S42D500A3 Product Specification

Product Description

The EFD SolderPlus D500 series of No-Clean (NC) solder pastes for dispensing, feature low flux residue, superior wetting, and up to eight (8) hours of tack time. These solder pastes offer exceptional lot-to-lot consistency with excellent dispense resolution and reproducibility.

D500 flux residue is colorless, transparent, hard, non-corrosive, inert, and designed to be left on your assembly. Cleaning is optional.

Quality

EFD solder pastes and fluxes meet or exceed IPC Joint Industry standards J-STD-004 for flux, J-STD-005 for paste, and J-STD-006A for alloy.

Material Properties

J-STD-004	
Classification	ROL0
Copper Mirror	No Breakthrough
Silver Chromate	Pass
Fluoride Spot	Pass
Corrosion	None
SIR 24 hours*	1.1×10^{10} Ω
SIR 96 hours*	9.7×10^{9} Ω
SIR 168 hours*	7.0×10^{9} Ω
J-STD-005	
Metal Content	84.5% +/- 0.5%
Viscosity at 25°C	400 +/- 50kcPs
Solderball Test	Preferred
Wetting Test	Pass
J-STD-006A	
Alloy	Sn42Bi58
Particle Size	Type III (45-25 micron)
Melting Temp.	Eutectic @138˚C
Bellcore GR-78	Compliant

Delivery

SolderPlus solder paste is shipped direct from our factory via next-day air service within three (3) business days of order receipt, excluding weekend deliveries. For the full range of packaging options, reference our Packaging Guide.

Storage and Handling

Store between 4˚ and 21˚C (40˚ and 70˚F). Do not Freeze. Allow four (4) hours at room temperature before using. Exposure to temperatures in excess of 27˚C may cause flux separation and chemical decomposition. When not in use, containers should be kept closed.

Warrantee

EFD solder pastes are warranted until expiration date shown on the product label when stored in accordance with recommended storage and handling.

Safety

Read the MSDS prior to use. Care should be taken to prevent accidental ingestion and contact with the eyes. Use adequate ventilation and avoid breathing soldering fumes. Wash hands thoroughly after use.

Technical Support

Our Product Specialists and Technical Service Team are available to evaluate your process requirements and develop a soldering solution with you.

Application Guidelines

Dispensing	
Best Working Environment	20˚C to 25˚C (68˚F to 77˚F) at 35% to 60% Relative Humidity
Dispensing Process	Ref: SolderPlus Dispensing Guide
Reflow	
Heating profile	Ref: page 2 of this specification
Cleaning	
Solvents	Ref: Flux Residue Removal Guide**
No Clean	Residue is designed to be left in place for typical applications.

* Nominal/Typical values
** EFD does not sell or recommend specific solvents but collaborates with any solvent vendor.

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Reflow Profiling

EFD solder pastes produce high quality solder joints across a wide heating process range. As a rule, the shorter the profile, the better the solder paste will perform. There is no advantage to a profile centered within the time ranges given below for printed circuit board (PCB) reflow profiling.

The soldering process involves three inputs: surfaces to be soldered, solder paste, and heat. No single profile is ideal for all products and heating methods. A good profile will not exceed the maximum recommended reflow time at the hottest point on the product. The minimum cycle time to reflow a solder joint can be half a second with laser heating.

Preheat

Room temperature to 140ºC: During preheat, low boiling point solvents and moisture are evaporated slowly to prevent spattering. The flux transitions from a gel state to a fluid state and spreads out on the product, covering the surfaces to be cleaned.

Activation

140ºC to 138ºC: The flux cleans the surfaces to be soldered. Excessive time in the activation range will use up available flux activity and may result in non-wetting, de-wetting, and other related solder defects.

A nitrogen atmosphere can be used to extend the activation window for products requiring very long reflow profiles.

Reflow

138ºC up to 153-178ºC and back down to 138ºC: Soldering begins upon reaching the solidus temperature of the alloy being used. For maximum joint strength, a peak temperature of 15° to 40°C above the liquidus must be reached.

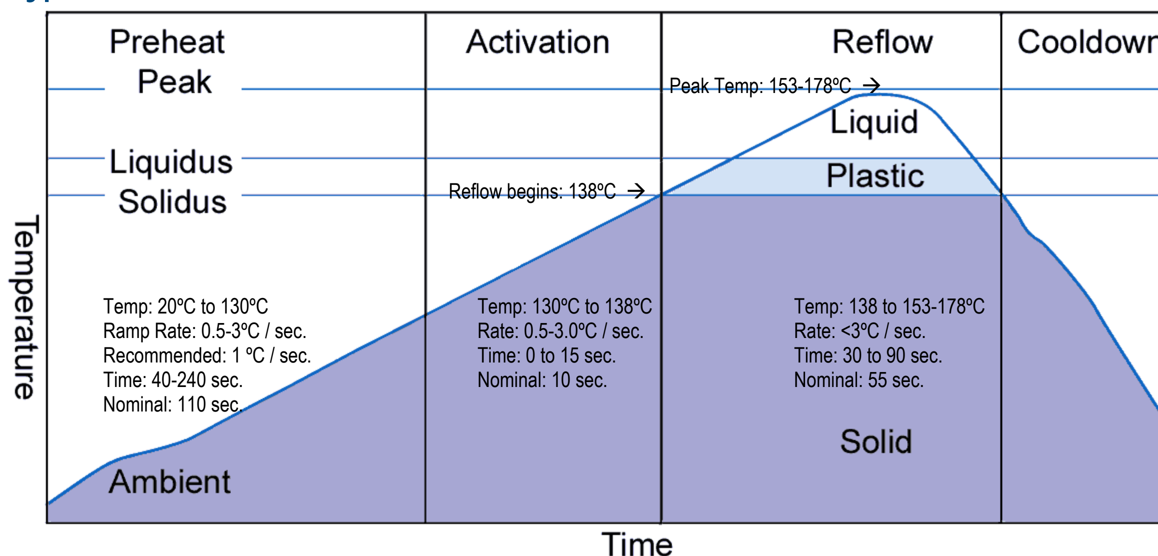
Cooldown

Cool to safe temperature prior to handling. Ramp rate: less than 4°C per second. Cooling too rapidly can cause Coefficient of Thermal Expansion (CTE) mismatch stress related damage.

NOTE: If you have problems with “tombstones” or unacceptable product temperature variation, temperature stabilization should start at 5° to 15°C below alloy solidus and end at 5° to 15°C above alloy solidus (10° to 30°C degree range). Ramp rate will usually need to be less than 1°C. Thermally uniform product may require as little as 5 seconds, while thermally diverse products may require over a minute.

Because of the variety among solderable devices and reflow equipment, it is often necessary to deviate from the guidelines given here. If you have questions, contact Technical Support at 800-338-4353.

Typical Printed Circuit Board Reflow Process



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