



HYSOL® FP4547

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PRODUCT DESCRIPTION

Hysol® FP4547 is a high purity, liquid epoxy designed for enhanced adhesion to integrated circuit passivation materials. This material is formulated to quickly underfill devices at 90°C to 120°C with a 2-3 mil gap. When fully cured, the material forms a rigid, low stress seal. This dissipates stress on solder joints and extends thermal cycling performance. Hysol® FP4547 also exhibits low moisture absorption for improved JEDEC performance.

TYPICAL APPLICATIONS

Encapsulant for flip chip devices

PROPERTIES OF UNCURED MATERIAL

Color	Black
Filler Content, %, ignition (ITM3A)	69
Flow Rate (500 mil flow, 3 mil gap, 90°C)	60 seconds
Flow Rate (500 mil flow, 3 mil gap, 120°C)	25 seconds
Shelf Life @-40°C (-40°F), months	9

Typical Value

Viscosity @ 25°C, (77°F) (ITM2R) Cone & Plate, (Brookfield) Spindle 52, Speed 20, Cp	18,000
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PHYSICAL PROPERTIES, CURED MATERIAL

Coefficient of Thermal Expansion, ppm/°C (ITM65B)	
α_1	21
α_2	80
Glass Transition, (Tg), (ITM65B) (TMA), °C	135
Flexural Modulus, (GPa), (ASTM D790)	11
Extractable Ionic Content (ITM107B)	
Chloride (Cl-), ppm	<10
Sodium (Na+), ppm	<5
Adhesion	
Die Shear strength	50± 2Kg
Nitride passivated/FR4 substrate 100 mil x 100 mil die at 25°C, (77°F)	

HANDLING

Pot Life @ 25°C, 77°F, days (ITM10T), (time to double in viscosity)	1
Gel Time @ 121°C, (250°F), minutes (ITM10N)	15

Frozen storage at approximately -40°C, or lower is required for maximum shelf life. Frozen packages must be completely thawed before use. Warm at room temperature until no longer cool to the touch (normally 60-90 minutes). Do not thaw in an oven. For best results in dispensing a 22 gauge needle should be used at 10-20 psi pressure. For best flow rates, a preheat temperature of 90°C-120°C is recommended.

GENERAL INFORMATION

For safe handling information on this product, consult the Material Safety Data Sheet, (MSDS).

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or their strong oxidizing materials

Cure Schedule

Recommended Cure ½ hour @ 165°C

With all fast cure systems, the time required for cure depends on the rate of heating. Conditions where a hot plate or heat sink is used are optimum for fastest cure. Cure rates depend on the mass of material to be heated and intimate contact with the heat source. Use suggested cure conditions as general guidelines. Other cure conditions may yield satisfactory results.

Note

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Loctite Electronics

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