ALPHA® NCX-PRL507

Epoxy Polymer Flux for Wafer Level Packaging Ball Attach & Flip Chip Applications

DESCRIPTION

ALPHA NCX-PRL507 epoxy flux is engineered for ball drop on wafer and flip chip attach processing. This halide & halogen free epoxy flux allows a fully formed lead free solder joint to occur prior to the formation of a polymer reinforcement layer (PRL) around the solder/pad interface. **ALPHA NCX-PRL507** was specifically developed with a higher Tg to provide significant improvement to drop shock and temperature cycling reliability performance of final assembled packages.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES AND BENEFIT

- Superior activity, wetting, and assembly yield rates
- High Tg polymer reinforcement layer
- High tack strength and self centering performance
- Excellent material stability – maintains tack and viscosity over multiple print cycles
- Halide and Halogen free formulation
- Improved ball shear strength, drop shock, and temperature cycle reliability performance

APPLICATION

- Stencil/Screen Printing
- Chip/Package Dip

PHYSICAL AND CHEMICAL PROPERTIES

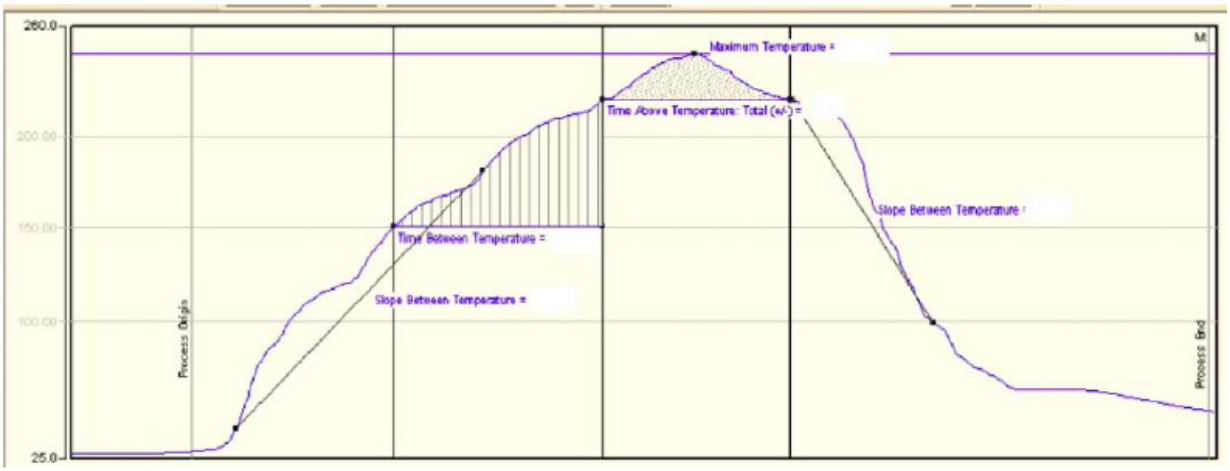
ALPHA NCX-PRL507 Technical Data		
Category	**Results**	**Procedures/Remarks**
Chemical Properties		
Activity Level (J-STD Classification)	RELO	IPC J-STD-004
Halide Content	No intentionally added Halides	IPC J-STD-004
Copper Corrosion Test	Pass, (No evidence of Corrosion)	IPC J-STD-004
Electrical Properties		
SIR (IPC 7 days)	Pass, > 8.9 x 10^9 ohms	IPC-TM-650 method 2.6.3.7 {Pass ≥ 1 x 10^8 ohm min}
Physical Properties		
Appearance	Off-White	Visual
Tack Strength @ Time-0 (gF)	~200 Typical	JIS Z 3284
Glass Transition Temperature Tg by DSC (°C)	~100 Typical	ASTM D3418-99
Coefficient of Thermal Expansion (CTE) α1/α2 (ppm/ °C)	~ 53.9 / 240 Typical	ASTM D3386-00
Viscosity Malcom Viscometer@10 rpm (Poise)	~ 800 to 1300 Typical	ASTM D2196-99

REFLOW

Reflow can be accomplished in an air or nitrogen controlled atmosphere. Nitrogen reflow with O_2 levels of 300 ppm and below is preferred and will typically provide significantly improved results. Given the uniform furnace loading and low mass associated with typical wafer level and flip chip applications, a lengthy soak or dwell is usually not required, especially as the Pb free bearing alloys typically employ a slower ramp rate than that used for tin lead eutectic solder alloy reflow processing. If a soak is preferred the soak temperature needs to be 130 to 140 °C to prevent premature polymer cure and subsequent non wetting.

Post cure is recommended to ensure the polymer collar is fully cured after reflow. A post cure process at 180 °C for 2 hours in Nitrogen is recommended.

Lead Free Reflow Profile



- Ramp-Up Rate: 1.2 to 1.5 °C /sec (Ramp to Peak)
- Peak Temperature: 240 °C to 245 °C
- Dwell Time (TAL): 60 to 90 sec
- Ramp Down (Cool Down Rate): > 3 °C /sec

RESIDUE REMOVAL

The product is designed to leave a polymer residue or polymer reinforcement layer (PRLTM) around the solder/pad interface after reflow. Stencil cleaning of the uncured/non-reflowed material can be accomplished using 50% Acetone and 50% IPA mix. Final cured residue material cannot be removed.

SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use. **Safety Data Sheets are available.**

STORAGE

This flux should be stored in sealed containers at 5 °C. Shelf life of unopened containers is nominally 6 months. The container should be allowed to reach room temperature before opening in order to prevent moisture condensation from ambient air onto the flux. Typical thawing time is around 2hours.

CONTACT INFORMATION

To confirm this document is the most recent version, please contact techinfo@MacDermidAlpha.com

www.macdermidalpha.com

North America	Europe	Asia
3950 Johns Creek Ct, Suite 300 Suwanee, GA 30024 USA 908.791.2300	Unit 2, Genesis Business Park Albert Drive Woking, Surrey, GU21 5RW, UK 44.01483.758400	14 Joo Koon Crescent, Singapore 629014 65.6430.0700

Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE. Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588