

## F 620 Series Lead Free Solder Pastes

No Clean Solder Pastes with excellent wetting

### **Description:**

F 620 Solder Paste series is a state-of-the-art lead free no clean solder paste that promotes wetting and minimizes soldering defects. The F 620 flux system is specifically optimized for Sn/Ag/Cu and SnAg alloy soldering. Extensive testing at customer locations has proven this paste to be capable of defect-free performance in the production environment. The F 620 Series exhibits minimal slump and has excellent print-after-wait performance. This formula provides superior performance on a variety of surfaces finishes and leaves behind a clear residue. Reflow can be accomplished in air or nitrogen.

### ◆ **Key Benefits:**

- Exceptional print to print consistency
- Excellent wetting
- 8 hour tack and work life
- Very good print after wait performance
- Fulfills Siemens Norm accord. DIN EN 29454 Part 1 (see Test certificate from April 17, 2004)
- Passes IPC Norm (see Trace Lab report from April 18, 2003)

### **Product indication:**

#### **Indication**

F620Cu0.5-88M3  
F620Ag4-88M3

#### **Alloy**

Sn95.5/Ag4/Cu0.5 (Standard)  
Sn96.5Ag4 (upon request)

Other alloys available upon request.

### **Physical Properties:**

#### **Metal Powder:**

#### Particle size

Type 3 = 25 –45 microns (325/+500 mesh)  
Other powder sizes upon request

#### Shape:

Spherical

#### Melting point

Sn95.5/Ag4/Cu0.5 = 217 °C  
Sn96Ag4 = 221 °C

#### Composition:

Sn95.5/Ag4/Cu0.5 = F620Cu0.5-88M3  
Sn96.5Ag4 = F620Ag4-88M3  
Other lead free alloys upon request

#### Density:

Sn95.5/Ag4/Cu0.5 7,4 g/cc  
Sn96Ag4 7,4 g/cc

#### Ring & Plug (SAC):

Shear stress 42 N/mm<sup>2</sup>

#### Cu Dissolution (SAC):

<96.5/3.5 at 288°C

#### **Solder Paste**

#### Metal Content:

Standard 88% ± 0.7%

#### Viscosity Range:

180 Pa.s ±40 Pas  
Physica CSR 10 rpm.

#### Density:

4,0 g/cc ± 0,3 g/cc

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### Performance Properties:

#### Typical Print Thickness:

0,5 – 0,65 mm pitch: 150 microns  
 <0,5 mm pitch: 120 microns

#### Minimum Pitch:

20 mil (500 microns)

#### Minimum Pad Width:

8 mil (200 microns, stencil thickness 150microns)

#### Slump

Per J-STD-005	
10 min @ 25° C	No bridging at 0.075mm spacing
10 min @ 150°C	

#### Solder Balling:

Per J-STD-005 pass

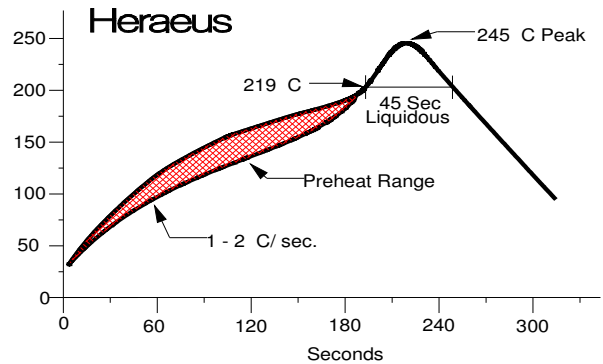
#### Reflow Parameters (recommendation):

For optimum results, the paste should be reflowed at a peak temperature of 15-30°C above the melting temperature of the alloy.

Time above melting temperature should be maintained for 30-90 seconds.

Heating should be uniform across the substrate and components.

Reflow can be accomplished with any industry accepted process in air or N<sub>2</sub>.



### Residue Properties:

#### Flux Activity:

According to J-STD-004 Class L  
 DIN EN 29454 1.2.2.C

#### SIR:

Per IPC SF - 818, Class 3  
 J-STD-004 > 1 x 10<sup>8</sup>

#### Copper Mirror:

Per IPC-SF-818, Pass  
 J-STD-004

#### Silver Chromate Test Paper:

Per - IPC-SF-818, Pass  
 J-STD-004

The descriptions and engineering data shown here have been compiled by Heraeus using commonly-accepted procedures, in conjunction with modern testing equipment, and have been compiled as according to the latest factual knowledge in our possession. The information was up-to-date on the date this document was printed (latest versions can always be supplied upon request). Although the data is considered accurate, we cannot guarantee accuracy, the results obtained from its use, or any patent infringement resulting from its use (unless this is contractually and explicitly agreed in writing, in advance). The data is supplied on the condition that the user shall conduct tests to determine materials suitability for a particular application.

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### **Recommended Processing Guidelines:**

#### Cleaning:

The flux residues may remain on the circuit. They do not need to be cleaned.

If desired, the residues can be washed with diverse Zestron and Vigon cleaning materials - see separate application recommendations.

#### Cleaning wet:

With different Zestron and Vigon cleaning materials see separate recommendations.

If the printing interval exceeds 1 hour, remove the paste from the stencil.

The printed solder paste remains tacky for up to 8 hours to allow device insertion. The exact time depends on environmental conditions.

If the printed circuit boards will be stored for more than 6 hours after populating and prior to reflow, it is advisable to store the boards in a tightly closed area. This is especially important if the humidity exceeds 65%.

### **Storage**

Store the solder paste in tightly-sealed jars and avoid exposure to sunlight and high humidity.

#### In jars:

Min. 6 months in a refrigerator at 2-10°C (35-50°F)

#### In syringes:

Min. 3 months in a refrigerator at 2-10°C (35-50°F)  
Store syringes tip down!

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