

# PRODUCT PROFILE

## ELECTROLOY NO CLEAN LEAD FREE PASTE

### Product Name

#233 – LEAD FREE PASTE – Sn42/Bi58

### Product Code

EMCO#233-302P

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DOC CATEGORY: 3

PF – EMCO#233-302P – 15082011 – REV.B – Page 1 of 7



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## PRODUCT DESCRIPTION

Electroloy's EMCO #233-302P Lead Free Low Temperature solder paste is specifically design with a rosin base paste flux for lead free solder processes. This paste offers an excellent repeatability & consistency as well as exceptional wetting capabilities for low temperature applications.

## ATTRIBUTES

- Pin- testable Residue
- ROL1 to IPC J-STD-004
- Good slump resistance
- Good tack performance and printer open time
- Extended "between-print" abandon time
- Clear, colorless residues

## CHEMICAL COMPOSITION OF ALLOY

Quality of Electroloy's EMCO#233-302P lead free solder paste in terms of composition of alloy is controlled strictly under Electroloy's Lead Free Specification LF-302.

Elements		Specification (%wt/wt)
Tin	Sn	41.0-43.0
Lead	Pb	Max 0.050
Aluminium	Al	Max 0.005
Antimony	Sb	Max 0.050
Arsenic	As	Max 0.030
Bismuth	Bi	Remainder
Copper	Cu	Max 0.080
Iron	Fe	Max 0.010
Zinc	Zn	Max 0.003
Cadmium	Cd	Max 0.002
Silver	Ag	Max 0.050
Nickel	Ni	Max 0.010
Indium	In	Max 0.050
Gold	Au	Max 0.050

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## PHYSICAL APPEARANCE

Electroloy's solder paste exhibits a homogenous solder paste which is grey color.

## PARTICLE SIZE OF SOLDER POWDER

The particle size of solder powder is compliant with the International Standard Specification IPC J-STD-005.

%Of Sample By Weights	Nominal Size
Less than 1% larger than	45 microns
80% minimum between	45-25 microns
10% maximum less than	20 microns

## CHARACTERISTICS OF EMCO#233-302P SOLDER PASTE (25-45µm)

Item	Characteristics	Test Method
Viscosity value	150,000 ± 30,000 cp	PCU-203, 10rpm, 25°C
Flux activity (per IPC J-STD-004)	ROL1	-
Corrosion of copper plate	Pass	IPC-TM-650 Method 2.6.15
Flux content	9.5 ± 0.5%	JIS Z 3197
Wetting Test	Pass	IPC-TM-650 Method 2.4.45
Solder Ball Test	Pass	IPC-TM-650 Method 2.4.43
Typical Tackiness (gf)	30.6	IPC-TM-650 Method 2.4.44
Slump Test	Pass	IPC-TM-650 Method 2.4.35
Typical SIR, at 168hrs (ohm)	≥1 x 10 <sup>10</sup>	IPC-TM-650 Method 2.6.3.3

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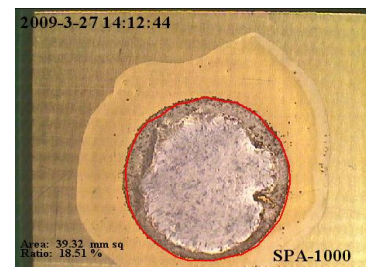
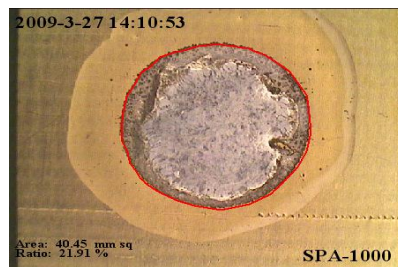
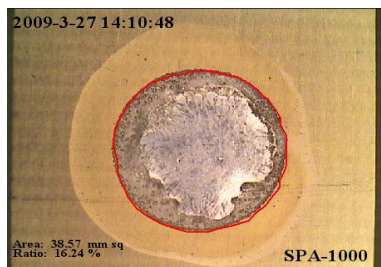
## TEST CONDUCTED AND RESULT

- (1) Wetting Test
- (2) Solder Ball Test
- (3) Tack Test

Equipment used: Solder Paste Analyzer SPA-1000

### (1) Wetting Test

Test Method	IPC-TM-650 Method 2.4.45
Test Temp (°C)	163
Test Time (Sec)	30
Result	Uniformly wet the copper coupon without evidence of dewetting or non-wetting.



### (2) Solder Ball Test

Test Method	IPC-TM-650 Method 2.4.43
Test Temp (°C)	163
Test Time (Sec)	30
Result	Pass



Before heating



After heating 10x



After heating 30x

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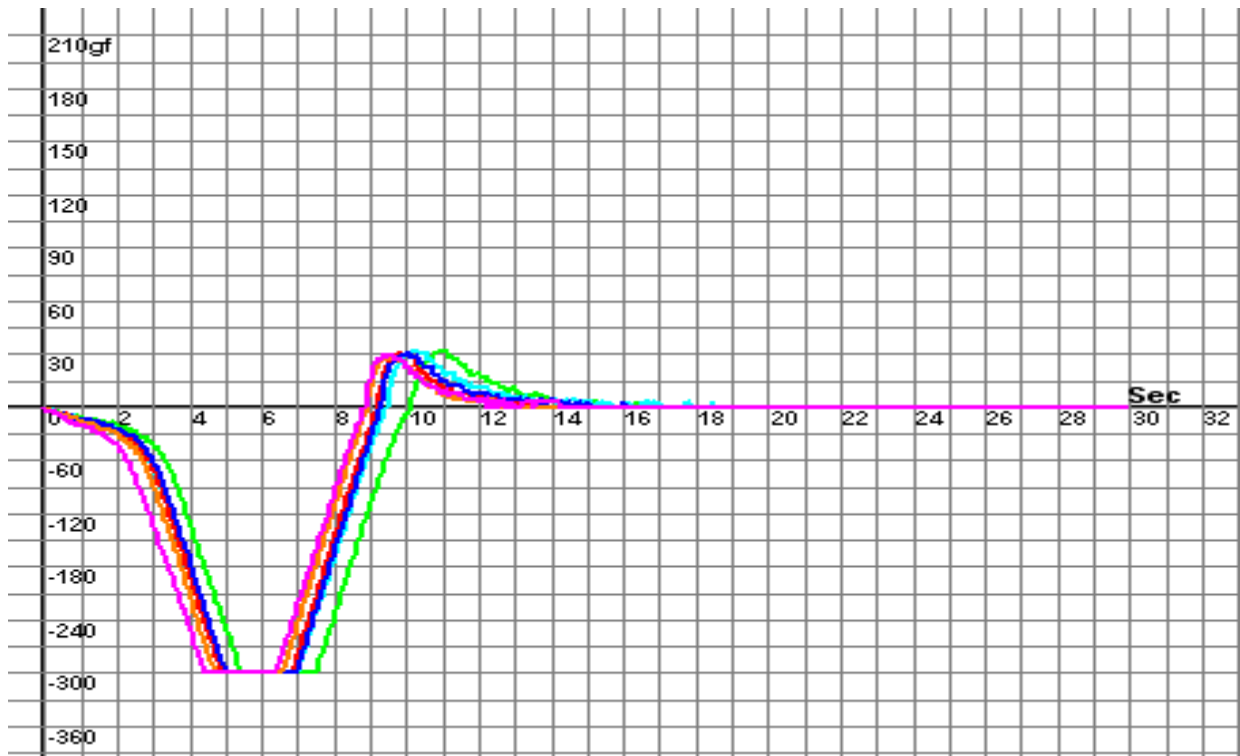
DOC CATEGORY: 3

PF – EMCO#233-302P – 15082011 – REV.B – Page 4 of 7

### (3) Tack Test

Test Method: IPC-TM-650 Method 2.4.44

Test Sample	T80(S)	Tmax(S)	Fmax (GF)	Td80(S)
1	0.40	0.70	31.50	0.95
2	0.30	0.75	32.30	0.95
3	0.30	0.45	30.30	0.80
4	0.25	0.80	30.90	0.85
5	0.30	0.75	28.20	0.85
6	0.25	0.65	30.30	0.90
Result (Av)	0.30	0.68	30.58	0.88

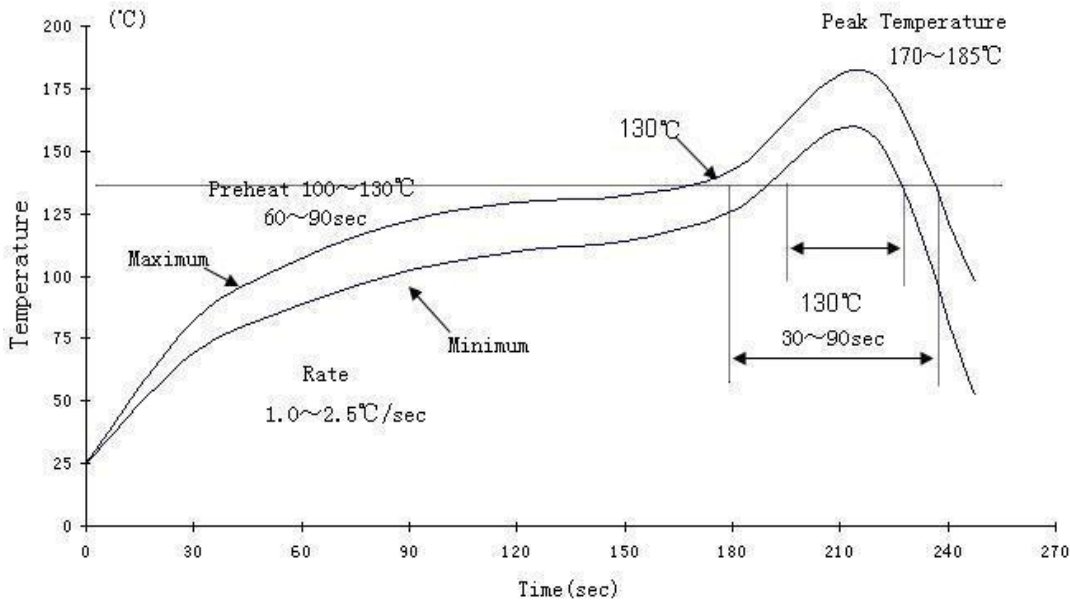


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DOC CATEGORY: 3

PF – EMCO#233-302P – 15082011 – REV.B – Page 5 of 7

## RECOMMENDED REFLOW PROFILE FOR EMCO#233-302P



### Preheat

From room temperature until 100-130°C at a rate of 1-2.5°C/s. Faster rate could result in component cracking due to vaporizing absorbed moisture.

### Soak Zone

Between 100 and 130°C. A soak zone is used to level out temperature differences on a board. It is often used in IR ovens and on boards with a big diversity of components and Cu distribution.

### Ramp up to reflow

Maximum 2.5°C/s because of different thermal expansion coefficients inside the components.

### Reflow

Peak temperature related to component specifications. Peak temperature at 170-185°C for 5-6 sec, more than 130°C for 30-90 sec.

### Cooling

Maximum 2.5°C/s because of different thermal expansion coefficients inside the components.

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## **PACKAGING**

Each tub of solder paste is approximately 0.5kg and shall be sealed tightly. Traceable information will be shown on the sticker such as product code, alloy composition , particle size, net weight and lot number .The solder paste tub shall be placed in foam box and packed in carton boxes of about 10kg per box. Cartridge and syringe type of solder paste is available upon request.

## **STORAGE AND SHELF LIFE**

Please store the product at 10°C or lower. When unopened, it is effective for 6 months from the date of manufacturing. To use the product, retrieve it from the place of storage. Please use the solder paste only after its temperature has resumed to the level of room temperature (leave it to stand for approximately 4-6 hours after retrieval from storage).

## **DELIVERY**

Each order can be shipped with the Certificate of Analysis for each lot.

## **MATERIAL SAFETY DATA SHEET**

A MSDS for this product can be request from our Sales personnel.

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DOC CATEGORY: 3

PF – EMCO#233-302P – 15082011 – REV.B – Page 7 of 7