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

SAFETY DATA SHEET

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

1.1 **Product Identifier:** INDALLOY WITH INDIUM8.9HF FLUX VEHI**CLE**

SDS Number: MSDS-4771 **Revised Date:** 29 MARCH 2015

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
1676 Lincoln Ave., Utica NY 13502
Technical & Safety Information: (315) 853-4900
Safety & SDS Information: nswarts@indium.com
Corporation web page: http://www.indium.com

In Europe:
Indium Corporation of Europe
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.
USA: 1 (800) 424-9300
Outside USA: +1 (703) 527-3887
*** 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: **Carcinogen listed in**

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

2.1 Classification:
Risk Phrases:
Symbol Xn R20/22, R36/37/38, R42/43, R33, R40, R48, R61, R50/53, R52/53

2.2 Label Elements

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

General GHS:

lead containing products only

Signal Word: Warning

Hazard statement(s)

H303	May be 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
H332	Harmful 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/vapours/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
Acute aquatic toxicity – Category 1 for lead containing products (H400)
Chronic aquatic toxicity – Category 1 for lead containing products (H410)

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.

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.

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

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

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
COPPER	*	7440-50-8 /231-159-6
ANTIMONY	*	7440-36-0/231-146-5
ROSIN	4.0-6.0	65997-05-9
POLYGLYCOL ETHER	3.0 – 5.0	9038-95-3
BISMUTH	*	7440-69-9
PROPRIETARY ACTIVATORS	1.0 -6.0	-
MANGANESE	0.05 (dopent)	7439-96-5
CESIUM	0.05(dopent)	7440-46-2
COBALT	0.05(dopent)	7440-48-4

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. 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 to lead fume may cause harm. Sign of overexposure is anemia.
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, 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.

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	-
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	-
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.	N.E.
PROPRIETARY ACTIVATORS	1.0 - 6.0	-	N.E.	N.E.	N.E.
MANGANESE	0.05 (dopent)	7439-96-5			
CESIUM	0.05(dopent)	7440-46-2			

COBALT	0.05(dopent)	7440-48-4

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

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:

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 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. 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:	Not applicable.	**pH:**	Not applicable
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 toxicological effects:

Acute toxicity: Not established
Irritation: Not established
Corrosivity: Not applicable
Sensitization: Not available
Mutagencity: Not established
Toxicity for Reproduction: Not Established
Absence of specific data: None available (not tested)
Repeated dose toxicity: Not established
Carcinogenicity: Not established
Likely Routes of Entry: eyes (irritation) /skin (irritation or sensitization) /inhalation (irritation/sensitization) ingestion (may be harmful)

Interactive effects: None known

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

May cause irritation or sensitization by skin and inhalation.

11.3 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. 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.

Mixture verses substance information: None known

Other Information:

Carcinogenicity:
Listing
NTP: No (National Toxicity Program)
OSHA: No (US Occupational Safety & Health Administration)
IARC: Yes - Lead and lead compounds are listed as possible carcinogens. (International Agency for Research on Cancer). Group 2B-Possibly carcinogenic to humans (cobalt).

Copper - LD50 – intraperitoneal mouse 3.5 mg/kg.

Silver – LD50 oral – rat > 5,000 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.

Antimony- LD50 oral-rat 7,000 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 **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.

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.

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 – Note that some of the product mixtures do contain lead and are therefore not complaint 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 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 proper shipping name:** None

14.2 **Transport hazard class(s):** None

14.3 **Packing group**: None

14.4 **Environmental hazards:** None

14.5 **Special precautions for user:** None

14.6 **Transport in bulk:** Not applicable

SECTION 15. REGULATORY INFORMATION

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

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 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.

Risk Phrases:

R42/43	May cause sensitization by inhalation or by skin contact
R36/37/38	Irritating to eyes, respiratory system and skin
R20/22	Harmful by inhalation and if swallowed
R33	Danger of cumulative effects (lead)
R40	Limited evidence of carcinogenic effect (lead) (cobalt)
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 and may cause long-term effects in the aquatic environment (lead)

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
S27	Take off immediately all contaminated clothing
S28	After contact with skin wash immediately with plenty of soap and water
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection

S7 Keep container tightly closed

Revised Date: 29 MARCH 2015

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 (DATA)

%Metal Mix in Flux

Indalloy Mixture (%Metal)	% TIN Sn	% SILVER Ag	% COPPER Cu	% LEAD Pb	% INDIUM In	% ANTIMONY Sb	% CESIUM Ce	% MANGANESE Mn	% COBALT Co	% BISMUTH Bi	RoHS 2* Compliance
100 (62.6Sn/37Pb/ 0.4Ag)	**52-57.6**	**0.3-0.37**	**-**	**30.7-34**	**-**	**-**	**-**	**-**	**-**	**-**	**NO**
104 (62Sn/36Pb/2 Ag)	**51.5-57**	**1.2-1.8**	**-**	**29.9-33**	**-**	**-**	**-**	**-**	**-**	**-**	**NO**
106 (Sn63/Pb37)	**52-58**	**-**	**-**	**30.7-34**	**-**	**-**	**-**	**-**	**-**	**-**	**NO**
121 (96.5Sn/3.5Ag)	**80.1-88.8**	**2.9-3.2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**YES**
122 (95Sn/5Pb)	**78.9-87**	**-**	**-**	**4.2-4.6**	**--**	**-**	**-**	**-**	**-**	**-**	**NO**
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**
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

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**
Indalloy Mixture (%Metal)	**% TIN Sn**	**% SILVER Ag**	**% COPPER Cu**	**% LEAD Pb**		**% ANTIMONY Sb**	**% CESIUM Ce**	**% MANGANESE Mn**	**% COBALT Co**	**% BISMUTH**	**RoHS2* Compliance**
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**
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**
NS (98.5Sn/1Ag/0.5Cu)	**81.8-90.6**	**0.83-0.92**	**0.42-0.46**	**-**		**-**	**-**	**-**	**-**	**-**	**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)