

Product Data Sheet

Flip-Chip Epoxy Flux PK-005

Features

- No-clean
- Compatible with epoxy-based underfill materials and conformal coatings
- Excellent wetting of standard Pb-Free alloys onto standard pad metallizations
- Fast curing
- Halogen-free



Introduction

Flip-Chip Epoxy Flux PK-005 is designed for use in direct chip-attach (DCA)/flip-chip and may also be used in ball-attach applications where high shear strength and/or compatibility with underfill is required. Made for the higher temperatures associated with Pb-Free alloys, **PK-005** can also provide flux and adhesion performance at the lower temperatures required for Sn/Pb soldering. **PK-005** provides two functions: a flux AND an encapsulant. As a flux, **PK-005** provides a powerful metal surface oxide cleaning capability during reflow, promoting good solderability. As an encapsulant, it cures after reflow to form a strong, adherent polymer layer surrounding the solder connections, providing not only excellent protection against environmental variations, but also reinforcement against lifting of bond pads under stressed conditions.

Description of Features

Compatibility With Standard Underfill Materials

PK-005 is similar to the chemical composition of standard epoxy-based capillary and no-flow underfills. This allows for excellent adhesion of the underfill to the residue. It also eliminates the residue cleaning that is required with standard flip-chip and ball-attach fluxes.

Fast Curing

PK-005 promotes excellent soldering and epoxy curing when using a typical Sn/Pb or Pb-Free reflow profile

Application Method

PK-005 can be applied using pin transfer, stencil printing, dispensing or dipping techniques. A dipping process is generally preferred.

Properties

Tg	36°C
CTE (<Tg)	52ppm
Typical Viscosity (Brookfield, Model HB DVII-CP, CP40 spindle, 5rpm)	3600cps
Shelf life (at -40°C)	6 months
Pot life (at room temp.)	10 hours
Quantitative Halide Content (%)	0%
Full residue	Compatible with underfill or conformal coating
Corrosivity (J-STD-004)	Pass
Surface Insulation Resistance (Ohms) (J-STD-004)	>1.0 E+8 (pass)

All information is for reference only. Not to be used as incoming product specifications.

OVER→

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PK-005 Epoxy Flux

Dipping and Placement Process

Initially, **PK-005** is applied to a tray, or reservoir, equipped with doctor blades or traveling flux reservoir designed to control the flux film thickness. A minimum thickness of 50 microns is recommended. The part to be soldered is then retrieved from a feeder medium, such as tape and reel or waffle pack feeder, and dipped in the epoxy flux. The part is then placed onto the corresponding pads on the board. The final assembly is then reflowed in an air or nitrogen atmosphere, as described in the next section.



Spheres and Flux



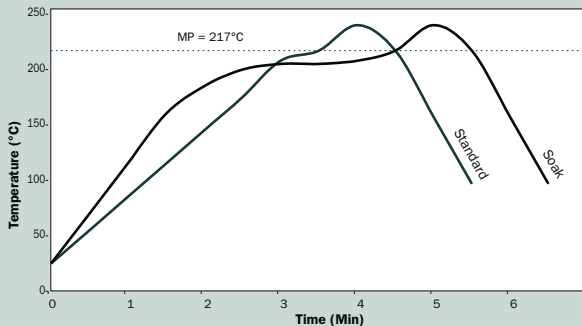
Spheres Dipped into Flux



Flux Coated Spheres

Reflow/Curing

Recommended Profiles:



PK-005 is compatible with normal Pb-Free profiles and can be used in convection, conduction, infrared, or vapor phase soldering systems. A nitrogen atmosphere of at most 50ppm O₂ is typically recommended when flip-chips. Standard ball-attach processes may be carried out in air or nitrogen. No post-cure is needed.

Packaging

PK-005 comes standard in 10cc (10g) or 30cc (25g) syringes. Other packaging may be available upon request.

Cleaning of Uncured PK-005

The uncured epoxy flux can be easily cleaned with methyl ethyl ketone. Other solvents, such as isopropyl alcohol may also be effective. Cleaning of the cured **PK-005** is not practical.

Storage and Handling

PK-005 is shipped in dry ice (frozen carbon dioxide) and should be put into cryo storage immediately upon receipt. Shelf life is 6 months when stored properly in a cryogenic freezer at -40°C or lower. Allow the flux to warm to room temperature prior to use. Once removed from storage, the total pot life is typically 10 hours, but will be reduced by high temperatures (>25°C) or high humidity (>60%RH).

Material Safety Data Sheets

The MSDS for this product can be found online at <http://www.indium.com/techlibrary/msds.php>

This product data sheet is provided for general information only. It is not intended, described which are sold subject exclusively to written warranties and limitations and shall not be construed, to warrant or guarantee the performance of the products thereon included in product packaging and invoices.

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