Product Specification

(Version number: HCB-03)

Category:

Sn-3Ag-0.5Cu Halogen-free Solder Wire

Type : LC-02-4

1. **Technical Data Sheet**
2. **Material Safety Data Sheet**

Lichuang (Taishan) Electronic Technology Co., Ltd.

Technical Data Sheet

★ Application

The product is suitable for environmental-friendly iron soldering with good ratio of performance to price. It is made from high-purity raw material by precise technological control. Matching with the enclosed flux, this product has good spreading ability, less fume and splash. This product could be widely used in environmental-friendly electronic assembly.

★ Characteristics

1. Chemical composition of solder alloy

Sort	Chemical composition (wt.%)								
	Sn	Pb	Sb	Cu	Ag	Zn	Fe	Al	Cd
Sn-3Ag-0.5Cu	Bal.	< 0.07	<0.10	0.5±0.2	3±0.2	0.001	<0.02	<0.001	<0.002

2. Physical property of solder alloy

Sort	Melting Point (℃)	Spec. Gravity g/cm^3	Tensile Strength MPa	Resistivity 10^{-9} ohm · m
Sn-3Ag-0.5Cu	219	7.40	28	100-150

3. Solder wire property

a.

Flux content (%)	Flux Classification	Halogen Test Method	Numbers of cores	Preservability
1.8~3.0	ROL0	IPC-TM-650	Single core	Two years

* Percent of flux can according as the requirement of client.

b.

Test Items	Test Method	Test Result
Copper plate corrosion test	IPC-TM-650-2.6.15	Pass
Insulation resistance（Ω）	IPC-TM-650-2.6.3.3	$>1.0\times10^8$
Solution resistance（Ωm）	JIS-Z-3197	≥500
Spreading rate（%）	JIS-Z-3197（1999）	≥75
Dryness test	JIS-Z-3197	Pass

4. Recommended parameters for iron soldering using LC-02-4 solder wire

a. Using iron with a power of 60-80W;

b. Recommended iron tip temperature: 370-400℃

5. Appearance

a. The surface shall be smooth and glossy uniformly .Extremely poor gloss , and adhesion of foreign matters and dirt shall not be found.

b. Significant scratches , cracks, tears, and surface oxidization shall not be found.

c. Noticeable coiling collapse shall not be found.

★ Packaging . Marking

1. Packaging

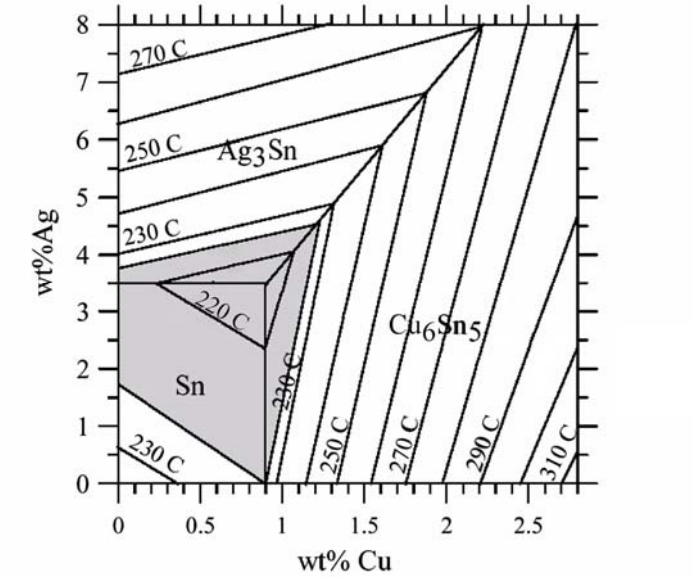
Items / Sort	Weight / Case	Quantity / Case	Weight / Roll
Solder Wire	1.2KG/3KG	100Roll/250Roll	0.012KG

* Choice of packaging can according as the requirement of client.

2. Marking

① Product name ②Product code of our company ③Manufacture's name ④ Manufacture's Web ⑤Net mass ⑥Type ⑦Wire diameter ⑧Alloy composition ⑨Flux content

★ Sn-Ag-Cu Phase Diagram



Eutectic point: Sn-3Ag-0.5Cu, melting point: 219℃

★ Residue Removal

Based upon the using flux, the left residue around the soldering joint should be cleaned or not. If necessary, please select the matching cleaner. The operation is easily and convenient.

★ Safety

Lead-free halogen-free solder wire is one kind of environmental-friendly product with good stability. While there will be some fume when using the solder wire. Good ventilation is necessary for the safe of operator.

Material Safety Data Sheet

2024-5-2

SECTION 1 - CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Identifier:Sn-3Ag-0.5Cu LEAD-FREE HALOGEN-FREE CORED
WIRE MSDS number: MSDS –Wire Alloy : Sn-3Ag-0.5Cu
Product Use: Soldering flux in cored solder for electrical or electronic applications.

Manufacturer:
Lichuang (Taishan) Electronic Technology Co., Ltd.
NO.3, changlong Road, changlong industrial
Zone.,sijiu town, taishan city, guangdong province
Information: 86-0750-5482656

In Case Of Emergency
CHEMTREC 24-Hour
86-0750-5482656

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Name	CAS #	Weight percent (wt%)	OSHA PEL mg/m³	TLV-TWA mg/m³	TLV-STEL mg/m³
Tin（Sn）	7440-31-5	99.0	2.0	2	N.E
Copper（Cu）	7440-50-8	0.5	0.1	0.2	N.E
Silver（Ag）	7440-22-4	3.0	0.1	0.2	N.E
Rosin	65997-05-9	< 3	N.E	N.E	N.E

SECTION 3 - HAZARDS IDENTIFICATION

Physical State and Appearance	Solid. (Cored metal wire)
Emergency Overview	Risk of cancer depends on duration and level of exposure. Avoid contact with eyes, skin and clothing. DO NOT ingest. Avoid breathing dust. Avoid prolonged or repeated contact with skin. Keep container closed. Use only with adequate ventilation. Avoid exposure during pregnancy. Wash thoroughly after handling.
Primary Routes of Entry	○ Skin ○ Eyes ● Inhalation ● Ingestion
Target Organs	Eyes, mucous membranes and respiratory system.
Potential Health Effects of ACUTE (severe short–term) Exposure	
Inhalation	Flux fumes during soldering may cause irritation and damage of mucous membranes and respiratory system.
Eye Contact	Irritation from contact with smoke from soldering.
Skin Contact	This product may be hazardous in case of skin contact (irritant, sensitizer). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
Ingestion	Fumes and/or dusts produced by this product may be hazardous in case of ingestion.
Skin Absorption	None.
Potential Health Effects of CHRONIC (prolonged) Exposure	
Fumes may cause irritation of eyes and mucous membranes, headache, and/or respiratory system irritation or damage.	
Medical Conditions Aggravated by Overexposure	

Chemical hypersensitivity, asthma and other respiratory conditions, existing eye and skin disorders.

Overexposure/Signs/Symptoms

Not available.

See Toxicological Information (section 11)

Notes: The LICHUANG SOLDER MANUFACTURER does not recommend, manufacture market or endorse any of its products for human consumption.

SECTION 4 - FIRST AID MEASURES

Seek medical assistance for further treatment, observation and support if needed.

EYE CONTACT

For burns flush immediately with cool water and get medical attention. For fume irritation use eye drops and remove from exposure.

SKIN CONTACT

For burns flush immediately with cool water. If a rash develops from flux fumes, remove person from exposure and wash skin with soap and water.

INHALATION

Remove person from exposure to fumes.

INGESTION

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if necessary.

SECTION 5 - FIRE FIGHTING MEASURES

Flammability ○ Yes ● No

Conditions to avoid Not established.

Flash Point (T.O.C) NA

Auto-Ignition Temperature NA

Flammability Limits percent by volume in air

The greatest known range is LOWER: NA UPPER: NA

Extinguishing Means ○ Water ○ Carbon Dioxide ○ Alcohol Foam ○ Dry Chemical

Hazardous Combustion Products

Carbon monoxide, carbon dioxide.

Explosion Sensitivity

Impact - None Identified.

Static Discharge Sensitivity ● Yes ○ No

Special Firefighting Procedures

Avoid breathing smoke. Wear self-contained breathing apparatus if this material is in the vicinity of a fire.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures

Melted solder will solidify on cooling and can be scraped up. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces.

SECTION 7 - HANDLING AND STORAGE

Storage Precautions
Keep container dry and tightly closed. Keep in a cool, well-ventilated place. Highly toxic or infectious materials should be stored in a separate locked safety storage cabinet or room.
Handling Precautions

Wear suitable protective clothing. Use in a well ventilated area. When using do not eat, drink or smoke. Avoid contact with skin and eyes. After handling, always wash hands thoroughly with soap and water.
Personal Precautions
Avoid breathing smoke / fumes generated during soldering. Wash thoroughly after handling.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering Controls
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection*

Eyes	Safety glasses should be used.
Body	Lab coat.
Respiratory	When ventilation is not sufficient to remove fumes from the breathing zone, a safety approved respirator or self-contained breathing apparatus should be worn.
Hands	Wear rubber gloves to avoid skin contact.

Hygienic Work Practices
Wear protective equipment and wash thoroughly after handling.

*** Note: Suggested protective clothing may not be adequate for a specific process. Consult a specialist before using.**

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State at 20 °C	Solid. (Cored wire)	**Specific Gravity (water = 1 at 25 °C)**	7.40
Boiling Point (760 mm Hg)	NA	**Melting Point**	219℃
Vapor Pressure (mm Hg at 20 °C)	N.D.	**Evaporation Rate (butyl acetate = 1)**	N.A.
Vapor Density (air = 1)	N.A.	**Percent Volatile (by volume)**	0 %
Solubility in Water (% by weight)	0	**Volatile Organic Compound (VOC)**	N.A.
PH	N.A.	**Odor Threshold**	N.E.
Freezing Point (760 mm Hg)	N.E.	**Coefficient of Water / Oil Distribution**	N.E.
Viscosity (mPa·s)	N.A.		
Appearance and Odor	Silver-gray metal in wire, ribbon shapes with a core of flux, no odor.		

SECTION 10 - STABILITY AND REACTIVITY

Stability and Reactivity	●Stable ○ Unstable	**Conditions to avoid**	N.E.
Incompatibility with Various Substances	Strong acid, strong oxidizers		

Hazardous Decomposition Products	Not Applicable.
Hazardous Polymerization	Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

EXPOSURE LIMITS: Not determined for the product. See Section 2 for ingredients.

Rosin is an allergen. Prolonged or repeated exposure to fumes during soldering may result in allergic reaction in a sensitive person, resulting in eye and skin irritation and asthma symptoms.

SECTION 12 - ECOLOGICAL INFORMATION

This section is subject to future development.
Biodegradability Data not established.
Aquatic Toxicity Data not established.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Disposal Methods
Waste must be disposed of in accordance with federal, state and local environmental control regulations.
CAUTION: Empty containers may contain product residue. Observe all label precautions.

SECTION 14 - TRANSPORT INFORMATION

DOT Classification
Not Regulated (United States).
ADR/RID Classification
Not Regulated (Europe).
TDG Classification
Not Regulated (Canada).

SECTION 15 – REGULATORY INFORMATION

Not Available.

SECTION 16 - OTHER INFORMATION

HMIS (Hazardous Material Information System) Rating
Health: 1 Flammability: 0 Reactivity: 0 Personal Protection: X

NOTES To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.