SHEN MAO

SOLDER PASTE

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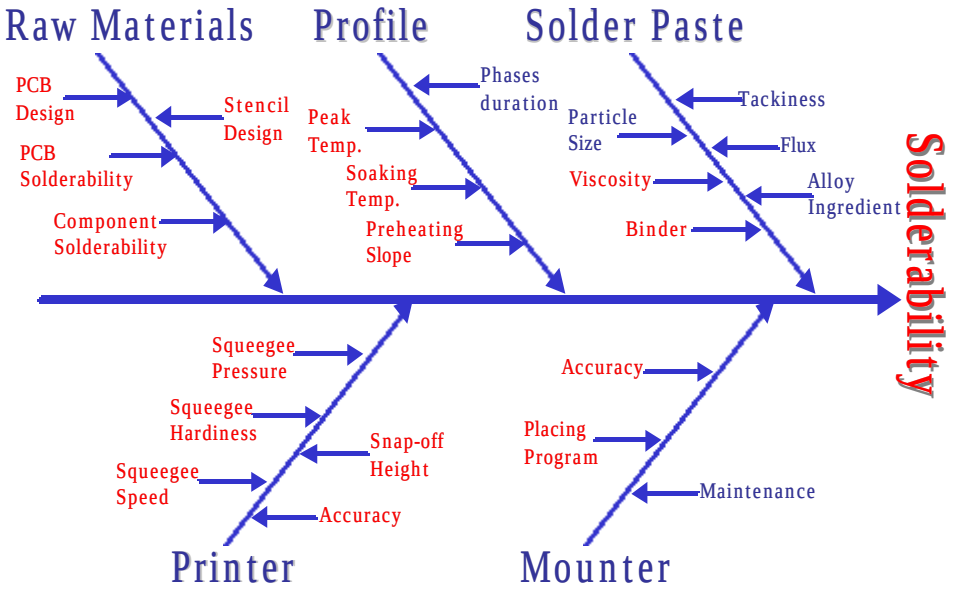
MODEL：NO CLEAN

PRODUCTS DATA

SH-6309RMA

(type3)



SHENMAO TECHNOLOGY INC.

SOLDER PASTE

1、SPECIFICATIONS

(1)、Specification----SH-6309RMA

NO	ITEM	SH-6309RMA
1	Appearance	Gray paste, No foreign, No Stiff
2	Alloy	63± 1.0WT%Sn ~~Pb
3	Particle Size	+45μm 1% less, —20μm 10% less
4	Powder Shape	Sphere
5	Flux Content	9.5 ± 0.5wt%
6	Halide Content	0.05 ± 0.02wt%(in flux)
7	Viscosity	190 ± 30 Pa.s (25+1℃)
8	Flux Type	Rosin Flux

SH-6309RMA		
ITEM	SPECIFICATIONS	REMARKS
Appearance	Gray paste, No foreign No Stiff	
Alloy Composition	Sn63/Pb37	JIS Z 3282 A class
Melting Point	183℃	
Particle Size	20~45μm	
Flux Content(%)	9.5	
Halide Content(%)	0.05	JIS Z 3197
Water Extracting Resistance Ω	100000	QQ-S-571E
Surface Insulation Resistance Ω	1×10^{12} Up	JIS-Z-3284
Viscosity (Pa.s)	200	Malcom 25℃ 10rpm
Spread Factor (%)	88-94	JIS Z 3197
Solder Ball	0~10	JIS Z 3284
Copper Board Corrosion	No	JIS Z 3197
Hot Slump	0.009mm	JIS Z 3284
Flux Residue Tackness	No	JIS Z 3284

●S.I.R Test Conditions：40℃, 95% RH

2、TECHNICAL TEST DATA

(1)、Copper Plate Corrosion Test

Test Method JIS-Z-3197 6.6.1

1、Place 0.3g of solder paste on the copper plate。

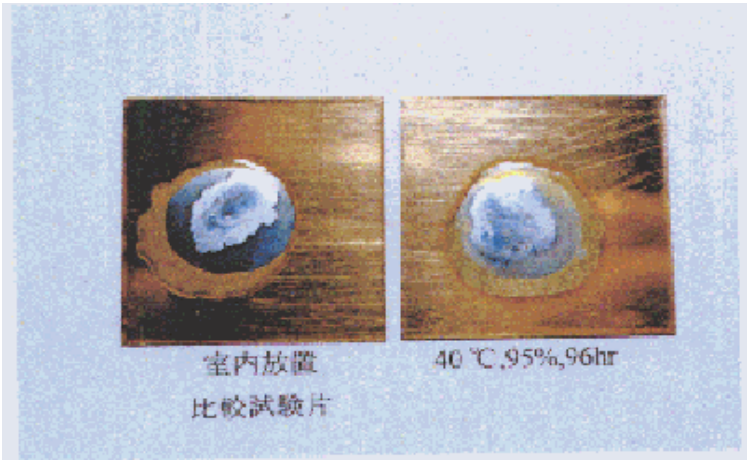
2、Carrying this test panel on a heat board of 220℃ a solder is melted. Maintain this position for 5 seconds.。

3、This test panel is cooled to room temperature. Leave this test panel for 96 hours a holder, to 40 and 95%relative humidity.。

Result

(PASS)

That corrosion is not more remarkable in comparison with comparative panel of room temperature storage。



(2)、SPREAD TEST

Test Method JIS-Z-3197 6.10

1、Place 0.3g of solder paste on the copper plate。

2、Carrying this test panel on a heat board of 220℃ a solder is melted at 30sec。

3、After removal flux residue , measure the height of a oslder。

4、Solder spreadability is calculated from the height of a solder。

Solder spreadability＝100(D－H)/D

H：The height of a solder (mm)

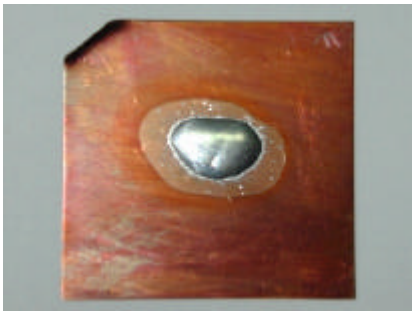
D：The diameter of case that considered a solder as a ball

D：$1.24V^{1/3}$

V：The weight of Solder paste / Specific gravity

Result

Sample	Solder spreadability
1	94.0
2	93.8
3	94.7
Average	94.2



(3)、Chlorides and Bromides

Test Method QQ-S-571E 4.7.3.3

1. One drop of flux solution shall be placed on a small dry piece of silver chromate test paper。
2. The test paper shall be visually examined for color change。
3. The test paper must not change color to white or yellow white。

Result

PASS

(4)、Copper Mirror Test

Test Method QQ-S-571E 4.7.9

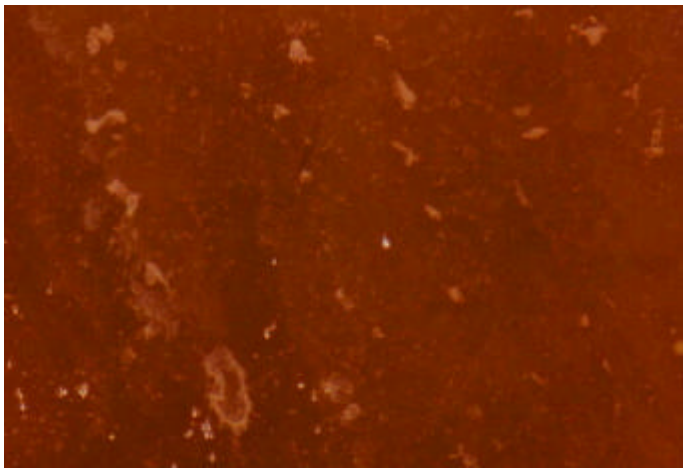
1、Approximately 0.05ml of the flux solution shall be placed to the copper mirror。

2、The mirror shall be placed in a cabinet at 23±2℃ and 50±5%RH humidity for 24 hours。

3、The copper mirror must not removal of the cooper film, as evidenced by the white background showing through。

Result

PASS



(5)、S.I.R TEST

Test Method JIS-Z-3284

1、Use the test pattern which consists of comb pattern.(pitch：0.318mm) 。

2、Measurements shall be determined in the chamber under the test condition at 40℃ and 95%RH humidity。

3、After conditioning at 1000 hours, measurement was hone with room temperature。

Result

No.		Initial (*)	24 hr	96 hr	168 hr	500 hr	1000 hr	1000 hr
1	1	$5.0x10^{12}$	$3.0x10^{12}$	$8.5x10^{11}$	$5.0x10^{11}$	$1.4x10^{11}$	$2.2x10^{11}$	$2.4x10^{12}$
	2	$6.0x10^{12}$	$3.0x10^{12}$	$1.1x10^{12}$	$6.0x10^{11}$	$1.2x10^{11}$	$2.8x10^{11}$	$3.0x10^{12}$
	3	$6.0x10^{12}$	$2.8x10^{12}$	$7.0x10^{11}$	$4.5x10^{11}$	$2.0x10^{11}$	$3.0x10^{11}$	$3.0x10^{12}$
	4	$8.0x10^{12}$	$5.0x10^{12}$	$1.2x10^{12}$	$4.5x10^{11}$	$1.8x10^{11}$	$2.8x10^{11}$	$3.5x10^{12}$
2	1	$1.0x10^{13}$	$3.5x10^{12}$	$1.7x10^{12}$	$1.2x10^{12}$	$3.5x10^{11}$	$6.5x10^{11}$	$5.0x10^{12}$
	2	$1.2x10^{13}$	$3.0x10^{12}$	$1.2x10^{12}$	$1.0x10^{12}$	$4.5x10^{11}$	$5.0x10^{11}$	$4.5x10^{12}$
	3	$1.0x10^{13}$	$5.6x10^{12}$	$1.6x10^{12}$	$1.0x10^{12}$	$3.0x10^{11}$	$5.2x10^{11}$	$7.5x10^{12}$
	4	$1.4x10^{13}$	$4.0x10^{12}$	$1.6x10^{12}$	$1.0x10^{12}$	$2.8x10^{11}$	$6.0x10^{11}$	$5.8x10^{12}$
3	1	$1.2x10^{13}$	$4.0x10^{12}$	$1.7x10^{12}$	$1.3x10^{12}$	$5.0x10^{11}$	$6.6x10^{11}$	$4.0x10^{12}$
	2	$1.1x10^{13}$	$2.0x10^{12}$	$1.5x10^{12}$	$1.2x10^{12}$	$5.0x10^{11}$	$7.0x10^{11}$	$4.0x10^{12}$
	3	$9.0x10^{12}$	$2.2x10^{12}$	$1.2x10^{12}$	$1.0x10^{12}$	$4.0x10^{11}$	$6.0x10^{11}$	$5.0x10^{12}$
	4	$1.0x10^{13}$	$1.8x10^{12}$	$9.0x10^{11}$	$8.5x10^{11}$	$4.0x10^{11}$	$7.5x10^{11}$	$5.2x10^{12}$
Blank	1	$2.2x10^{13}$	$2.0x10^{11}$	$2.0x10^{11}$	$1.5x10^{11}$	$3.0x10^{11}$	$3.0x10^{11}$	$6.0x10^{12}$
	2	$2.0x10^{13}$	$2.4x10^{11}$	$2.0x10^{11}$	$1.5x10^{11}$	$3.0x10^{11}$	$3.5x10^{11}$	$4.0x10^{12}$
	3	$2.6x10^{13}$	$1.6x10^{11}$	$1.8x10^{11}$	$1.4x10^{11}$	$2.8x10^{11}$	$3.0x10^{11}$	$4.5x10^{12}$
	4	$1.5x10^{13}$	$1.5x10^{11}$	$1.2x10^{11}$	$1.7x10^{11}$	$2.6x10^{11}$	$3.5x10^{11}$	$5.0x10^{12}$

(*)room temperature condition (Ω)

(6)、Electro Migration Test

Test Method JIS-Z-3284

1、Use the test pattern which consists of comb pattern. (pitch：0.318mm)。

2、Connect the 45-50V DC voltage source to the specimen test points to apply the bias voltage to all specimens。

3、Measurements shall be determined in the chamber under the test condition at 40℃ and 95% RH humidity.。

4、After conditioning at 1000 hours, measurement was done with room temperature。

Result

1、(PASS)

2、Occurrence of electro migration no

No		Initial	24 hr	96 hr	168 hr	500 hr	1000 hr	1000 hr
1	1	$6.0x10^{12}$	$2.2x10^{12}$	$5.0x10^{11}$	$3.0x10^{11}$	$2.6x10^{11}$	$3.0x10^{11}$	$2.6x10^{12}$
	2	$1.2x10^{13}$	$2.0x10^{12}$	$3.5x10^{11}$	$2.8x10^{11}$	$2.8x10^{11}$	$3.0x10^{11}$	$2.2x10^{12}$
	3	$8.0x10^{12}$	$2.0x10^{12}$	$3.5x10^{11}$	$3.0x10^{11}$	$2.6x10^{11}$	$4.0x10^{11}$	$3.5x10^{12}$
	4	$1.0x10^{13}$	$2.8x10^{12}$	$4.0x10^{11}$	$3.0x10^{11}$	$2.2x10^{11}$	$2.8x10^{11}$	$3.0x10^{12}$
2	1	$5.0x10^{12}$	$2.0x10^{12}$	$6.5x10^{11}$	$3.5x10^{11}$	$2.4x10^{11}$	$4.0x10^{11}$	$3.0x10^{12}$
	2	$5.0x10^{12}$	$3.0x10^{12}$	$5.0x10^{11}$	$2.6x10^{11}$	$2.2x10^{11}$	$3.0x10^{11}$	$2.4x10^{12}$
	3	$4.5x10^{12}$	$3.5x10^{12}$	$6.2x10^{11}$	$2.8x10^{11}$	$2.6x10^{11}$	$4.0x10^{11}$	$2.6x10^{12}$
	4	$4.0x10^{12}$	$3.0x10^{12}$	$5.4x10^{11}$	$2.6x10^{11}$	$3.0x10^{11}$	$5.0x10^{11}$	$3.0x10^{12}$
3	1	$8.0x10^{12}$	$2.0x10^{12}$	$8.5x10^{11}$	$4.0x10^{11}$	$2.8x10^{11}$	$6.6x10^{11}$	$5.0x10^{12}$
	2	$7.0x10^{12}$	$2.0x10^{12}$	$7.5x10^{11}$	$3.5x10^{11}$	$3.0x10^{11}$	$6.0x10^{11}$	$4.5x10^{12}$
	3	$1.0x10^{13}$	$2.2x10^{12}$	$8.5x10^{11}$	$3.5x10^{11}$	$3.5x10^{11}$	$5.0x10^{11}$	$4.0x10^{12}$
	4	$1.2x10^{13}$	$2.6x10^{12}$	$6.8x10^{11}$	$3.0x10^{11}$	$3.5x10^{11}$	$5.6x10^{11}$	$5.0x10^{12}$
Blank	1	$9.0x10^{12}$	$2.0x10^{11}$	$3.0x10^{11}$	$3.0x10^{11}$	$4.0x10^{11}$	$5.0x10^{11}$	$6.0x10^{12}$
	2	$1.4x10^{13}$	$2.0x10^{11}$	$2.8x10^{11}$	$3.0x10^{11}$	$3.0x10^{11}$	$3.5x10^{11}$	$5.0x10^{12}$
	3	$1.1x10^{13}$	$2.6x10^{11}$	$3.5x10^{11}$	$3.5x10^{11}$	$4.0x10^{11}$	$4.0x10^{11}$	$5.2x10^{12}$
	4	$1.1x10^{13}$	$2.2x10^{11}$	$3.0x10^{11}$	$3.0x10^{11}$	$4.5x10^{11}$	$5.2x10^{11}$	$5.0x10^{12}$

(＊) room temperature condition (Ω)

(7)、Temperature–Viscosity Test

Test Method

1、Viscosity is measured, while changing the temperature of Solder paste。

2、Measurement Device：PCU-203 (Malcom)。

3、Rotation：10 rpm

4、Temperature：15-30℃。

Result

Tem(℃)	15	16	17	18	19	20	21	22
Viscosity	300	290	280	270	260	250	240	230

Tem(℃)	23	24	25	26	27	28	29	30
Viscosity	220	210	200	190	180	170	160	150

Tem unit(℃) Viscosity unit(Pa.s)

(8)、Tackiness Test

Test Method JIS-Z-3284

1、Print the solder paste on the test plate to 0.2mm thickness, 6.5mm diameter。

2、The prepared test plates shall be stored at 25℃ and 50%RH humidity。

3、Measurement Device：LT25A-500(Rhesca)。

4、Probe Down speed：2.0mm/sec。

5、Probe Up speed：10mm/sec。

6、Press force：50g。

Result

Time / No	0 hr	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	24 hr	48 hr
1	98.4	100.6	108.5	106.4	106.1	106.1	109.6	106.7	115.9	135.1	33.3
2	98.7	104.5	110.7	106.1	108.5	105.0	114.2	106.1	116.2	134.8	29.3
3	97.1	107.9	109.6	110.7	108.5	112.2	107.7	107.6	115.1	129.4	35.0
4	98.9	108.5	109.6	114.2	109.0	110.7	115.3	108.5	111.0	136.8	34.1
5	97.2	103.0	113.3	108.7	115.3	107.9	106.4	112.7	113.6	138.6	23.7
Average	97.4	104.9	110.3	109.2	109.5	108.4	110.8	108.3	114.4	134.9	31.1

Unit(kN/m^2)

(9)、Slump Test

Test Method

1、Print solder paste to a test board and insert it in the cabinet of 150℃ and heat for one minute。

2、Measure the printing width at after printing and after heating.。

3、Printing condition

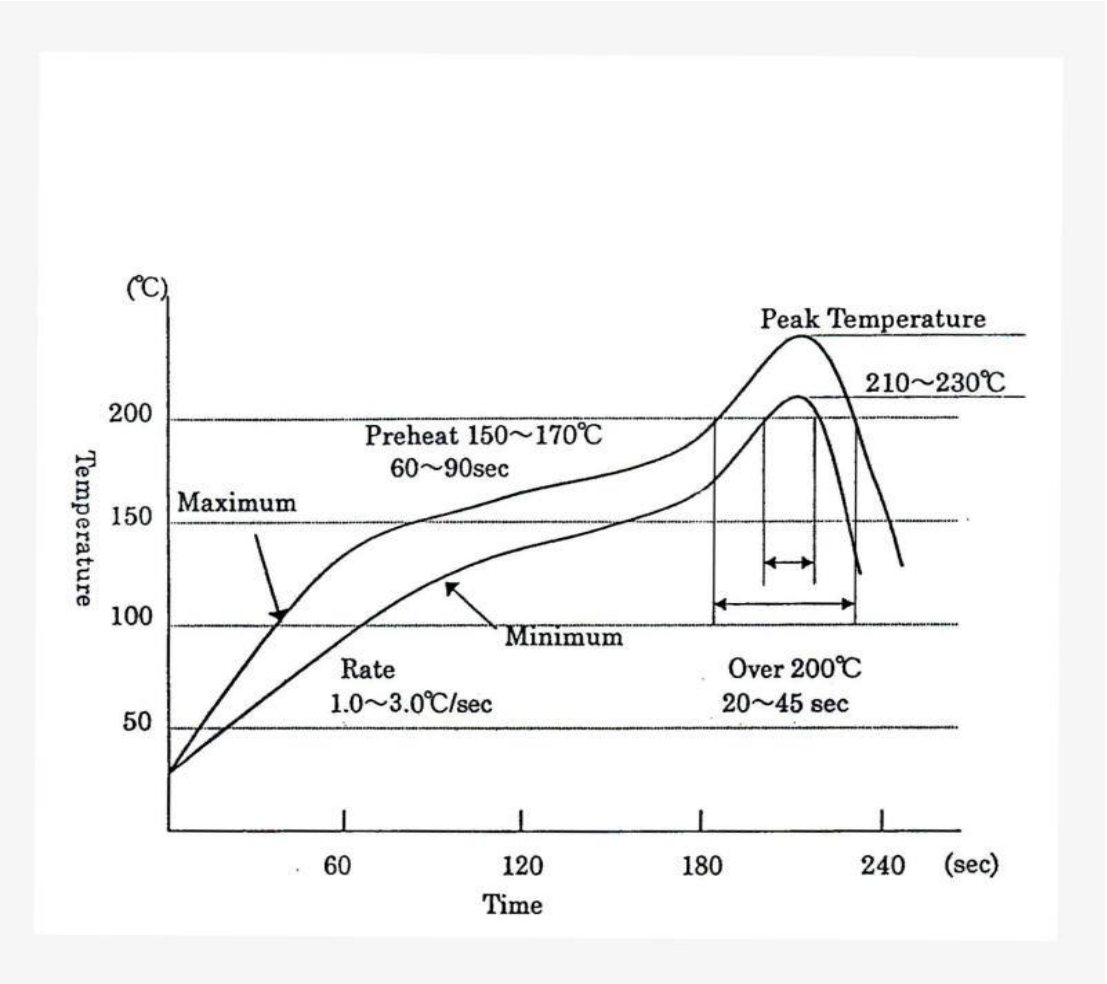
Printing pressure ：1.0kg
Squeegee material：Urethane
Squeegee speed ：30mm/sec
Stencil material ：Stainless steel (Laser processing)
Stencil thickness ：150μm(Open size 0.52×5.0mm)

Result

Point	Size after printing	Size after heating	Slump width
1	0.506	0.511	0.005
2	0.506	0.517	0.011
3	0.510	0.527	0.017
4	0.501	0.520	0.019
5	0.498	0.524	0.026
6	0.525	0.527	0.002
7	0.515	0.521	0.006
8	0.505	0.509	0.004
9	0.509	0.510	0.001
10	0.521	0.525	0.004
Average	0.510	0.519	0.009

Unit(mm)

4、Temperature Profile



5、Handling and Storage Instruction

1. Storage

(1) Keep in 0~10℃ temperature.

(2) Expiration period: 6 months from production date (sealed condition).

(3) Keep out of direct sunlight.

2. Operation Manual (Sealed)

(1) Keep solder paste in room temperature (25 ± 2℃) for 3~4 hours. Do not use any heater to raise temperature.

(2) Kindly mixed averagely for 3~5 minutes according to necessity.

3. Operation Manual (Opened)

(1) At first, add 2/3 can of solder paste onto the stencil, do not add more than 1 can of which.

(2) Add solder paste a little at a time according to production procedure.

(3) To maintain the solder paste quality, please make sure not to storage the opened can with sealed can.

(4) Use new opened solder paste at the beginning of the next day. Mix opened solder paste with sealed one at ratio 1:2, add a little at a time during printing.

(5) Soon after printing, please make sure all components to be mount on printed circuit board between 4~6 hours.

(6) Please withdraw solder paste from stencil and seal kindly if printing progress would pause for more than 1 hour.

(7) After continuously printing for 24 hours, kindly withdraw printed solder paste and follow step (4).

(8) It is recommended to clean both side of stencil every 4 hours manually to ensure printing quality.

(9) Kindly keep room temperature between 22~28℃, room humidity RH 30~60% is recommended.

(10) To clean up the defect printed board, kindly use isoprophyl alcohol or IPA.