产品规格书
PRODUCT SPECIFICATION

产品种类：无铅锡膏

产品名称：**Tin Mate-C17**

1. 简介 Description

Tin Mate-C17 是一种无铅低温锡膏，特点是与 Sn42Bi58（138 ℃）相比熔点更低，此特点可以实现回流曲线低温化，可有效降低生产组装的成本。

Tin Mate-C17 is a lead-free,low-temperature solder paste characterized by a lower melting point compared to Sn42Bi58（138 ℃）. This feature can realize low temperature reflow curve and effectively reduce the cost of production and assembly.

2. 特征 Features

合金 Alloy	熔点 Melting point	粉末尺寸 Powder size	包装规格 Package
Sn42Bi58	138℃	T4 (20~38μm)	（500±2）g per can or syringe packaging
		T3 (25~45μm)	
注：如果要求使用其他合金成分、粉末尺寸或包装规格，请联系杭州华光。 Note：If you need other alloy composition, powder size or package, please contact with HUA GUANG.			

环保要求 Environmental protection requirements			
标准/法规 Standard or statute	要求 Requirement	测试方法 Test method	状态 State
JEITA ET-7304 无卤素焊接材料的定义 Definition of Halogen-free Welding Materials	焊接材料（固态）中氯、溴、氟含量低于 1000ppm The content of Chlorine, Bromine and Fluorine in welding material (solid) is less than 1000 ppm	EN 14582	PASS
RoHS Directive 2011/65/EU	符合 RoHS 测试结果要求 The testresults meet the RoHS directive requirement	IEC 62321	PASS
欧盟第 1907/2006 号 REACH 法规 Regulation (EC) No 1907/2006 concerning the reach	SVHC 清单物质测试结果不超过限值 The test results of SVHC list material are not exceed the limit	IEC-OES、UV-VIS、GC-MS、HPLC-DAD/MS	PASS

3. 应用Application

印刷参数设置 Printer Operation

- 印刷速度Print Speed：25~100mm/sec
- 模版寿命：8小时在30~60%RH和22~28℃条件下

Solder Paste Stencil Life:8 hrs. @ 30-60% R.H. &22-28°C

- 针管点涂 Needle tube dot application

4. 安全和清洗Safety and Cleaning

Tin Mate-C17无毒性，但在回流焊过程中会产生一些反应性或化合物分解导致的气体。因此建议工作区域内应有良好的通风条件。

Tin Mate-C17 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.

Tin Mate-C17专为免洗应用设计。如果需要清洗，一般的清洗剂就可以完全清除助焊剂残留。

Tin Mate-C17 is designed for no-clean applications, however the flux can be removed if necessary by using a commercially available flux residue remover.

丝印模板清洗：推荐使用自动化模板清洗系统，用于模板和印刷失败清洗，以防出现锡珠。大多数模板清洗剂都很有效，例如异丙醇（IPA）。

Stencil Cleaning: This is best per formed using isopropyl alcohol (IPA) as a solvent. Most commercially available stencil cleaners work well.

5. 贮存Storage

5.1 Tin Mate-C17在0~10℃条件下可保存6个月。

Tin Mate-C17 has a refrigerated shelf life of 6 months at 0 -10℃.

5.2 通常在 20～30℃室温之间，40～65%RH 的湿度回温，回温时间通常控制在 2-4 小时之内。锡膏打开包装使用前需进行充分回温到室温（推荐4个小时）。

It is usually between 20-30 ℃ room temperature,40～65%RH humidity return temperature, the return temperature time is usually controlled within 2-4hours. Allow the solder paste to warm completely and naturally to ambient temperature (4 hours is recommended) prior to breaking the seal for use.

5.3 长时间冷藏储存后可能会引起锡膏内组分的分离，使用前应对锡膏进行充分搅拌，

手工搅拌3~6分钟，机器搅拌1~3分钟。

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.

5.4 不要将用剩的锡膏与新的锡膏混合在同一包装瓶内。锡膏不需使用时应重新进行密封，当瓶盖不能很好地进行密封保存时请更换瓶盖内衬以保证尽可能的密封。

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.

6. 性能规格 Performance and Standard

6.1 焊料的合金化学成份Alloy Composition

Composition / 组成（mass%）								
Alloy/合金		Sn			Bi			
Sn42Bi58		Balance / 余量			57-59			
Impurities/不纯物								
Mass% or less/ 质量% 以下								
Pb	Fe	Al	Cd	Ni	Sb	Zn	Cu	As
0.05	0.02	0.005	0.002	0.08	0.1	0.005	0.08	0.01

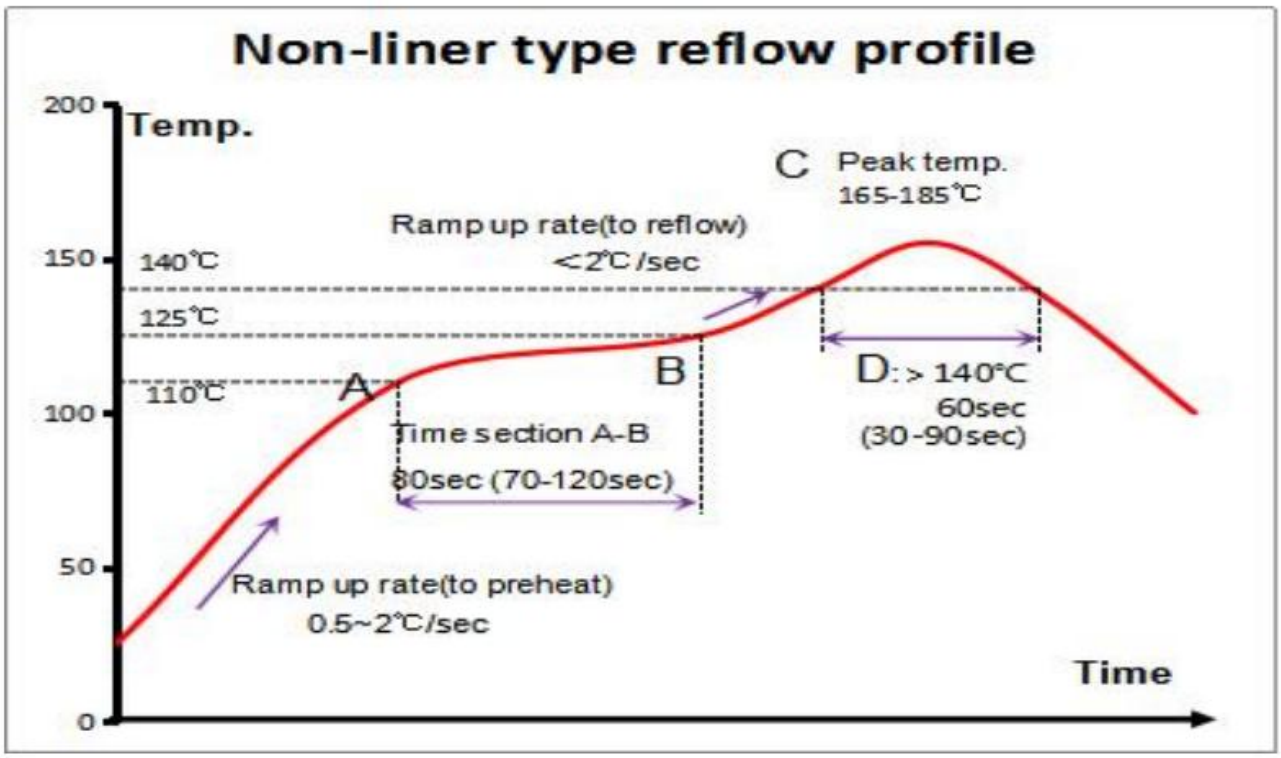
6.2 化学特性 Chemical Characteristic

测试项目 **Test item**	结果 **Result**	参照标准/备注 **Standard reference/Notes**
活性等级 Classification	ROL级	IPC J-STD-004
卤素含量 Halogen content	ND	EN 14582:2007
铜镜试验 Bronze mirror test	PASS	IPC J-STD-004
铜板腐蚀试验 Bronze board erode test	PASS	IPC J-STD-004

6.3 物理性能Physics capability

<table>
<tr><th>测试项目
Test item</th><th colspan="3">结果
Result</th><th>参照标准/备注
Standard reference/
Notes</th></tr>
<tr><td>颜色 colour</td><td colspan="3">清澈助焊剂残余
Limpidity flux residue</td><td></td></tr>
<tr><td rowspan="2">印刷工艺粘度
Viscosity of printing process</td><td>合金
Alloy</td><td>助焊剂含量
Flux content</td><td>粘度
Viscosity</td><td rowspan="3">@ 10 RPM (Malcom Viscometer
@ 25℃)</td></tr>
<tr><td>Sn42Bi58</td><td>10.5±1wt%</td><td>170±30</td></tr>
<tr><td>针筒点涂工艺粘度
Viscosity of needle point coating process</td><td colspan="3">按客户要求定制
Customized to
Customer Requirements</td></tr>
<tr><td>锡珠 Solder ball</td><td colspan="3">Acceptable</td><td>IPC J-STD-005 A</td></tr>
<tr><td>印刷时粘度保持时间
Holding time of viscosity</td><td colspan="3">> 8 hours</td><td>@ 50%RH, 22℃</td></tr>
<tr><td>铺展率 Coverage</td><td colspan="3">PASS</td><td>JIS Z 3197</td></tr>
<tr><td>坍塌 Slump</td><td colspan="3">PASS</td><td>IPC J-STD-005 A</td></tr>
</table>

7. 推荐回流焊曲线Recommendation Reflow Profile



Point		Standard	Upper	Lower
A	Pre-heat start point	100℃	110℃	90℃
B	Pre-heat end point	125℃	130℃	120℃
A-B	Pre-heat time	80s	120s	70s
C	Peak temp.	165℃	185℃	165℃
D	Time above 140℃	50s	90s	30s

注：以上温度曲线为推荐工艺曲线，仅供参考，客户可根据本身的回流炉使用情况以及实际工艺需求做适当调整。

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