SHENMAO SOLDER
Solder Paste

LEAD-FREE SOLDER PASTE SERIES

All alloy composition were to conform to SONY Green Partner and comply RoHS requirement

Item / Product Code	Alloy Composition	Melting Point (℃)	Gravity	Strength (kgf/mm)	Elongation(%)
PF602	Sn/Bi58	138	8.56	7.80	27
PF603	Sn/Ag3.5/	221	7.36	4.18	58
*PF606	Sn/Ag3.0/Cu0.5/X	217~219	7.40	5.30	47
*PF607	Sn/Ag3.5/Cu0.7/X	217~219	7.42	5.34	48
*PF608	Sn/Ag3.9/Cu0.6/X	217~219	7.42	5.34	48
*PF609	Sn/Ag3.8/Cu0.7/X	217~219	7.42	5.34	48
*PF610	Sn/Ag3.0/Cu0.5/ Ni0.06/Ge0.01	217~219	7.40	5.40	48
PF612	Sn/Zn8.0/Bi3.0	190~199	7.3	6.60	27
*PF614	Sn/Ag4.0/Cu0.5/X	217~219	7.42	5.34	48
PF623	Sn/Sb5	236~243	7.3	5.1	35
**PF636	Sn/Ag3.0/Cu0.5	217~219	7.40	5.30	47
**PF637	Sn/Ag3.5/Cu0.7	217~219	7.42	5.34	48
**PF638	Sn/Ag3.9/Cu0.6	217~219	7.42	5.34	48
**PF639	Sn/Ag3.8/Cu0.7	217~219	7.42	5.34	48
**PF640	Sn/Ag4.0/Cu0.5	217~219	7.42	5.34	48

" * " Fuji Electric Holdings Co. Patent No.: Japan No.3296289,U.S No.6179935B1,Germany No.19816671C2
(" * " add content of percentage of Ni and Ge) (Max:100ppm)

" ** " Iowa State University Research Foundation Inc Patent No.: U.S No.5527628

FLUX FOR LEAD FREE SOLDER PASTE

Characteristics:

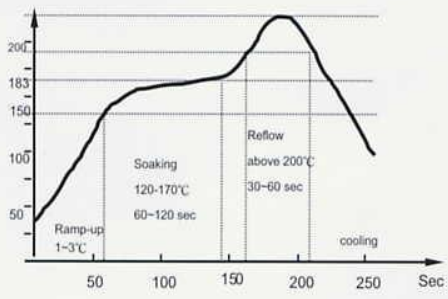
1. Excellent Performance on Circuit Tester
2. High Print Speed: 0-120 mm/Sec
3. Over 8hrs stencil life
4. Excellent Wettability
5. Low Void
6. Extended Tack Time > 12 hrs

Item / Product	P	P25	P27	P58	PW
Particle Size (μ m)	20-45 20-38	20-45 20-38	45-75 20-45	20-45 20-38	20-45 20-38
Flux Content (%)	11±0.5	11±0.5	12±0.5	11±0.5	11±0.5
Flux Type	ROL1	ROL0	ROL1	ROL1	ORH0
Halide Content (%)	0.05±0.02	0	0.1±0.02	0.05±0.02	0
Fluorine	None	None	None	None	None
Viscosity (Pa.s)	200±30	200±30	180±30	200±30	200±50
Spread (%)	75 up	75 up	75 up	75 up	80 up
Tackiness (gf)	140 up	140 up	125 up	140 up	140 up
Slump Test	Less than 0.3mm	Less than 0.3mm	Less than 0.3mm	Less than 0.3mm	Less than 0.3mm
Copper Plate Corrosion Test	PASS	PASS	PASS	PASS	PASS
Copper Mirror Test	PASS	PASS	PASS	PASS	PASS
Silver Chromate Test	PASS	PASS	PASS	PASS	PASS
S.I.R	> 1×10^9	> 1×10^9	> 1×10^9	> 1×10^9	> 1×10^9
Electro Migration	PASS	PASS	PASS	PASS	PASS
Application Alloy Series	All Pb-Free alloy Series	All Pb-Free alloy Series	Low temperature alloy Series	All Pb-Free alloy Series	All Pb-Free alloy Series
Remark	Recommended for fine pitch 0.4mm print applications	Excellent Performance on ICT	Recommended for heat-sink applications	Designed for long time printing	Recommended for water-soluble applications

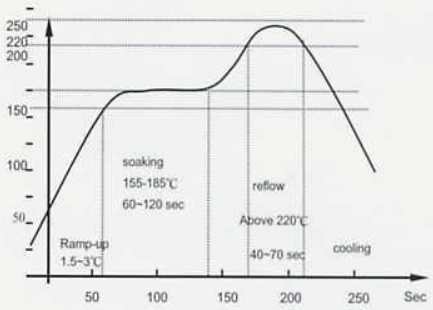
S.I.R Test Condition: 85℃, RH 85% Electro Migration Test Condition: 65℃, RH 85%

- We also provide lead free micro solder paste for flip chip process, Please contact us for more information.

RECOMMENDED TEMPERATURE PROFILE

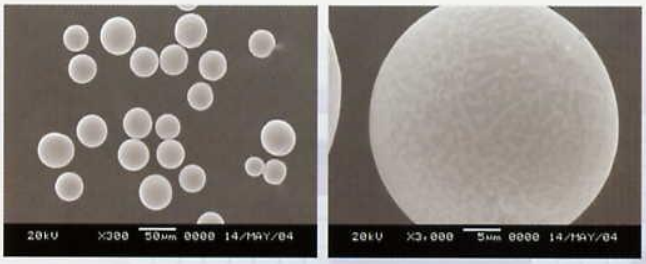


Tin/Lead Solder Paste



Lead-Free Solder Paste

SOLDER POWDER



Standard: J-STD-005

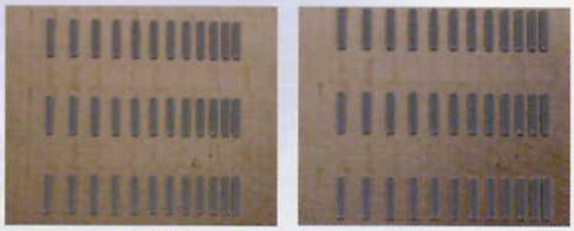
Grade	% of sample by weight-Nominal Size		
	Less than 1% Larger than	90% minimum between	10% maximum less than
Type2	75 microns	75~45 microns	20 microns
Type3	45 microns	45~25 microns	20 microns
Type4	38 microns	38~20 microns	20 microns
Type5	25microns	25~15 microns	15 microns
Type6	15microns	15~5 microns	5 microns

Sn-Ag-Cu SERIES TECHNICAL TEST DATA

Solder Ball Test--- (Method: IPC-TM-650,2.4.43)

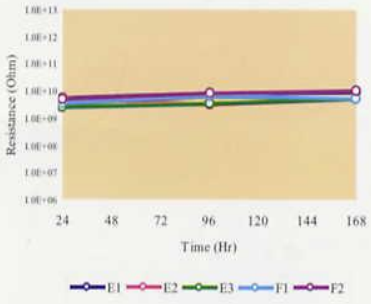
After 15 minutes After 4 hrs

Slump Test---(Method: JIS-Z-3284 Annex 7)

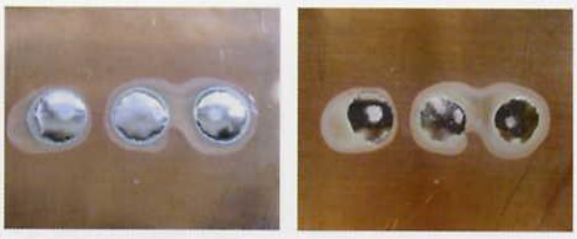


Initial After 1 hr

S.I.R Test---(Method: IPC-TM-650,2.6.3.3)



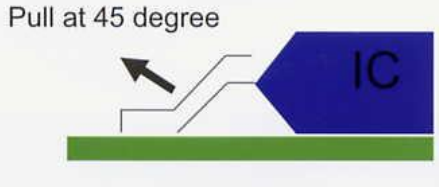
Corrosion---(Method: IPC-TM-650, 2.6.15)

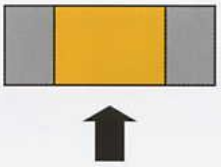


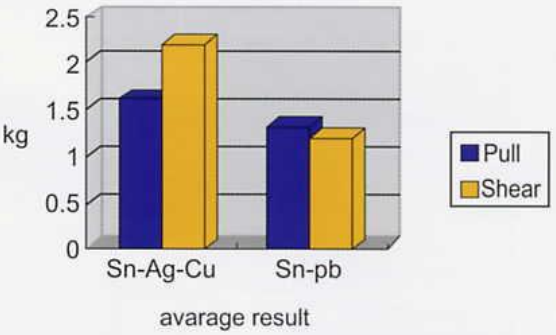
Initial 40℃,RH90%, 240hrs

Sn-Ag-Cu SERIES REALIABILITY TEST DATA

◆ QFP lead pull strength and Chip Shear strength test





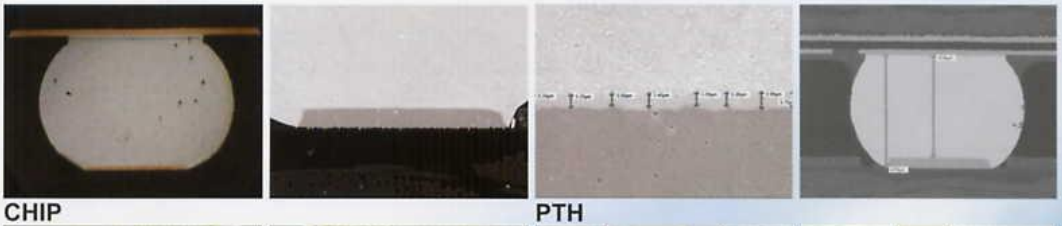


avarage result

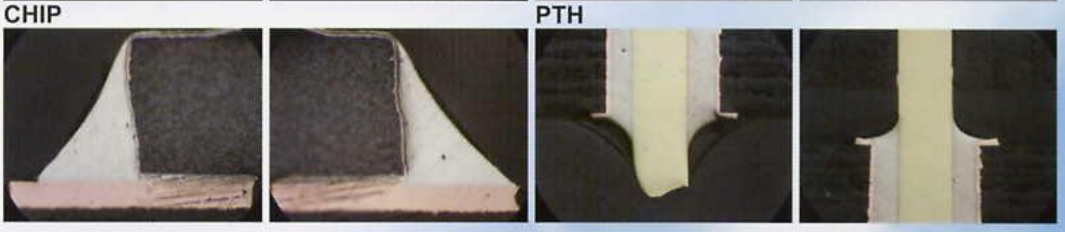
Pull and push speed: 1.0mm/sec

◆ Cross section

BGA



CHIP PTH



Microscope and SEM are employed to inspect the joint quality.

◆ Dye Stain Test

Dye stain test is employed to monitor the cracking of joint.

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Sn/Pb SOLDER PASTE SERIES

Characteristics:

1. High Print Speed up to 120 mm/sec.
2. Reflow with or without nitrogen.
3. Over 8hrs stencil life.
4. Excellent Wettability.
5. Low Void.
6. Extended Tack Time >12h

Item \ Product	SH-6309RMA	SH-6209RMA	SH-6209-04	SH-6311	SH-6320	SH-6370
Alloy	Sn63/Pb37	Sn62/Pb36/Ag2	Sn62.8/Pb36.8/Ag0.4	Sn63/Pb37	Sn63/Pb37	Sn63/Pb37
Melting Point (℃)	183	179	179~183	183	183	183
Particle Size (μm)	20-45 20-38	20-45 20-38	20-45 20-38	20-45 20-38	45-75 20-45	20-45 20-38
Flux Content (%)	9.5±0.5	9.5±0.5	9.5±0.5	9.5±0.5	8.0±0.5	9.5±0.5
Flux Type	ROL0	ROL0	ROL0	ROL1	ROL1	ORL1
Halide content (%)	0	0	0	0.1	0.1	0.05
Fluoride	None	None	None	None	None	None
Viscosity (Pa.s)	200±30	200±30	200±30	200±30	180±30	200±30
Spread (%)	88~90	90~92	90~92	92~94	92~94	90~92
Tackiness (gf)	140	140	140	140	110	140
Corrosion	PASS	PASS	PASS	PASS	PASS	PASS
S.I.R	$> 1 \times 10^9$	$> 1 \times 10^9$	$> 1 \times 10^9$	$> 1 \times 10^9$	$> 1 \times 10^9$	$> 1 \times 10^9$
Electro Migration	PASS	PASS	PASS	PASS	PASS	PASS

Sn/Pb SOLDER PASTE SPECIAL SERIES

These solder pastes are for special soldering applications. e.g. water-soluble, high-temperature solder and flip-chip process.

Item \ Product	SH-6388WA (water-soluble)	SH-10882WA (water-soluble)	SH-10882	SH-6390	SH-6391	SH-6392
Alloy	Sn63/Pb37	Sn10/Pb88/Ag2	Sn10/Pb88/Ag2	Sn63/Pb37	Sn63/Pb37	Sn63/Pb37
Melting Point (℃)	183	268~290	268~290	183	183	183
Particle Size (μm)	20-45 20-38	20-45 20-38	20-45 20-38	15-30	10-20	5-15
Flux Content (%)	11±0.5	11±0.5	10±0.5	10±0.5	10±0.5	10±0.5
Flux Type	ORH0	ORH0	ROL1	ROL1	ROL1	ROL1
Halide content (%)	0	0	0.05	0.05	0.05	0.05
Fluoride	None	None	None	None	None	None
Viscosity (Pa.s)	200±50	200±50	200±30	180±50	190±50	200±50
Spread (%)	90	90	90	90	90	90
Tackiness (gf)	130	130	140	140	140	140
Corrosion	PASS	PASS	PASS	PASS	PASS	PASS
S.I.R	$> 1 \times 10^9$	$> 1 \times 10^9$	$> 1 \times 10^9$	$> 1 \times 10^9$	$> 1 \times 10^9$	$> 1 \times 10^9$
Electro Migration	PASS	PASS	PASS	PASS	PASS	PASS

- S.I.R Test Condition: 85℃, RH 85%