锡膏规格表

编号：P010

项目 \ 标准规格型号	RMAA5C2			测试方法
熔点（℃）	178			JIS.Z.3282
锡粉合金成份	Sn62Pb36Ag2			JIS.Z.3282
合金主要成份范围	Sn 锡:62±0.5	Pb 铅：余量	Ag 银:2.0±0.2	JIS.Z.3282
外观	外观淡灰色，圆滑膏状无分层			目测
焊剂含量（wt%）	10±0.5			JIS.Z.3197-8.1.3
卤素含量（wt%）	<0.03			JIS.Z.3197-8.1.4.1.2
粘度（25^{0}C 时 pa.s）	180±10%			JIS.Z.3284 附录六
颗粒体积（μm）	25~45			JIS.Z.3284 附录一
水卒取阻抗(Ω·cm)	**>1×10^5**			JIS.Z.3197-8.11
铬酸银纸测试	合格			JIS.Z.3197-8.1.4.2.3
铜板腐蚀测试	无			JIS.Z.3284 附录四
表面绝缘阻抗测试（Ω） 40^{0}C/ 90%RH	**>1×10^{11}**			JIS.Z.3284 附录三
表面绝缘阻抗测试（Ω） 85^{0}C/ 85%RH	**>1×10^8**			JIS.Z.3284 附录三
湿润性（级）	**2**			JIS.Z.3284 附录十
锡珠测试(级)	2			JIS.Z.3284 附录十一

备注：本表所列性能指标为参考值，不作为法律保证依据！实际值以每批交货的 QA 报告为准！

物质安全资料表

MATERIAL SAFETY DATA SHEET

第一段 化学产品和企业标识

物品名称	锡膏
物品型号	RMAA5C2
制造商名称	东莞永安科技有限公司
制造商地址	东莞市塘厦镇石鼓村第二工业区向阳路 353 号
紧急联络电话/传真电话	TEL：0769-82077878 FAX：0769-82077898

第二段 主要组成成份

主要成份	中文名称	化学式	含量Rate%	化学文摘社登记号码 CAS.NO.	相对分子质量
合金成份 90%	锡	Sn	62	7440-31-5	118.69
	铅	Pb	36	7439-92-1	207.2
	银	Ag	2	7440-22-4	107.87
焊剂 10%	松香	——	50	68475-70-7	——
	触变剂	——	10	——	——
	表面活性剂	——	5	——	——
	溶剂	——	35	——	——

第三段 危害辨识资料

最重要危害效应	健康危害：对眼睛、皮肤、粘膜和上呼吸道有刺激作用，长期吸入铅的烟雾可发生慢性铅中毒。
	环境影响：对环境有危害，对水体、土壤和大气可造成污染。
	物理性及化学性危害：灼伤及吸入分解产物可能造成神经伤害。
	侵入途径：皮肤接触、吸入烟雾。
	燃爆危险：无
	特殊危害：无
物品危害分类：无	

第四段 急救措施

不同暴露途径之急救方法：

- 吸入：脱离现场移至新鲜空气处。如呼吸困难，给输氧。就医。
- 皮肤接触：脱去污染的衣着，用流动清水冲洗。
- 眼睛接触：提起眼睑，用流动清水或生理盐水冲洗。就医。
- 食入：饮足温水，催吐。洗胃，导泄。就医。

第五段 燃爆性与消防措施

燃烧性：粉体在高温遇明火会引起燃烧
有害燃烧产物：氧化铅、氧化锡
灭火剂：干粉、砂土及二氧化碳灭火器。
灭火方法：消防人员必须佩戴防毒面具、穿全身消防服，在上风向灭火。

第六段 泄漏应急处理

个人应注意事项：避免吸入焊锡烟气或粉尘。
环境注意事项：勿使泄漏区域扩大。
清理方法：建议应急处理人员戴防尘面面罩，用洁净的铲子收集于干燥、洁净、有盖的容器中。若大量泄漏，收集回收。

第七段 操作处置与储存

处置注意事项：1.阅读所有的容器标示。 2.工作场所严禁吃东西、喝饮料、抽烟及化妆。 3.搬运时轻装轻卸，防止包装破损。配备相应品种和数量的消防器材及泄漏应急处理设备。倒空的容器可能残留有害物。
贮存注意事项：储存于 5~10℃的冰柜中，远离火种、热源。应与氧化剂、酸类分开存放，切忌混储。配备相应品种和数量的消防器材。储区应备有合适的材料收容泄漏物。
保存期限：6 个月（5~10℃）

第八段 防护措施

检测方法：火焰原子吸收光谱法。
工程控制：需防止烟尘危害，提供足够的机械式排气装置。
呼吸系统防护：空气中粉尘浓度超标时，必须佩戴自吸过滤防尘口罩。紧急事态抢救或撤离时，应该佩戴空气呼吸器。
眼睛防护：戴化学安全防护眼镜。
皮肤及身体防护：穿戴工作衣及防护手套。
车间卫生措施：工作现场禁止吸烟、进食和饮水。工作完毕，淋浴更衣。

第九段 物理及化学性质

物质状态：膏状	形态：膏状
颜色：银灰色	气味：无气味
相对密度（水=1）：4.5~4.6	水中溶解度：不溶于水
熔点：178℃	沸点/沸点范围：/
自燃温度：/	闪火点:>60℃

第十段 稳定性及反应活性

稳定性：稳定（5-10℃）
应避免接触条件：严禁阳光直射或高热，避免接触水气或酸。
禁配物：强酸、水
聚合危害：——
燃烧（分解）产解物：——

第十一段 毒理学资料

急性毒性： LD50：无资料

LC50：无资料
亚急性和慢毒性： ——
致敏感性：——
刺激性：——
致突变性：——
致畸性：——
致癌性：——

第十二段 环境资料

迁移性：——	持久性/降解性：——
生物积累性：——	生态毒性：——
其它有害作用：水中嗅觉阈浓度：水中铅浓度 2mg/L 时，有金属味。	

第十三段 废弃处理方法

废弃处理方法：处置前应参阅国家和地方有关法规。若可能，回收使用。

第十四段 运输信息

危险性分类及编号：——	
UN 编号：——	包装标志：——
安全标签：——	
运输注意事项：起运时包装要完整，装载应稳妥。运输过程中要确保容器不泄漏、不坠落、不损坏。严禁与氧化剂、酸类、食用化学品等混装混运。运输途中的应防曝晒、雨淋，防高温。车辆运输完毕应进行彻底清扫。	

第十五段 法规信息

法规信息： 化学危险物品安全管理条例（1987 年 2 月 17 日国务院发布），化学危险物品安全管理条例实施细则（化劳发[1992]677 号）； 工作场所安全使用化学品规定（[1996]劳部发 423 号）等法规，针对化学危险品的安全使用、生产、储存、运输、装卸等方面均作了相应规定； 车间空气中锡卫生标准（GB16217-1996），规定了车间空气中该物质的最高容许浓度及检测方法；大气中铅及无机化合物的卫生标准（GB 7355-87），规定了车间空气中该物质的最高容许浓度及检测方法；废弃物清理法。

第十六段 其它资料

参考文献：危害化学物质中文资料库，环保署		
制表单位	名称：东莞永安科技有限公司	
	地址：东莞市塘厦镇石鼓村第二工业区向阳路 353 号	
	电话：0769-82077878	
制表人	职称：工程师	姓名：朱君竺
制表日期：2007.6.30		
备注：上述资料中符号“-”代表目前查无相关资料，而符号“/”代表此栏位对该物质并不适合用。		

锡膏使用指南

一、锡膏的储存

A.锡膏应保存在 5-10 ℃环境下，保质期为六个月（从生产日算起）。
B.在使用前，预先将锡膏从冰箱中取出室温下至少 4 小时，这是为了使锡膏恢复至工作温度，也是为防止水份在锡膏表面冷凝。

二、 锡膏搅拌

A．为了使锡膏完全地混合均匀，在回温后请充分搅拌锡膏。

B．机器搅拌一般为 1~3 分钟，人工搅拌一般为 3~6 分钟（锡膏储存的时间越长，则搅拌时间越长）。

三、使用环境

锡膏最佳的使用环境：温度为 20~25℃，湿度为 35~60%。

四、印刷

印刷时锡膏使用注意事项：

A．将锡膏约 1/3 的量添加于钢网上，并以少量多次的添加方式补足钢网上的锡膏量、以维持锡膏的品质。
B．当天未使用完的锡膏，不可与尚未使用的锡膏共同放置，应另外存放在别的容器中。锡膏开封后在室温下建议于 24 小时内用完。
C．当天未用完的锡膏，隔天使用时建议将未用完的锡膏与新锡膏以 1：2 的比例搅拌混合使用，并以少量多次的方式添加使用。
D．锡膏印刷在基板上后，建议于 4～6 小时内放置元件进入回焊炉。
E．换线超过一小时以上，请于换线前将锡膏从钢网上刮起收入锡膏罐内封盖。
F．尽可能不要接触到皮肤，如接触时请用异丙醇清洗，并且避免吸入挥发之气体。

五、 回焊

62/36/2 有铅锡膏曲线分析:

100-150℃（预热区）

由于锡膏是采用高温气化有机酸及松香来去除氧化层的,而松香及有机酸要在 100 度以上才能发挥活性。所以必须在 150 度前要有充足的时间利用它,这个温区上升太高会使有机酸没有充分利用就气化减弱了锡膏实际的活力.温度上升太慢又使它没有获得足够的热能而不能发挥作用,**80-140** 秒它有足够的时间来去除氧化层, 同时也能使元件及 PCB 板有合理的预热过程，时间不够会造成**锡膏在焊盘上扩散不良**。

150-178℃（加热区）

这个阶段是元件与 PCB 板充分预热为焊锡的焊接扩散打好基础,这个阶段有机酸会继

续消除氧化层，更重要的是要使 PCB 板与元件整体能平稳升温到锡粉的熔点前的温度,过快会造成 PCB 板上的元件温度不统一会造成**元件立起**和大 IC PIN **爬升不良**,对锡的扩散不利.**40-80** 秒的时间为合适.这样可以保证大元件也能有充分的升温。

178-178℃（熔溶区）顶点温度 220 或 230℃

这个温区是焊锡熔化的关键,它分为以下几个阶段：

178-200℃

高温气化有机酸在 200℃会全部气化必须在气化前发挥它的重要作用(活性),通常要在很短的时间内获得足够的能量才能使锡有良好的焊接扩散,约 90%的扩散是在这个时候完成的,需要在 20 秒内完成从 178 升到 200℃的温度,才能使锡获得良好扩散的充足热能.

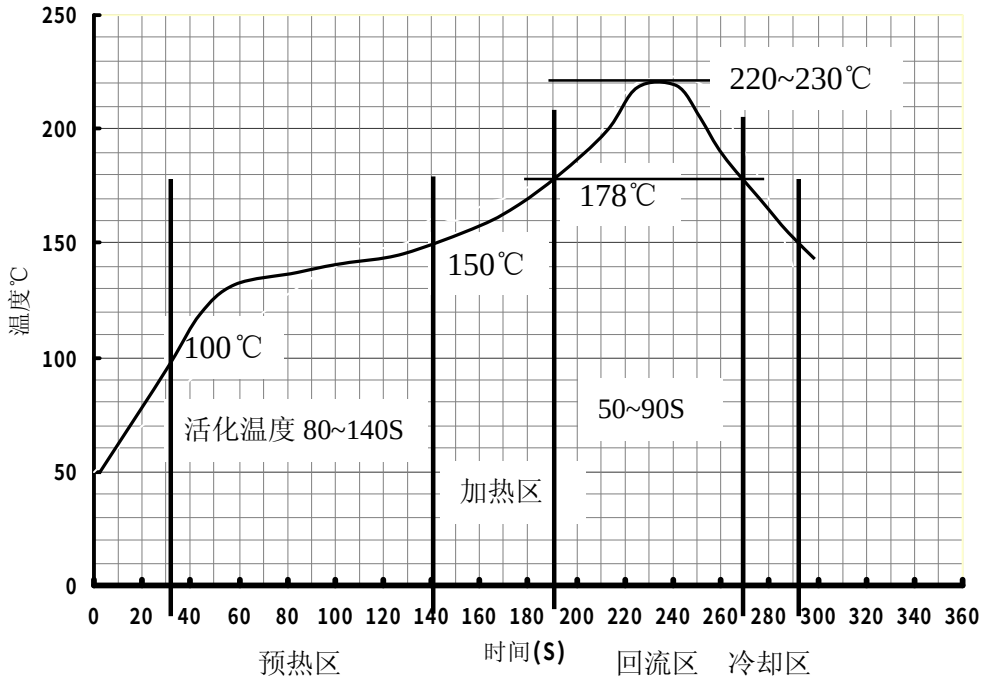
200-（220 或 230）℃

这个温区是由松香在高温作用下进一步推动锡的爬升和扩散,也能使助焊剂中的挥发物进一步挥发.温度过高时间过长会引起焊点变色,**电路板上的白色印字及松香氧化变黄影响外观.通常不超过 20-30 秒.如果是有铅制程而元件是无铅的，那么顶点温度应设置在 230℃，大于 217℃的时间应在 30S 以上。这样才能保证无铅元件角焊料熔化，而不产生假焊。**

（220 或 230）℃-178℃

这个温区为降温区通常在 30-50 秒内完成,对焊点、元件和 PCB 板都会安全的降温,时间过长也同样会引起焊点变色,电路板上的白色印字及松香氧化变黄影响外观.

有铅含银 2%锡膏参考曲线



注：因 PCB 的大小、厚度、材质、板上的元件不同，就算同一台回流炉同一温度设置测出的炉温曲线也不一样，所以应根据 PCB 板的不同调整炉温设置！

六、 包装方式

标准包装为一罐 500 克，每纸箱为 5 公斤、每泡沫箱为 10kg（冰袋保护）。

七、 标签

a) 锡膏型号

b) 合金

c) 批号

d) 粒度（目数）

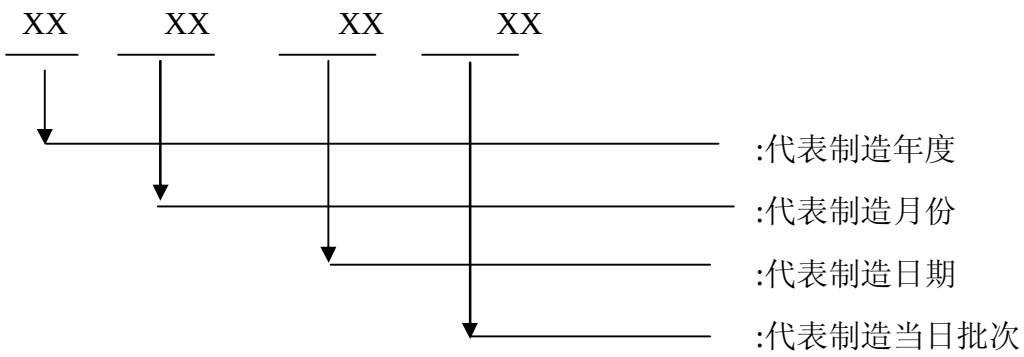
e) 净重

f) 生产批号

g) 保质期

八、 成品批号定义

每批锡膏批号有 8 个数字：



SPECIFICATIONS OF SOLDER PASTE

№:P010

spec / model / properties	LF-RMAA5C2			Test method
Melting point（℃）	178			JIS.Z.3282
Solder powder alloy composition	Sn62Pb36Ag2			JIS.Z.3282
Alloy composition	Sn: 62±0.5	Pb: balance	Ag:2.0±0.2	JIS.Z.3282
Exterior condition	The outward appearance light gray, the smooth paste shape does not have the lamination			test
Solder rate（wt%）	10.0±0.5			JIS.Z.3197-8.1.3
Halogen rate（wt%）	<0.03			JIS.Z.3197-8.1.4.1.2
mucosity（25^0C pa s）	180±10%			JIS.Z.3284 appendices Six
Pellet volume（μm）	25~45			JIS.Z.3284 appendices One
Water impedance (Ω·cm)	$>1\times10^5$			JIS.Z.3197-8.11
Chromic acid bank check test	Pass			JIS.Z.3197-8.1.4.2.3
Copper plate corrosion test	None			JIS.Z.3284 appendices Four
Surface insulation impedance test（Ω） 40^0C/ 90%RH	$>1\times10^{11}$			JIS.Z.328 appendices Three
Surface insulation impedance test（Ω） 85^0C/ 85%RH	$>1\times10^8$			JIS.Z.328 appendices Three
humidity（grade）	2			JIS.Z.3284 appendices Ten
Solder balls testing（garde）	2			JIS.Z.3284 appendices Ten

Note: This material just for reference, it will not act as legal guarantee approval!

The actual vale is subject to QA report of each lot shipment.

MATERIAL SAFETY DATA SHEET

Section one Chemical product and corporate logo

Product name	solder paste
Model	RMAA5C2
Manufacturer name	DongGuan YongAn Technology Co.,Ltd
Manufacturer address	№353, Xiangyang Road,2nd Industrial District, Shigu,Tangxia Town,Dongguan
Emergency contact №	TEL：0769-82077878 FAX：0769-82077898

Section two Main components

Main content	Chinese name	Chemical formula	Rate%	CAS.NO.	Relatively molecule mass
Alloy content 90%	Tin	Sn	62	7440-31-5	118.69
	Lead	Pb	36	7439-92-1	207.2
	Silver	Ag	2	7440-22-4	107.87
Solder 10%	Rosin	——	50	68475-70-7	——
	Thixotropic agent	——	10	——	——
	Surface activity	——	5	——	——
	Solvent	——	35	——	——

Section three Hazard Identification information

The most important effect of hazards	Health harm：Excite to eyes ,skin, mucous membrane and respiratory, absorb the fog of lead in long-playing can cause Chronic lead poisoning
	Environmental effect：harmful to the environment，may cause pollution the water ,soil, and atmosphere
	Physics and chemical effect:：burning or absorb catabolism may injure nerve
	Inrush approach：skin contact、absorb fog
	Burning blast danger：None
	Special effect：None
Hazard classification items：None	

Section four First aid treatment

First aid for different exposure way：

- skin contact：take off the infected clothes and use flow water to wash.
- Eye contact：lift the eyelid，use flow water or physiological saline wash, hospitalize.
- Inhalation：Leave the place to the flesh air area, keep respiratory system unobstructed. If breath difficulty, supply the oxygen therapy and see the doctor.
- Ingestion：drink enough warm water press to vomiting ， wash the stomach and see the doctor.

The most vital symbol and effect：excite to the skin and organ

Section five Blastability and Fire-fighting measures

Hazardous characteristics：The powder will burning when it get close to elevated temperature or fire.

Harmful combustion products：tin oxide

extinguishing agent：drymeal、sandy clay and carbon dioxide extinguisher.

Fire extinguishing method：fire-fighter must wear the anti-poisonous mask, wear the uniform and put on a fire.

Section six Accidental release measures

Notes：Avoid inhale solder tin fog or powder.
Environmental notes：Don't expand drain region.
Cleaning Method：Advise the operator wear dustproof mask, use the clean scoop to collect the dry ,clean container with cover. If leak out in a large quantity, please collect back.

Section seven Safety handling and storage

Handling notes：1.read all signs of container. 2 .No allow eating, drinking, smoking and titivated in the working place. 3 light install and light remove by conveying, avoid damage the package. Prepare the variety and the quantity of fire-fighting equipment and leak out disposal. Empty containers may still have harmful material in.
Storage notes：keep it in refrigerator with 5~10℃， keep away from the fire ,heat. The oxidant and acid should be separate for storage ,do not mix them . Fit out the variety and fire-fighting equipment. The storage must have the suitable material to collect the leak out substance
Storage term：6 months（5~10℃）

Section eight Preventive measure

Testing method：flame atomic absorption spectrometry
Engineering control ： avoid the damage of fog and dust and supply enough mechanism releaser
respiratory system protection：when the chroma of dust in the air super scale, must wear the filtrate dustproof respirator. If in emergency situation or remove , must wear the air respiratory.
Eye protection：put on defend glasses.
Body and hand protection：wear anti-poisonous uniform and wear latex gloves。
Plant sanitation standard：No smoking ,eating, drinking in working place ,take a shower after work..

Section nine Physical and chemical properties

Physical state：Pasty	Physical state：Pasty
color：Silver-gray	Odour：none
Relative density（water=1）：4.5～4.6	Water dissolve：water fast
Melting point ： 178℃	Boiling point：/
Self point ： /	Flash point:>60℃

Section ten Stability and reactivity

stability：stable（5-10℃）
Avoid contacting condition：strictly forbidden direct sunlight or high heating, avoid contacting water steam or acid.
Forbidden matching ： strong oxidizer, strong acid ,water
Convergent harm：——

Burning resolving：——

Section eleven Toxicological information

Acute toxicity： LD50：no data LC50：no data
Sub acute and slow toxicity：——
Sensitivity incurance：——
Cause sensibility：——
Irritation：——
Mutagenicity：——
Teratogenicity：——

Section twelve Ecological information

Migration：——	Durability / Degradability：——
Biological accumulation：——	Ecotoxicity：——
Other deleterious effect：when the consistency of lead is 2mg/L in water, will have tinny taste.	

Section thirteen Waste disposal method

Waste disposal method：Please refer to the Country or region rules ,recycle to reuse if possible
Waste attention issues ：——

Section forteen Transport information

Risk classification and number ：——	
UN code：——	Package logo：——
Safety tag：——	
Transportation notes：The package must integrity and install or remove should be stable. Make sure the container no damage, no leak out, no purer. Avoid mixing from antioxidant acid, and edible chemical product. No allow sunlight or drench etc. The car must be completely clean after transporting.	

Section fifteen Statutable information

Statutable information：Chemical Safety Management of Dangerous Goods Regulations（issue by State Council on Feb 17,1987）,Chemical Safety Management of Dangerous Goods Regulations Ordinance（issue [1992]677#）; Workplace safety requirements to chemicals（[1996] issue by Ministry of Labour 423#）ect. Statutes, there are stipulations aiming at chemical harm product's safe usage ,production ,storage , transportation ,load and unload etc; Workshop tin health standards in the air（GB16217-1996），prescribe the highest chroma and test method for the substance.; Atmospheric lead and inorganic compounds in the health standards (GB7355-87)，prescribe the highest chroma and test method for the substance； Waste clean-up method.

Section sixteen Other information

References：Chinese hazardous chemical substance database， EPD (environment protection department)		
Watchmaking unit	Name: DongGuan YongAn Technology Co.,Ltd	
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Note：The symbol "——" in above data stands for no relative currently, the symbol "/" stands for this column is not suitable for this material.		

Guide to the operation of solder paste

One Storing of solder pastes

A. The solder pastes should be kept under the temperature of 5-10℃and the shelf life is 6 months. (Calculated from the date of manufacture)

B. Before operation, first take the solder pastes out of refrigerators and let them stay a room temperature for at least 4 hours: it enables the solder pastes to recover to the operating temperature and also to prevent moisture from surface condensation on solder pastes.

Two Solder paste mixing

A. In order to make the solder pastes to be completely mixed in a well distributed manner, please adequately mix the solder pastes after the return of temperature.

B. The mechanical mixing usually last for 1 to 3 minutes, while manual mixing usually lasts for 3 to 6 minutes(The longer the solder paste are kept ,the longer the mixing requires)

Three Operation Environment

Optimal operation environment for solder pastes is temperature at 20~25℃and humidity within 35-60%.

Four Printing

Cautions in the operation of solder pastes during printing

A. Adding 1/3 solder pastes in a steel screen by supplementing enough solder pastes in a manner of small amount in a several times to maintain the quality of solder pastes.

B. The solder pastes that have not run out, which do not place together with those unused solder pastes. They should be put it other container. After being used unsealed, the solder pastes should be completely used under a room temperature within 24 hours.

C. For the solder pastes that have not run out for the first day, it is recommend that unused solder pastes on the other day will be mixed with new solder paste in the ration of 1:2 for mixing and using ,and they will be used in a manner of adding in a small amount in several times.

D. When solder pastes printed on substrates, it is recommended that elements should be placed into the reflow furnace within 4 to 6 hours.

E. When wire exchange exceeds on hour or more, please scrape the solder paste up from the steel screen and put it into the solder pastes container for sealing.

F. Not contact with the skin as possible. In case of any such contact, please use isopropanol for rinsing, and try to avoid inhalation of the volatile gases.

Five Reflow

The tracing analysis of 62/36/2 solder paste in low temperature

100—150℃(preheating zone)

As the paste use organic acid steam in high temperature and rosin to remove the oxide layer, and they will not exerting activity until the temperature over 100.So we must have ample time to use it before rise up to 150℃, in this zone rise up fast will cause that, organic acid have not been used completely ,but change into gasification, weaken paste actual activity: if rise

slowly, there is not adequate heat energy, and can not play a role. Within 80~140 seconds, it has ample time to remove the oxide layer, and the elements with the PCB pad have a reasonable preheating process, insufficient time may cause the paste adverse proliferation on pad.

150--178℃(heating zone)

This stage is the part and the PCB pad full preheating builds the foundation for the soldering tin welding proliferation, this stage organic acid can continue to eliminate the oxide layer, more importantly must cause the PCB pad and the part entire physical ability steadily elevates temperature to in front of the tin powder melting point temperature, excessively quickly can create on the Scabbard the part temperature not unified to be able to create the part to set up and big IC PIN climbs not good, for is appropriate to the tin proliferation disadvantageous. 40-80 seconds are suitable. This may guarantee the big part also have the full elevation to rise up temperature.

178--178℃(melt dissolve zone)(Vertex temperature 220 or 230℃)

This zone is a key what the soldering tin melts, it divides into following stages:

178--200℃

Organic acid at 200℃ occur gasification, it must play a role before the gasification, usually, tin have a good soldering spread only when the paste get ample energy in a short time, about 90% spread completed in this short time, the temperature that from 178 rise up to 200 must complete within 20 seconds, so that tin can get ample energy to spread in good condition.

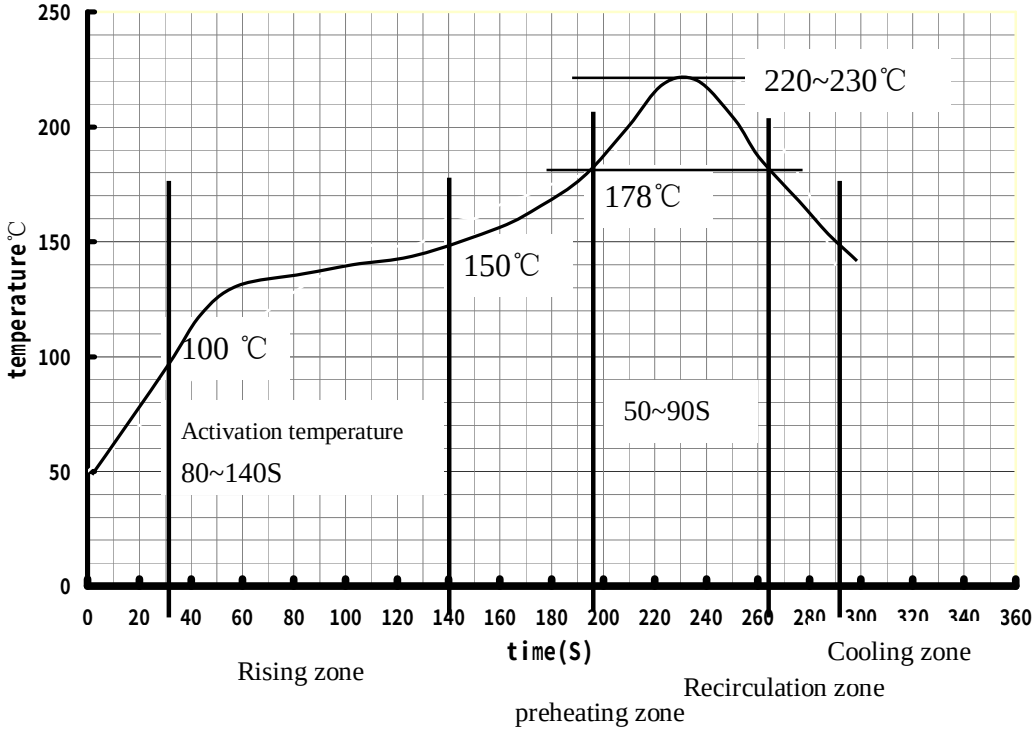
200--220 or 230℃

In this zone, usually, tin have a good soldering spread only when the paste get ample energy in a short time. Higher temperature and longer time will cause welding spot discolor, the white printing on the circuit board and the yellow caused by rosin oxidation will influence exterior, so heating between 20~30 seconds at the most. If the element is lead free, please set the vertex temperature at 230℃, the time that over 217℃ should be 30 seconds at least. So that, the element foot solder can melt and no tack welding.

220 or 230--183℃

This zone is cooling zone, generally fulfill within 30-50 seconds, it is safe to welding spots, elements and PCB pad to cool down. Higher temperature and longer time will cause welding spot discolor, the white printing on the circuit board and the yellow caused by rosin oxidation will influence exterior.

63/37 paste furnace temperature reference curve



Notes: for there are some differences in PCB size, thickness, material and element, grant that with the same return furnace, set at the same temperature, the reference curve will not be the same finally, so please base on different PCB pad to adjusting furnace temperature setting.

Six Packaging

The standard packing is 500 grams per pot, 5 kilograms per paper box,10 kilograms per foam box (with ice bag protection).

Seven Label

a) solder paste model
b) alloy
c) Batch number
d) Granularity (grit number）
e) Net weight
f) Production batch number
g) Durability

Eight The definition of end product batch number