Heraeus

Solder Pastes

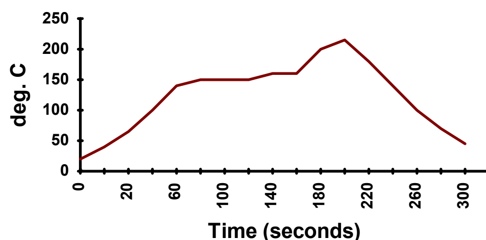
F360 Series

No Clean Solder Paste

Description:
F360 Series solder pastes are ready to use homogenous mixtures, consisting of fully alloyed metal powders, binders, solvents and thixotropic agents for surface mount assembly applications. These pastes provide excellent wetting and are capable of printing down to 12 mil pitch. F360 Series pastes are available for every application. They can be reflowed in air or N_2 and the residues may be left on the board.

- **Key Benefits:**
  - Passes Bellcore requirements for no clean solder pastes per TR-NWT-000078 issue 3
  - Passes IPC requirements for class 3 no clean pastes per IPC-SF-818.
  - Long tack and work life
  - Excellent wetting
  - Capable of printing 12 mil. pitch
  - Low residue

Sn63/Pb37
Reflow Profile



Physical Properties

Metal Powder:
Type 2 = -200/+325 mesh
Type 3 = -325/+500 mesh
Type 4 = -400/+500 mesh

Shape:
Spherical

Melting Point:
Varies depending on alloy
(see back for alloy guide)

% Metal:
Standard 90 %
(other percentages available)

Viscosity range:
240 - 1000 Kcps; depending on application.
Brookfield RVT, TF spindle, 5rpm. at 25°C.
(see back for viscosity ranges)

Performance Properties

Typical print thickness:
20 - 25 mil pitch: 0.006" - 0.008"
(150 - 200 microns)
<20 mil pitch: 0.004" (100 microns)

Minimum pitch:
12 mil (300 microns)

Minimum pad width:
6 mil (150 microns)

Solder Balling:
No Solder balls detected at 15X after
120 seconds; 100°C
120 seconds; 160°C
600 seconds; 215°C

Residue Properties:

Flux activity:
According to IPC-SF-818
Class L3N

SIR:
Per IPC SF - 818
> 1×10^8, Class 3
Per Bellcore TR-NWT-000078 issue 3;
> 2×10^4 megohms

Electro migration:
Per Bellcore TR-NWT-000078 issue 3
Pass

Copper Mirror:
Per IPC-SF-818
Pass

Silver Chromate test paper:
Per - IPC-SF-818
Pass

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Ionic Residue Level:
Average
Cl^- ≤1.0 ppm
Br^- ≤ 0.01 ppm

- **Recommended Processing Guidelines:**

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

If cleaning is required, the residues may be cleaned in any available solvent such as: freon, semiaqueous and aqueous with a saponifier (saponifier concentration ~.5-9%,
water temperature 60 – 65°C).

Clean wet paste with isopropanol or similar solvents.

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

The printed solder paste remains tacky for up to 16 hours to allow device insertion. The
exact time depends on environmental conditions.

If the printed circuit boards will be stored for more than 8 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%. Humidity should ideally be controlled between 45 - 65%.

Reflow Parameters:
For optimum results the paste should be reflowed at 25-50°C above the liquidus temperature of the alloy. Time above liquidus should be maintained for 20 - 60 seconds.
Heating should be uniform across the substrate and components. Reflow can be accomplished with any industry accepted process.

Packaging:
Pastes are available in 250, 500 and 1000gm. jars
5, 10 and 30cc. syringes
3, 6 and 12oz. cartridges

Storage:
Store in a dry location at 10-25°C.
Avoid direct sunlight. Allow paste to come to room temperature prior to opening.
Store syringes vertically, tip down.

Safety:
When using do not eat, drink or smoke.
Avoid contact with skin and eyes.
Wear suitable gloves and eye protection.
Contains lead!

Warranty:
Material guaranteed to meet specifications for 6 months from date of shipment.

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 infr 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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Heraeus F360 Series solder pastes can be ordered using the following part numbering system

(Flux Series) (Alloy) - (Metal Content) (Viscosity) (Powder Mesh Size)

For example: (F360) (SN63) - (90) (H) (3) - F360SN63-90H3

Where F360 = Flux Series
SN63 = Alloy
90 = Metal Content
H = Viscosity Range
3 = Powder Mesh Size

Alloy: Alloy codes (melting points):

Sn62 (179) = Sn62/Pb36/Ag2
Sn63 (183) = Sn63/Pb37
Sn60 (183-190) = Sn60/Pb40
Sn10 (268-300) = Sn10/Pb90
Bi58 (138)= Bi58/Sn42
Ag35 (221)= Sn96.5/Ag3.5
Ag5 (220-240) = Sn95/Ag5
Pb88 (268-300)= Sn10/Pb88/Ag2
Au80 (280) = Au80/Sn20

Metal Content: Standard at 90%

Viscosity Range:
H = 800-1000 Kcps
M = 600-800 Kcps
L = 400-600 Kcps
D = 240-350 Kcps

Powder Mesh Size:
Mesh size Symbols:
2 = -200/+325
3 = -325/+500
4 = -400/+500

Type 2 & 3 availalable in all standard alloys. Contact your Heraeus representative for other alloy requirements.

CBK0900.1