)	79.2-87.9	3.3-3.7	0.42-0.46	-	-	-	-	-	-	-	-	YES
254 (86.9Sn/10In/3.1Ag)	72-80	2.6-2.85	-	8.3-9.2	-	-	-	-	-	-	-	YES

Indalloy Mixture (%Metal)	% TIN Sn	% SILVER Ag	% COPPER Cu	% INDIUM In	% ANTIMONY Sb	% CESIUM Ce	% MANGANESE Mn	% COBALT Co	% BISMUTH Bi	% NICKEL Ni	% Germanium Ge	RoHS 2/3 Compliance
256 (SAC 305) (96.5Sn/3Ag/0.5Cu)	80.1-88.8	2.5-2.8	0.42-0.46	-	-	-	-	-	-	-	-	YES
Modified 256 (SAC 305) (96.45Sn/3Ag/0.5Cu +doped 0.05 Mn)	80-88.7	2.5-2.8	0.42-0.46	-	-	-	0.042-0.046 doped	-	-	-	-	YES
Modified 256 (SAC 305) (96.45Sn/3Ag/0.5Cu +0.05 Cs)	80-88.7	2.5-2.8	0.42-0.46	-	-	0.042-0.046	-	-	-	-	-	YES
258 (SAC105) (98.5Sn/1Ag/0.5Cu)	81.8-90.6	0.83-0.92	0.42-0.46	-	-	-	-	-	-	-	-	YES
259 (90Sn/10Sb)	74.7-82.8	-	-	-	8.3-9.2	-	-	-	-	-	-	YES
264 (91.5Sn/8.5Sb)	75.9-84.2	-	-	-	7.06-7.82	-	-	-	-	-	-	YES
268 (SACm) (98.5Sn/0.5Ag/1Cu/0.05Mn)	81.8-90.6	0.42-0.46	0.83-0.92	-	-	-	0.042-0.046 doped	-	-	-	-	YES
270 (90.95Sn/3.8Ag/0.7Cu/3Bi/1.4Sb/0.15Ni)	75.5-83.7	3.2-3.5	0.58-0.46	-	1.16 -1.2	-	-	-	2.49-2.76	0.12-0.138	-	YES
272 (90Sn/3.8Ag/1.2Cu/1.5Bi/3.5Sb)	74.7-82.8	3.2-3.5	1-1.1	-	2.9-3.2	-	-	-	1.2-1.4	-	-	Yes

276 (90.6Sn/3.2AG /0.7Cu/5.5Sb)	**75.2-83.4**	**2.7-2.9**	**0.58-0.64**	**-**	**4.6-5.1**	**-**	**-**	**-**	**-**	**-**	**-**	**Yes**
Indalloy Mixture (%Metal)	**% TIN Sn**	**% SILVER Ag**	**% COPPER Cu**	**% INDIUM In**	**% ANTIMONY Sb**	**% CESIUM Ce**	**% MANGANESE Mn**	**% COBALT Co**	**% BISMUTH Bi**	**% NICKEL Ni**	**% Germanium Ge**	**RoHS 2/3 Compliance**
277 (89Sn/3.8Ag/0.7Cu/3.5Sb/0.5Bi/2.5In)	**73.9-81.9**	**3.2-3.5**	**0.58-0.64**	**2.08-2.3**	**2.9-3.2**	**-**	**-**	**-**	**0.42-0.46**	**-**	**-**	**YES**
279 (89.3Sn/3.8Ag/0.9Cu/5.5Sb/0.5In)	**74-82**	**3.2-3.5**	**0.7-0.8**	**0.42-0.46**	**4.6-5.1**	**-**	**-**	**-**	**-**	**-**	**-**	**Yes**
284 (89.7Sn/3.4Ag/3.2Bi/3.0Sb/0.7Cu)	**74.5-82.5**	**2.8-3.1**	**0.58-0.64**	**-**	**2.5-2.8**	**-**	**-**	**dopant**	**2.7-2.9**	**dopant**	**-**	**Yes**
845-27-3	**66-82.8**	**1.7-4.6**	**0.08-1.8**	**0.08-4.6**	**2.5-7.4**	**-**	**-**	**-**	**-**	**-**	**-**	**YES**
291 (99.24Sn/0.7Cu/0.05Ni/0.01Ge)	**82.4-91.3**	**-**	**0.58-0.64**	**-**	**-**	**-**	**-**	**-**	**-**	**0.042 -0.046**	**0.0083-0.0092**	**YES**
292	**66-82.8**	**1.7-4.6**	**0.08-1.8**	**0.1-2.0**	**3.1-8.0**				**2.5-5.5**	**0.08-0.9**		**Yes**
845-27-3	**66-82.8**	**1.7-4.6**	**0.08-1.8**	**0.08-4.6**	**2.5-7.4**	**-**	**-**	**-**	**2.5-5.5**	**0.08-0.9**		**Yes**
845-27-5	**66-82.8**	**1.7-4.6**	**0.08-1.8**	**-**	**2.5-7.4**				**2.5-5.5**	**0.08-0.9**		**Yes**
NS (98.5Sn/1Ag/0.5Cu)	**81.8-90.6**	**0.83-0.92**	**0.42-0.46**	**-**	**-**	**-**	**-**	**-**	**-**	**-**		**YES**
NS (98.3Sn/1.2Ag/0.5Cu +0.05 Ni)	**81.6-90**	**0.1-1.1**	**0.42-0.46**	**-**	**-**	**-**	**-**	**-**	**-**	**0.05**		**YES**
NS (99Sn/0.3Ag/0.7 Cu)	**82-91.1**	**0.25-0.28**	**0.58-0.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**		**YES**
NS (99.2Sn/0.5Cu/0.3Bi/doped0.05Co)	**82.3-91.3**	**-**	**0.42-0.46**	**-**	**-**	**-**	**-**	**0.042-0.046 doped**	**0.25-0.28**	**-**		**YES**

NS = Non standard alloy mixture

***RoHS = Restriction of Hazardous Substances-**

RoHS 2 (2011/65/EU) RoHS 3- no phthalates