

SHENZHEN FITECH CO., LTD.

锡膏 SAC305 系列—规格书

Solder Paste SAC305 305 Series

mLED 1500 系列 — mLED 1530、mLED 1540、mLED 1550、mLED 1560

技术部

Technical Department

Technical Data Sheet

锡膏（Solder Paste）mLED -1500 系

一、简介 Introduction

mLED 1500 系列锡膏采用球形度好，粒度均匀，氧含量低的 SAC305 超微焊粉及优良无卤助焊剂配制的优质印刷型锡膏，焊接前黏着力好，工艺性能稳定，焊接过程中溶剂挥发少，焊接后无锡珠产生，爬锡效果好，残留物少，坍塌性能好，为 Mini/Micro LED 微凸点窄间距封装的理想焊接材料。

mLED 1500 series solder paste is a high-quality printing solder paste prepared by SAC305 ultrafine solder powder with good sphericity, uniform particle size, low oxygen content and excellent halogen-free flux. It has good adhesion before soldering, less solvent evaporation during soldering, after soldering. No solder ball, has good wetting effect, less residue and good collapsing performance. It is an ideal soldering material for Mini/Micro LED micro-bump narrow-pitch packaging.

二、产品特性及优势：Features and Advantages

1. 采用窄分布超微焊粉，下锡稳定性好。

Using narrow-distribution ultra-fine solder powder, good stability of soldering.

2. 触变性好，粘度合适，可采用喷印、针转移、点胶、印刷等方式。

Good thixotropy, Appropriate viscosity, can be used to spray print, transfer, point glue needle, printing, etc.

3. 化学活性好，无锡珠，爬锡效果优。

Good chemical activity, no solder ball, good wetting.

4. 操作简单，可选择回流炉、电热板、烘箱等。

Simple operation, able to choose from reflow oven, heating plate, oven.

三、技术特性：Technical feature

1. 未焊接熔化特性：Before reflow

| 产品性能 Feature | 指标 Result | 备注 Note |
|----------------------------|---|--------------------------|
| 外观 Appearance | 灰色 gray | 膏状 Paste |
| 金属填料类型 Alloy | Sn96.5Ag3Cu0.5 | |
| 金属填料粒径 Powder size | mLED 1530 T6 / 5-15μm mLED 1540 T7 / 2-11μm mLED 1550 T8 / 2- 8μm mLED 1560 T9 / 1-5μm | 类型 Description |
| 金属填料熔点 Alloy melting point | 219℃ | |
| 金属填料比例 Powder content | 印刷型 Printing 87±1% | 可进行调整 Adjustable |
| 比重 Solder density | 3.8 ~ 4.4 | 比重瓶 |
| 粘度 Viscosity | 印刷型 Printing 200±30 Pa.s | 按客户要求 Malcolm (10rpm) |
| 触变指数 Ti | 0.6±0.1 | Lg(3rpm/30rpm) |
| 卤素含量 Halogen Cl + Br | < 1500ppm | |
| 保质期 Shelf life | T6: 6 month@ 0~10℃ T7~T8: 4 month@ 0~10℃ T9: 3 month@ 0~10℃ | 密封 Sealed storage |

2. 焊接后特性: After curing

| 性能 Feature | 指标 Result | 备注 Note |
|-----------------------------|-------------|---------|
| 导热系数 Thermal conductivity | 58 J/M.S.K | |
| 导电率 Electrical conductivity | 14% of IACS | |
| 抗拉强度 Tensile strength | 50Mpa | |
| 延伸率 Ductility | 44 % | |
| 硬度 Hardness | 14.1HV | |
| 残留物干燥度 Dryness test | 合格 Pass | |
| 锡球测试 Solder ball test | 合格 Pass | |
| 润湿测试 Wetting test | 合格 Pass | |

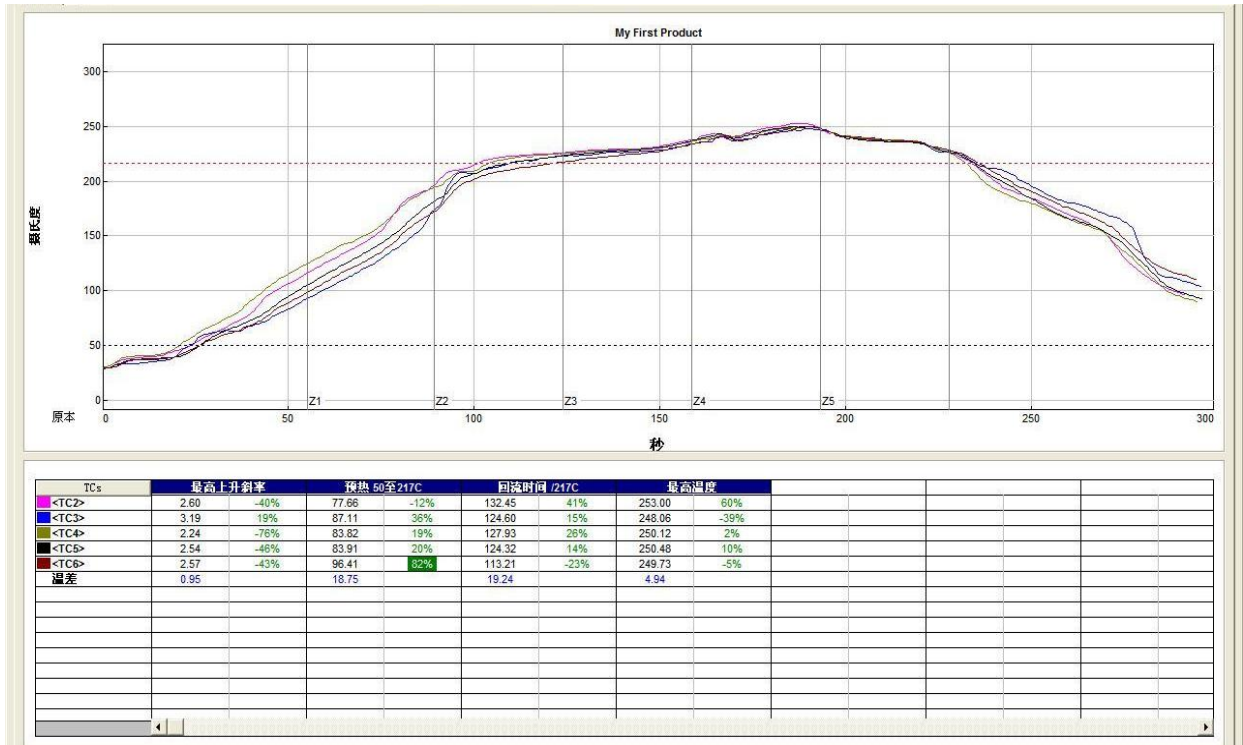
四、焊接工艺: Soldering & curing process

1. 回流焊接: 按下图回流曲线加热。

Reflow oven : Heat cure according to the reflow curve as shown below.

以下是我们采用氮气保护的热风回流焊工艺的温度曲线，可以用作回流焊炉温度设定之参考。该温度曲线可有效减少锡膏的垂流性以及锡球的发生，对绝大多数的产品和工艺条件均适用。不同炉型、不同元器件对炉温将会有所改变。

The below graph shows our recommended hot nitrogen reflow soldering process temperature curve. It can be used as a reflow furnace temperature setting. The temperature curve can effectively reduce the vertical flow of the solder paste and the forming of solder balls. For the vast majority of products and process conditions this is suitable. Furnace temperature would vary for different type and different components.



① 备注 Note :

★ 上述温度曲线是指焊点处的实际温度，而非回焊炉的设定加热温度（不同）

The above temperature curve refers to the actual temperature of the solder joint position rather than the welding furnace heating temperature during setting (different).

★ 上述回焊温度曲线仅供参考，可作为使用者寻找在不同制程应用之最佳曲线的基础。实际温度设定需结合产品性质、支架大小、芯片分布状况及特点、设备工艺条件等因素综合考虑，事前不妨多做试验，以确保曲线的最佳化。

The temperature curve are for reference only. It can be used as the user to find the basis of the optimal curve of different process application. Actual temperature setting should be combined with the product properties, stent size, chip distribution, characteristics, equipment and process condition factors. Sample tests should be done in advance to ensure the curve is optimized.

- ★ 本型号系列锡膏除可采用上述“升温-保温”型加热方式外，也可采用“逐步升温”型加热方式
This series of solder paste can be used in addition to the above "heat - insulation" type heating mode. It can also be used in "warmed" type heating mode.
- ★ 锡膏过回流焊务必通入氮气，氧浓度低于 1000ppm。
Reflow shall be carried out in N₂ atmosphere (O₂ < 1000 ppm. or less)

五、包装储存 Package and storage

1. 包装 Package □

- ☞ 印刷型：500g/罐，宽口型塑胶（PE）瓶包装，并盖上内盖密封封装，送货时可用泡沫箱盛装，可按客户要求包装。

Printing : 500g/bottle, wide-mouth plastic (PE) bottle, sealed with inner lid and packaged in foam box. according to customer's requirements.

2. 运输储存 Transport storage

- 运输条件：冰袋冷藏运输，国际物流采用蓝冰+EPP保温箱运输。
Transport : Ice pack refrigerated transportation. International logistics adopts blue ice + EPP incubator for transportation.
- 储存条件：收到后应尽快将其放进冰箱储存，建议储存温度为0~10℃。温度过高会相应缩短其使用寿命，影响其特性。
Storage: It should be stored in the refrigerator as soon as possible after receipt. The recommended storage temperature is 0~10 °C. If the temperature is too high, it will shorten its service life and affect its characteristics.
- 有效期限：在0~10℃未开封储存条件下，按锡粉粒径不同，其有效期为 3~6 个月。
Self life: Under the condition of unopened storage at 0~10℃, the validity period is 3~6 months according to the particle size of solder powder.
- 工作时间：建议回温后24小时内使用完毕。
Work time: Used within 24 hours after returning to temperature.
- 印刷至回流时间：印刷锡膏2小时内完成过回焊炉。
Time from printing to reflow: the PCB shall be reflowed within 2hrs. after printing.

六、使用方法：Instructions

- ✓ 回温方式：不开启盖子的前提下，于室温中自然回温；回温次数不超过两次；
Recovery method: don't open the bottle cap until the solder is close to room temperature, No more than two times of temperature return;

- ✓ 回温时间：室温下回温2~4小时。达到热均衡所需要的实际时间因容器大小而异。
Recovery time : Generally, paste should be removed from refrigeration 2 ~4 hours before use. Actual time to reach thermal equilibrium will vary with container size.
- ✓ 注 意：未经充足“回温”，不要打开瓶盖，不可用加热的方式缩短“回温”时间；
Note: without enough "recovery", DO NOT open the bottle caps. DO NOT try to heat the paste to lower recovery time.
- ✓ 使用环境：锡膏最佳使用环境温度为20-25℃，相对湿度40-60%RH。在氮气保护环境下进行回流焊。
Using environment: The best temperature for using the solder paste is 20 to 25 °C, relative humidity 40-60% RH. Reflow soldering under nitrogen protection.

七、健康与安全方面应注意事项 Health and safety considerations

注意！ Note！

以下资料仅提供给使用者作参考，用户在使用前应了解清楚。详细内容请查阅本品物料安全数据表(MSDS)。
The following information is provided for users' reference only. Users should know clearly before using it. For details, please refer to the material safety data sheet (MSDS) of this product.

本制品不含受管制的特定化学物质，也不含有机溶剂中毒预防规则中所规制的有机溶剂，但仍需作必要的防范措施，以确保人体健康及安全。

This product does not contain specific chemical substances that are regulated, nor does it contain organic solvents that are regulated in the Organic Solvent Toxicity Prevention Regulations. However, necessary precautions must be taken to ensure human health and safety. For products containing lead, the operation should be carried out in accordance with the Labor Safety and Health Act and lead poisoning prevention rules.

- i. 锡膏是一种化学产品，混合了多种化学成份，应切记避免近距离嗅闻其气味，更不可食用。

Solder paste is a chemical product that is mixed with a variety of chemical ingredients. should remember to avoid close smell of its smell, not to be edible.

- ii. 在焊接固化过程中，锡膏中的焊剂产生的部分烟雾会对人体的呼吸系统产生刺激，长时间或一再暴露在其废气中可能会产生不适，因此应确保作业现场通风良好，焊接设备必须安装充足的排气装置，将废气排走。

In the welding process, part of the smoke generated by the flux in the solder paste will stimulate the respiratory system of the human body, which may cause discomfort if exposed to the exhaust gas for a long time or repeatedly. Therefore, it is necessary to ensure good ventilation in the operation site.

- iii. 应有必要的防范措施避免锡膏接触皮肤和眼睛。若不慎接触到皮肤，则应立即用肥皂和清水彻底清洗干净。若不慎让锡膏接触眼睛，则需立即用清水冲洗10分钟以上，并尽快送医院医治。

Necessary precautions should be taken to prevent the paste from touching the skin and eyes. In case of contact with the skin inadvertently, the place should be immediately cleaned with soap and water. If the tin paste contact the eyes carelessly, it shall be immediately washed with water for more than 10 minutes and sent to the hospital as soon as possible.

- iv. 作业过程中不允许饮食、抽烟，作业后须先用肥皂或温水洗手后才能进食。

No eating or smoking is allowed in the course of homework. After homework, you must wash your hands with soap or warm water before eating.

- v. 虽然本品之溶剂系统闪点较高，但仍然易燃，应避免接近火源。若不慎着火，可用二氧化碳或化学干粉、泡沫灭火器进行灭火，不可用水灭火。

Although the solvent system of this product has a very high flash point, it is still flammable and should be avoided. If you accidentally catch fire, use carbon dioxide or chemical dry powder fire extinguisher to extinguish the fire. Do not use water to extinguish the fire.

- vi. 废弃的锡膏和清理后沾有锡膏污渍的清洁布不能随意掉弃，应将其装入封密容器中，并按国家和地方的相关法规处置。

The waste solder paste and the cleaning cloth with solder paste stains after cleaning shall not be discarded at will. It shall be put into a sealed container and disposed of in accordance with relevant national and local regulations.