



SAFETY DATA SHEET

This safety data sheet represents a family grouping of all metal mixes that are blended with the same flux. A table is provided that lists all metal groupings. To better serve all of our customers and reduce the paperwork burden 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 INDIUM3.2 FLUX VEHICLE (Lead free)

SDS Number: SDS- 4145LF

Revised Date: 13 APRIL 2021

Product Use: Industrial Use - Water wash solder paste consisting of a flux vehicle blended with an 83-92 % pre-alloyed metal powder. (mixture) Review metal alloy table for listing of mixtures with the same flux.

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2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:

Eye
 Inhalation
 Skin
 Ingestion
NTP
Carcinogen listed in IARC
OSHA
 Not Listed

GHS:

Lead free products:

Classification:

Eye Irritant (Category 2A)

Germ cell mutagenicity (Category 2)

Carcinogenicity (Category 2)

Reproductive toxicity (Category 1B)

Acute toxicity, oral (Category 4)



Signal Word: Danger

Hazard statement(s)

H302 Harmful if swallowed
H319 Causes serious eye irritation
H341 Suspected of causing genetic defects
H351 Suspected of causing cancer
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)

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 powder and organic chemicals. Harmful if swallowed.

Inhalation: Vapors or fumes from this material at typical re-flow temperatures over 100°C may cause local irritation to mucous membranes and the upper respiratory tract.

Skin Contact: May cause skin irritation. Contact with **Antimony** may cause irritation or dermatitis.

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

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.

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: May cause damage to respiratory system. Kidney and liver damage from injection of indium compounds has been reported based on limited animal testing. Target organs: teeth and gums

BISMUTH: May cause kidney damage.



WARNING: This product can expose you to chemicals such as [lead, trace amounts of propylene oxide, ethylene oxide, 1,4 dioxane] which are known to the State of California to cause cancer and [lead and ethylene oxide] which can cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Note: The Indium Corporation does not recommend, manufacture, market or endorse any of it's products for human consumption.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Components	% wt	CAS Registry #/EINECS#	PEL mg/m ³	TLV-TWA mg/m ³	TLV-STEL mg/m ³
TIN	*	7440-31-5/231-141-8 (US)	2	2	-
		(EU)	-	2	4
		(Canada)	-	2	4
		(Singapore)	2	-	-
SILVER	*	7440-22-4/231-131-3 (US)	0.01	0.01	N.E.
		(EU)	-	0.1	-
		(Canada)	-	0.1	0.3
		(Mexico)	-	0.1	-
		(Singapore)	0.1	-	-
COPPER	*	7440-50-8/231-159-6 (US)	0.1	0.2	-
		(EU)	-	0.2	2
		(Canada)	-	0.2	0.6
		(Singapore)	0.2	1(dust)	-

		(Mexico)	-	0.2	2
		(China)	-	0.2(fume)	0.6
			-	1(dust)	2.5
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	-
BISMUTH	*	7440-69-9	N.E.	N.E.	N.E.
INDIUM	*	7440-74-6/231-180-0			
		(US)	0.1	0.1	-
		(EU)	-	0.1	0.3
		(Canada)	-	0.1	0.3
		(Singapore)	0.1	-	-
		(Mexico)	0.1	-	0.3
		(China)	0.1	-	0.3
GOLD	*	7440-57-5	N.E.	N.E.	N.E.
MANGANESE	*	7439-96-5/231-105-1	N.E.	N.E.	N.E.
CARBOXYLIC ACID (C1-5)	3.4-6.7	68937-68-8	N.E.	N.E.	N.E.
TRIALKYLAMINE (C6-C12)	1.6-3.3	68038-01-7	N.E.	N.E.	N.E.
POLYGLYCOL ETHER	3.0-7.0	9038-95-3	N.E.	N.E.	N.E.

N.E. = Not established

EU = European Union Occupational Exposure Limits

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. Paste is not flammable

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. Wear proper personal protective equipment during clean up.

7. HANDLING AND STORAGE

Handling

Precautions:

Keep containers tightly closed when not in use. Use care to avoid spills. Use only with production equipment specifically designed for use with solder paste. Wear appropriate personal protective equipment when working or handling solder paste. Always thoroughly wash your hands after handling this product. Do not touch or rub eyes until hands are washed.

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

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Use only with production equipment (such as stencil printers and re-flow furnaces) with adequate ventilation and other safety features specifically designed for use with solder paste. Control concentration of all components so that they're permissible exposure levels are not exceeded.

Personal protection:

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

Respirator: An approved or compliant marked air-purifying respirator with a fume/organic chemical cartridge is recommended under certain circumstances (i.e. when re-flowing manually on a plate instead of a ventilated re-flow furnace) where airborne concentrations are expected to be elevated or exceed exposure limits.

Skin: Compatible chemical resistant gloves.

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Grey colored paste.

Boiling Point: Not applicable.

Odor: Mild characteristic odor.
Specific Gravity: Not applicable.
Vapor Pressure: Not applicable.
Vapor Density: (air=1) Not applicable.
Evaporation rate: Not applicable
Decomposition temp: Not established

Melting Point: Not applicable
pH: Not applicable
Solubility in Water: Soluble
Odor Threshold: No information
Partition coefficient: n-octanol/water: Not applicable
Viscosity: Consult Product data sheet and Product Certificate of Analysis

Flammability: Not flammable
Auto-ignition Temp: Not flammable

Flashpoint: Not flammable

10. STABILITY AND REACTIVITY

General: Stable.
Conditions to Avoid: Not established.
Incompatible Materials: Avoid contact with acids, bases or oxidizing agents.
Hazardous Decomposition: Harmful toxic oxide fumes may form at elevated temperatures. CO/CO₂/HBr
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Carcinogenicity: NTP: No
 OSHA: No
 IARC: No

Solder paste mixture contains <1% of a flux substance that is suspected of causing cancer, may damage fertility or the unborn child and suspected of causing genetic defects.

12. ECOLOGICAL INFORMATION

Product not tested.

13. DISPOSAL CONSIDERATION

Waste Disposal Method: Scrap metal alloy usually has value. Contact a commercial reclaimer for recycling. Otherwise, dispose of in accordance with all Federal, State and Local environmental regulations. In Europe follow the Special Waste Regulations.

14. TRANSPORT INFORMATION

Transport in accordance with applicable international regulations and requirements. Not regulated (Department of Transportation).

Non- hazardous under shipping regulations, all modes (ground/IATA/IMDG)

UN - none

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.).



WARNING: This product can expose you to chemicals such as [lead, trace amounts of propylene oxide, ethylene oxide, 1,4 dioxane] which are known to the State of California to cause cancer and [lead] which can cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

SARA 313 Listing - 40 CFR 372.65

Silver CAS# 7440-22-4

Copper CAS# 7440-50-8

Antimony CAS# 7440-36-0

All ingredients in this product 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).

Canadian WHMIS:

D2A-Materials Causing Other Toxic Effects-Very Toxic Material (Chronic) (lead)



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 regulations NOM-018-STPS-2015 and NOM-010-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 using the Chinese Occupational Exposure Limit for Hazardous Agents in the Workplace, GBZ2-2007.

Malaysia:

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
	Reactivity:	0

Revised Date: 13 APRIL 2021

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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.

Note: This SDS may be translated into an international language. If there is any misinterpretation or misunderstanding of any words or phrases that may occur within any translation the ENGLISH language shall always prevail.

ALLOY TABLE

Metal alloy mix with flux

INDALLOY Metal Product Mixture	%TIN Sn	%SILVER Ag	%ANTIMO NY Sb	%COPPER Cu	% INDIUM In	%BISMUTH Bi	%GOLD Au	% COBALT Co	%MANG ANESE Mn	RoHS 2/3* Compliance (2011/65/EU)
121 (Sn96.5/Ag3.5)	80-88.8	2.9-3.2	-	-	-	-	-	-	-	YES
128 (100Sn)	83-92	-	-	-	-	-	-	-	-	YES
131 (97Sn/3Sb)	80.5-89	-	2.49-2.76	-	-	-	-	-	-	YES
133 (Sn95/Sb5)	78.9-87.4	-	4.2-4.6	-	-	-	-	-	-	YES
182 (Au80/Sn20)	16.6-18.4	-	-	-	-	-	66.4-73.6	-	-	YES
209 (Sn65/Ag25/Sb10)	54-59.8	20.8-23.0	8.3-9.2	-	-	-	-	-	-	YES
241 (SAC387) (Sn95.5/Ag3.8/Cu0.7)	79.3-87.9	3.2-3.5	-	0.58-0.64	-	-	-	-	-	YES
244 (99.3Sn/0.7Cu)	82.4 – 91.3	-	-	0.58 – 0.64	-	-	-	-	-	YES
246 (Sn95.5/Ag4/Cu0.5)	79.3-87.9	3.3-3.7	-	0.42-0.46	-	-	-	-	-	YES
249 (Sn91.8/Bi4.8/Ag3.4)	76.2-84.5	2.8-3.1	-	-	-	4.0-4.4	-	-	-	YES
252 (Sn95.5/Ag3.9/Cu0.6)	79.3-87.9	3.2-3.6	-	0.50-0.55	-	-	-	-	-	YES

INDALLOY Metal Product Mixture	%TIN Sn	%SILVER Ag	%ANTIMO NY Sb	%COPPER Cu	% INDIUM In	%BISMUTH Bi	%GOLD Au	% COBALT Co	%MANG ANESE Mn	RoHS 2/3* Compliance (2011/65/EU)
254 (86.9Sn/10In/3.1Ag)	72-80	2.6-2.9	-	-	8.3- 9.2	-	-	-	-	YES
256 (SAC 305) (Sn96.5/Ag3.0/Cu0.5)	80.1- 88.8	2.5-2.8	-	0.42- 0.46	-	-	-	-	-	YES
258 (Sn98.5/Ag1/Cu0.5)	81.8- 90.6	0.83- 0.92	-	0.42- 0.46	-	-	-	-	-	YES
259 (Sn90/Sb10)	74.7- 82.8	-	8.3-9.2	-	-	-	-	-	-	YES
264 Sn91.5/Sb8.5	75.9- 84.2	-	7.1-7.8	-	-	-	-	-	-	YES
268 (SACM0510) (98.5Sn/0.5Ag/1Cu) Doped 0.05Mn	81.8- 90.6	0.42- 0.46	-	0.83- 0.92	-	-	-	-	0.05	YES
282 (Bi57/Sn42/Ag1)	34.9- 38.6	0.83- 0.92	-	-	-	47.3-52.4	-	-	-	YES
Sn 992	82-91	-	-	0.42- 0.46	-	0.25-0.28	-	0.042- 0.046	-	YES
Non Standard (Sn96/Ag4)	79.7- 88.3	3.3-3.7	-	-	-	-	-	-	-	YES

*RoHS 2 = Restriction of Hazardous Substances

*RoHS 3 – products do not contain any listed phthalates

Solder related products are not directly related to the regulations. It is the customer's responsibility to ensure compliance. Review any applicable exemptions that may apply.