

F 381 Series No-Clean Solder Pastes

For Difficult to Solder Surfaces, with Low Odour Characteristics

Description

The solder pastes of the F381 Series comprise a ready-to-use homogeneous mixture **with low odour characteristics**, consisting of metal powders, binders, solvents, fluxes and thixotropic agents.

This pastes have an **outstanding wetting capability** (they contain halogenated activators - bonded halogens only), and are ideal for applications where difficult-to-solder surfaces have to be joined. Variation in pad and component solderability is tolerated without a negative effect on yields.

The **SIR** of the flux residues is **high**. This solder pastes are **insensitive to temperature and humidity**. They display **no tendency to create solder balls on chip** resistors and capacitors.

The solder pastes of the F381 Series have **very high green strength** and are suitable for machines with high accelerations / decelerations. Moreover they have **very long stencil life** and **can be used in printers with TCU** (Temperature Control Unit - very strong ventilation). Their rheology is optimised to allow **excellent printing performance** with narrow openings and an **excellent first print after a pause - e.g. a lunch break**.

Typical Properties

Metal powder shape:	spherical
Alloy, Particle Size, Melting Point, Metal % and Viscosity:	see reverse

Organic vehicle

If the paste is properly stored, its composition prevents crusting and ensures the following rheological properties:

- ⇒ excellent printability
- ⇒ stable viscosity.

Flux activity

According to:
⇒ ISO 9454-1: **1.1.2.C.**

Cleaning

The flux residues don't need to be cleaned. They may remain on the circuit. If desired, the residues can be washed away with diverse Zestron and Vigon cleaning materials, see separate application recommendations.

Processing

- ⇒ Ensure that the paste has reached room temperature before opening, to prevent condensation.
- ⇒ Stir well prior to use.
- ⇒ Print through a stencil or screen.

Printing Data *

<u>Stencil thickness:</u>	≤ 200 µm (≤ 8 mil)
<u>Screen, mesh size:</u>	80 mesh

<u>Min. pitch:</u>	
20 mil = 500 µm (particles 25-75 µm) **	
16 mil = 400 µm (particles 25-45 µm) **	

<u>Min. width of stencil apertures:</u>	
10 mil = 250 µm (particles 25-75 µm) **	
8 mil = 200 µm (particles 25-45 µm) ***	

** (Stencil thickness: 150 – 200 µm)

*** (Stencil thickness: 120 – 150 µm)

F381 solder pastes can be **printed at high speed** up to 150 mm/sec under controlled conditions. For more information please talk to our Applic. Dept.

* The above data are for information only. Final results depend on different process parameters at the customer.

Clean wet paste: with diverse Zestron and Vigon cleaning materials, see separate application recommendations.

- ⇒ The printed solder paste remains tacky **up to 24 hours**, to allow device insertion. The exact time depends on the environmental conditions, components' size and form, and on the accelerations/decelerations in the line. The peak temperature depends on the heat capacity of the components.

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⇒ **Reflow can be done under air or an inert atmosphere.**

Storage

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

Solder Paste in jars:

Maximum 6 months under the following conditions:

- storage in a refrigerator at 2 to 10 °C.

Solder pastes in syringes:

Maximum 3 months under the following conditions:

storage in a refrigerator at 2 to 10 °C.

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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Available as Standard Products:

F381SN62-90M25
 F381SN62-90.5M30
 F381SN63-90M40¹⁾
¹⁾This is a scale up product

Explanation of the Solder Paste Numbering System:

For example: **F381SN62-90M25**

Flux series: F381

Alloy: SN 62

Metal content: 90

Viscosity: M

Powder size: 25

Alloy

Code	Alloy	Melting point °C
SN62	Sn 62 / Pb 36 / Ag 2	179
SN63	Sn 63 / Pb 37	183

Metal content

Code	Metal content in the paste - weight %
90.0	90.0
90.5	90.5

Viscosity

Code	Viscosity of the solder paste
M	CSS, 25°C, yield point 350 – 700 Pa.

Powder size

Code	Particle size in µm ²⁾	Mesh size
25	25 - 75	
30	25 - 45	
40	20 - 38	

²⁾ Acc. to the measurement with Helos laser granulometer

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