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Technical Data Sheet

JC 823-6

Epoxy for BGA、CSP Under-fill

Product Description

JC823-6 is a one-component epoxy adhesive that can rework for electronic devices bonding. This product exhibits excellent operability and can be applied on various electronic components potting, casting and sealing. This product can fast cure at high temperature. This product can shorten the working time and can increase the efficiency at the same time. This product develops tough and strong structure which exhibits excellent shear, peel and impact strength. The durability of this product is very high level and it can pass many environmental test experiments. When underfilling CSP and BGA chips, it can buffer the expansion and contraction stress of the solder ball contacts, and can buffer the shear force conducted by the reaction force during the drop test.

Features

1. This product is a solvent-free, no volatile one-component epoxy and will not release any toxic volatilizations.
2. This product exhibits low viscosity and excellent fluidity that is convenient to operate.
3. The hardening surface of this product will not exhibit a surface oiliness and poor gloss.
4. The reactivity of this product is outstanding at the temperature higher than 150 °C.
5. This product exhibits high elasticity, fatigue resistance and crack resistance.
6. This product complies to the 2011/65/EU RoHS regulations.
7. This product complies to chlorine < 900ppm, bromine < 900ppm, chlorine + bromine < 1500ppm.

Typical Uncured Properties

	JC823-6
Appearance	Liquid
Color	Black
Viscosity 25°C, S14 100rpm, cps	2,500~4,000
Specific Gravity (20/20°C)	1.18

Typical Curing Properties

Pot Life 25°C, day	2
Cure Time 80°C, min	30
Cure Time 100°C, min	15
Cure Time 120°C, min	10
Cure Time 150°C, min	5

Direction of Use

1. The package of this resin which is refrigated in freezer(-40~-5℃) or cold place(2~13℃). If this product takes out from freezer, it can be brought to ambient conditions by allowing to stand which is before using please take it out from refrigerator and put it at 2~13°C for 1 hour. And then put it at 14~34℃ for 1 hour. Do not loosen container cover before temperature equilibration.
2. It should be applied to a clean surface which is free of dirt, grease or mold release. In many cases, a simple solvent wipe is sufficient.
3. After heat curing stage, cool down the part gradually can minimize the thermal stress.
4. Cure time on the real part will depend on factors, such as part geometry, materials to be bonded, bondline thickness and efficiency of the oven. Cure schedule should be confirmed with actual production parts and equipment

Rework Process

I、Component Removal

Before component removal, component solder joints must be heated above their reflow temperature in order to reduce the damage to the circuit board. When the temperature of the circuit board is about 260~280°C, the underfill will be soft and easy to remove. It may pull out the pads if the circuit board is heated too slowly or to an excessive temperature. After heating the circuit board, the component can be easily removed by twisting or a vacuum pick-up nozzle.

II、Site preparation

After component removal, there are two methods to clean the residues.

(I) Scraping

Heat the soldering iron up to 250~300°C and scrape off the underfill without any damage of pads on the circuit board. Alternatively, heat the bottom of substrate and scrape off the underfill with a metal squeegee.

(II)Rotating Brush

Apply pressure onto the brush to clean the residues. Too large pressure may wear out the brush or increase the board damage. The types of the circuit board or the solderball composition will influence the decision to apply solderpaste or flux.

III、Component Replacement

The user can use isopropanol or a flux pen to make sure that no residues remain on the circuit board after cleaning. Brush the solderpaste or flux on the board. After aligning the new package, it will be placed by vacuum, reflowed with hot air and underfill, followed by the underfill cure step.

Typical Cured Properties*1

Glass Transition Temp.,(TMA), °C	50
CTE*6 (< Tg), μm/m/ °C	30
CTE*6 (> Tg), μm/m/ °C	178
Specific Heat 0°C, J/g°C	1.01
Specific Heat 50°C, J/g°C	1.40
Specific Heat 100°C, J/g°C	1.62
Durometer Hardness, Shore D	80
Specific Gravity(20/20°C)	1.218
Water Absorption Ratio (25°C/ 24hr), %	0.95
Water Absorption Ratio (80°C/ 24hr), %	2.40
Water Absorption Ratio (97°C/ 1.5hr), %	1.89
Shear Strength *1 Al vs Al, kgf/cm^2	173
Shear Strength *2 Al vs Al, kgf/cm^2	133
Shear Strength *3 Al vs Al, kgf/cm^2	168
Shear Strength *4 Al vs Al, kgf/cm^2	160
Flextual Modules, 25°C, Gpa (DMA)	0.4
Flextual Modules, 50°C, Gpa (DMA)	0.1
Flextual Modules, 80°C, Gpa (DMA)	0.01
Young' s Modulus, Gpa	0.4
Elongation, %	20
Elongation breaking strength*5, kgf	231
Degradation Temp. (TGA 10°C/min), °C	325
Weight Loss Ratio @100°C, %	0.1
Weight Loss Ratio @150°C, %	0.2
Weight Loss Ratio @200°C, %	0.4
Weight Loss Ratio @250°C, %	0.7
Weight Loss Ratio @300°C, %	1.8
Weight Loss Ratio @350 °C, %	15.0
Volume Resistivity, ohm-cm	$4.5*10^{15}$
Surface Resistivity, ohm	$4.5*10^{14}$
Dielectric Constant, 1KHZ	3.2
Dielectric Strength, KV/mm	18
Temperature Range, °C	-40~100

*1 Cure Condition：80°C / 30min
*2 Cure Condition：100°C / 15min
*3 Cure Condition：120°C / 10min
*4 Cure Condition：150°C / 5min
*5 Cure Condition：100°C / 30min
*6 CTE: Coefficient of Thermal Expansion

Storage and Shelf Life

This product should be kept without any possibility of moisture and heat exposure. Shelf life of this product is 8 months at -40°C ~ -5°C. Please put it at 14~34°C for 1 to 2 hour. Use this product up within 2 days. The viscosity will be changed when replace this product at room temperature.

Caution

Some findings indicate a lack of potential for carcinogenicity with the compositions of this product by long term recurrent application to the skin. However, contact with skin is likely to produce mild transient reddening. It is important to remove adhesive from skin with soap and water thoroughly. DO NOT use solvents for cleaning hands. This product of moderate acute toxicity by swallowing. If swallowed, call a physician. Avoid contact with eyes. In case of contact, flush with water for at least 15 minutes and get medical attention immediately. For specific information on this product, consult the Material Safety Data Sheet.