

## Product : LEAD-FREE NO-CLEAN SOLDER PASTE ALLOY: Sn42-Bi58

### PRODUCT DESCRIPTION

Formula Sn42-Bi58 is a mildly activated resin-based formulation designed specifically to allow post-process residues to be left on the PCB without degradation. Sn42-Bi58 has a wide process window uncommon to most no-clean solder pastes, which allows it to accommodate a variety of environments and process applications. Sn42-Bi58 performs well in continuous production, offering good slump resistance, high tack, and low post-process residues. The post soldering residues are compatible with ICT (In Circuit Testing). Sn42-Bi58 is a solder paste formula that maintains its activity and printing characteristics for up to 8 hours.

### APPLICATION

The product is applied to between standard moulding board print and fine pitch one. The print speed is suggested to be 20~100mm/sec. The moulding board thickness is 0.1mm~0.2mm, The scraper pressure is 1~10kg/cm<sup>2</sup>. Application conditions: Temperature: 25±3°C, RH≤65%.

### FEATURES

Alloying component: Sn42-Bi58 Powder size: Type 3(25~45µm)  
Alloying powder component: 90.3±0.3wt%  
Residue: about 5wt%  
Packaging: 500±2g per bottle

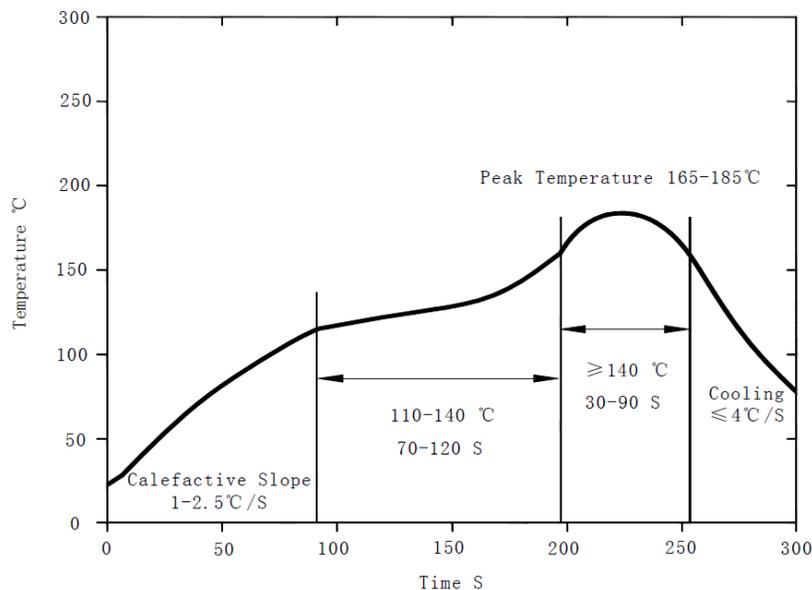
### SAFETY

Sn42-Bi58 has no toxicity, but it will produce some reacting or compound broken down gas in the process of solder reflowing. Therefore, It's suggested that there are good atmospheric conditions in the work area.

### STORE

- Sn42-Bi58 has a refrigerated shelf life of 4 months at 3-10°C. Sn42-Bi58 packaged in syringes must be refrigerated in order to avoid material separation. Do not freeze this product.
- Allow the solder paste to warm completely and naturally to ambient temperature (4 hours is recommended) prior to breaking the seal for use.
- Refrigeration may result in the separated materials of solder paste. Thoroughly mix the product for 3 to 6 minutes for manual mixing and 1-3 minutes for machine mixing before application.
- Do not store new and used paste in the same container. Re-seal any opened containers while not in use. As the cap of the 500 gram jars is not a seal, replace the internal plug in conjunction with the cap to ensure the best possible seal.

### REFLOW PROFILE



### NOTE:

The above temperature curve is considered to be a recommended technology one for reference. It can be adjusted due to actual technology demand.

**TECHNICAL DATA SHEET**

Test item	Result	Standard reference/Notes
<b>Chemical characteristic</b>		
Reactive grade	ROLO	IPC J-STD-004
Halogen content	N.D	IPC J-STD-004
Bronze mirror test	PASS	IPC J-STD-004
Bronze board erode test	PASS	IPC J-STD-004
<b>Electrical capability</b>		
SIR (IPC, 7days @85°C /85%RH)	PASS, >1.4×10 <sup>9</sup> ohms	IPC J-STD-004 (Pass means ≥ 1.0×10 <sup>8</sup> ohms)
SIR (Bellcore, 96 hours @65°C /85%RH)	PASS, >3.8×10 <sup>12</sup> ohms	Bellcore GR78-CORE (Pass means ≥ 1.0×10 <sup>11</sup> ohms)
Electromigration (Bellcore, @65°C/85%RH 10v 500hours)	PASS initial =3.87×10 <sup>10</sup> ohms final = 1.06 ×10 <sup>10</sup> ohms	Bellcore GR78-CORE (Pass means final>initial/10)

<b>Physics capability</b>										
Colour		Limpidity flux residue								
Adhesive force@ Humidity (time = 8hours)		PASS, @25°C/75%RH, change<1g/mm <sup>2</sup>					IPC J-STD-005			
		PASS, @25°C/50%RH, variation<10%					JIS Z 3284			
Viscosity		140±30 Pa·S					@ 10 RPM (Malcom Viscometer @ 25°C)			
Solder ball		Acceptable					IPC J-STD-005			
Holding time of viscosity		> 8 hours					@ 50%RH, 22°C			
Coverage		PASS					JIS Z 3197			
Slump		PASS					IPC J-STD-005			
Alloy (wt%)	Sn	Sb	Bi	Cu	Ag	Fe	Zn	Cd	Al	Pb
	Rem	<0.1	57.5-58.5	<0.10	<0.01	<0.02	<0.001	<0.002	<0.001	<0.05

## MATERIAL SAFETY DATA SHEET

**SECTION 1 - CHEMICAL PRODUCT AND COMPANY INFORMATION****Product Identifier** : Sn42-Bi58 SOLDER PASTE**Product Use** : Mixture of solder powder with paste flux for soldering electrical or electronic connections.**SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS**

Name	CAS #	Weight percent	OSHA PEL mg/m <sup>3</sup>	TLV-TWA mg/m <sup>3</sup>	TLV-STEL mg/m <sup>3</sup>
Tin	7440-31-5	37~38	2	2	N.E.
Bismuth	7440-69-9	51~52	0.05	0.15	N.E.
Modified rosin	8050-09-7	3.0-4.5	N.E.	N.E.	N.E.
Confidential	*	2.0-6.0	N.E.	N.E.	N.E.

**SECTION 3 - HAZARDS IDENTIFICATION**

<b>Physical State and Appearance</b>	Solid. (Paste.)
<b>Emergency Overview</b>	Fumes during soldering are irritating to eyes and may cause headache and respiratory system irritation or damage. Prolonged or repeated exposure to rosin flux fumes during soldering may result in allergic reaction in a sensitive person, resulting in asthma symptoms. Harmful if inhaled or swallowed.
<b>Primary Routes of Entry</b>	<input type="radio"/> Skin <input checked="" type="radio"/> Eyes <input checked="" type="radio"/> Inhalation <input checked="" type="radio"/> Ingestion
<b>Target Organs</b>	Flux fumes: eyes, mucous membranes and respiratory system.

**Potential Health Effects of ACUTE (severe short-term) Exposure**

<b>Inhalation</b>	Flux fumes during soldering may cause irritation and damage of mucous membranes and respiratory system.
<b>Eye Contact</b>	Irritation from contact with smoke from soldering.
<b>Skin Contact</b>	Possible local irritation by contact with flux or fumes.
<b>Ingestion</b>	May be harmful if swallowed. Most of the solder paste will pass through the body unabsorbed.
<b>Skin Absorption</b>	None.

**Potential Health Effects of CHRONIC (prolonged) Exposure**

Fumes and/or dusts produced by this product may be hazardous in case of ingestion, of inhalation. This product may be hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant).

**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 ENDOTHERM 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**

Flush eyes with plenty of water and get medical attention.

**SKIN CONTACT**

Prolonged and repeated contact with bare skin may cause irritation. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap.

**INHALATION**

Remove person from exposure to fumes.

**INGESTION**

Remove dentures if any. Have conscious person drink several glasses of water or milk. INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. NEVER give an unconscious person anything to ingest. Seek medical attention.

**SECTION 5 - FIRE FIGHTING MEASURES**

**Flammability** : Yes  No

**Flash Point (T.O.C)** : N.E.

**Auto-Ignition Temperature** : N.E.

**Flammability Limits percent by volume in air** : N.E.

**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**

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.

**SECTION 7 - HANDLING AND STORAGE****Storage Precautions**

Store at 3 -10°C in closed containers. Store in a dry place.

**Handling Precautions**

Keep containers sealed when not in use.

**Personal Precautions**

Wash hands after handling solder paste and before eating or smoking. Care should be taken to remove solder paste from under fingernails.

**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 or goggles 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 or cloth gloves to avoid skin contact
Feet	Not applicable
Hygienic Work Practices	Wash hands thoroughly after handling chemicals.

**Note:**

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

<b>SECTION 10 - STABILITY AND REACTIVITY</b>			
<b>Physical State at 20°C</b>	Solid (Paste)	<b>Specific Gravity (water = 1 at 25 °C)</b>	>7
<b>Boiling Point (760 mm Hg)</b>	N.A.	<b>Melting Point</b>	138°C
<b>Vapor Pressure (mm Hg at 20°C)</b>	N.A.	<b>Evaporation Rate (butyl acetate = 1)</b>	<0.1
<b>Vapor Density (air = 1)</b>	N.A.	<b>Percent Volatile (by volume)</b>	<1%
<b>Solubility in Water (% by weight)</b>	Insoluble	<b>Volatile Organic Compound (VOC)</b>	N.A.
<b>PH</b>	N.A.	<b>Odor Threshold</b>	N.E.
<b>Freezing Point (760 mm Hg)</b>	N.A.	<b>Coefficient of Water / Oil Distribution</b>	N.E.
<b>Appearance and Odor</b>	Gray metallic paste with mild odor.		

<b>SECTION 10 - STABILITY AND REACTIVITY</b>			
<b>Stability and Reactivity</b>	Stable ☉ Unstable ○	<b>Conditions to avoid</b>	Not Established
<b>Incompatibility with Various Substances</b>	Reactive with oxidizing agents		
<b>Hazardous Decomposition</b>	Not Established		
<b>Corrosivity</b>	Not Applicable		

<b>SECTION 11 - TOXICOLOGICAL INFORMATION</b>
<p><b>Toxic and Chronic Effects on Humans</b></p> <p>Fumes and/or dusts produced by this product may be hazardous in case of ingestion, of inhalation. This product may be hazardous in case of skin contact (irritant, sensitizer), of eyecontact (irritant).</p> <p>MUTAGENIC EFFECTS: Not available.</p> <p>The product may be toxic to blood, kidneys, lungs, the nervous system, the reproductive system, spleen, brain, digestive system, gastrointestinal tract, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea, thyroid. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to toxic material may produce general deterioration of health by an accumulation in one or many human organs.</p>

**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**

Solder paste can be melted to reclaim the solder metal.

CAUTION: Empty containers may contain product residue. Observe all label precautions.

**SECTION 14 - TRANSPORT INFORMATION**

**DOT Classification** Not a DOT controlled material (United States).

**ADR/RID Classification** Not controlled under ADR (Europe).

**TDG Classification** Not controlled under TDG (Canada).

**SECTION 15 – REGULATORY INFORMATION**

**U.S.A.** All Chemical substances in this product are listed in the EPA (Environmental Protection Agency) TSCA (Toxic Substances Control Act) Inventory. B2 D2B

**Europe** European Council Directive 67/548/EEC

**Note:**

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. All right