



HYSOL®FP4501

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PRODUCT DESCRIPTION

Hysol® FP4501 is an optically clear, liquid epoxy with excellent near-UV light transmission characteristics. Typical transmission at 290 nm is 70%. It features good electrical insulation characteristics and purity suitable for direct contact with various semiconductor devices. This material also provides easy inspection of wire bond integrity. FP4501 was designed for charge coupled devices (CCD's) and other similar optoelectronic devices. A coating of this material protects the chip and fragile interconnections from damage due to moisture, handling and temperature variations. It may be suitable for other adhesive or coating applications which require optical clarity or near-UV transmission.

TYPICAL APPLICATIONS

Optoelectronic Liquid Encapsulant

PROPERTIES OF UNCURED MATERIAL

Color	Transparent Light Blue
Shelf Life @ -40°C, (-40°F), Months	6

Typical Value

Viscosity @ 25°C, (77°F) (ITM2A)	
Brookfield RVF Spindle 7, Speed 20, cP	12,500

PHYSICAL PROPERTIES, CURED MATERIAL

All measurements taken at 25°C (77°F) unless otherwise noted

Color	Water-White
Glass Transition, Tg, °C, (ITM65B)	>140
Coefficient of Thermal Expansion, in/in/°C (ITM65B)	<80 x 10 ⁻⁶
Hardness, Shore D, (ASTM D2240)	85
Density, gm/cc	1.35
E-Modulus, kgf/cm ²	38,000
Elongation, % (ASTM D638)	2
Extractable Ionic Content, (ITM107B)	
Chloride (Cl-), ppm	<30
Sodium (Na+), ppm	<30
Potassium (K+), ppm	<30

Cured Electrical Properties

Volume Resistivity, ohms-cm (ASTM D257)	1 x 10 ⁶
Dielectric Constant, (ASTM D150)	3.3

Handling

Pot Life @ 25°C, (77°F) hours* (ITM10T)	5
Gel Time @ 121°C, (250°F), minutes (ITM10N)	35-45

*Time for viscosity to double.

Shelf life at room temperature is approximately 5 hours.

Product may be stored at or below -40°C for greater than 3 months. Frozen packages must be completely thawed before use. Warm at room temperature for best results. Do not thaw in an oven or water bath. For best results dispense FP4501 onto a substrate warmed to approximately 90°C. This will help minimize air entrapment under bonding wire. FP4501 requires a physical barrier to control flow. The chip should be placed in a cavity or a plastic potting dam may be bonded around the chip for best results.

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	1 hour @ 90°C plus
For low stress	2 hours @ 120°C, plus
	2 hours @ 150°C

Alternate cure	1 ½ hours @ 120°C plus
	4 hours @ 150°C

Above cure conditions are suggested for maximum performance. Curing below 130°C is not recommended.

Note

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Loctite Electronics

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