



HYSOL®FP4549G

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PRODUCT DESCRIPTION

Hysol® FP4549G is a high purity, low stress, 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 as little as a ½ mil gap. When fully cured, the material forms a rigid, low stress seal that dissipates stress on solder joints and extend thermal cycling performance. FP4549G also exhibits low moisture absorption for improved JEDEC performance.

TYPICAL APPLICATIONS

Flip chip on board applications with low moisture absorption for improved JEDEC performance.

PROPERTIES OF UNCURED MATERIAL

	Value
Chemical Type	Epoxy
Appearance	Grey
Flow Rate 500 mil flow, 3 mil gap, 90°C)	15 seconds
Filler Content,% ignition, ITM3A	50
Shelf Life @ -40°F,(-40°C), months	9

Typical Range

Viscosity @ 25°C, (77°F)	
Cone & Plate , (Brookfield, cps)	
CP52; speed 20 (ITM2A)	2,300

Work Life at Room Temperature

24 Hours, (Time required to double viscosity)

PHYSICAL PROPERTIES, CURED MATERIAL

Coefficient of Linear Thermal Expansion, ITM65B

Alpha 1, ppm/°C	45
Alpha 2, ppm/°C	143

Glass Transition Temperature (Tg) °C

ITM65B	
TMA	140

Flexural Modulus, (Gpa), ASTM D790

5.6

Extractable Ionic Content, ITM107B

Chloride (Cl), ppm	< 10
Potassium (K), ppm	< 10

Adhesion

Die Shear Strength	50±2Kg
Nitride passivated/FR4 substrate	
100 mil x 100 mil die at 25°C, (77°F)	

Handling

Gel Time @ 121°C, (250°F), minutes,	13.5
ITM10N	

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

Storage Conditions

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 substrate temperature of 90°-120°C is recommended.

Cure Schedule

Use suggested cure conditions as general guidelines. Other cure conditions may yield satisfactory results.

Recommended Cure ½ hour @ 165°C

With all fast cure systems, the minimum required time 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.

Note

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Loctite Electronics

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