



# HYSOL<sup>®</sup> FP4531

## Snap Cure, Fast Flow Underfill

### Description

Hysol<sup>®</sup> FP4531 is a fast flow material for flip chip and CSP underfill applications with a gap of 1 mil or larger. The material is designed to snap cure within 7 minutes at 160°C, even with a preheat application temperature as high as 90°C.

Typical Uncured Properties	FP4531	Test Method
Color	Black	STP4C
Viscosity @25°C (77°F)		STP2A
Cone and plate, (Brookfield, cps)		
CP52; speed 20	10,000	
Filler Content, (% ignition)	62	STP3A
Shelf Life @ -40°C, (-40°F), months	9	

### Typical Cured Properties

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

	FP4531	Test Method
Color	Black	STP4C
Glass Transition Temperature (Tg, °C;TMA)	144	STP65B
Coefficient of Linear Thermal Expansion,		STP65B
(Cured 7 minutes at 160°C)		
Alpha 1, ppm/°C	28	
Alpha 2, ppm/°C	104	
Flexural Modulus, Gpa	7.6	ASTMD90-95A
Extractable Ionic Content		STP107B
Chloride (Cl-), ppm	20	
Sodium (Na+), ppm	5	
Potassium (K+), ppm	5	

Handling	FP4531	Test Method
Gel Time @ 121°C, (250°F), minutes	6	STP10N
Pot Life @ 25°C,	8 hours	STP10T
(time required to double viscosity)		

Frozen storage at approximately -40°C, or lower is required for maximum shelf life. Allow material to reach room temperature before use.

For best results in dispensing, a 21 gauge needle should be used at 10 psi pressure. For best flow rates, a preheat temperature of 90°C is recommended.

## Cure Schedule

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

### Recommended Cure

7 minutes at 160°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.

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For additional information or distributor locations, please contact:

<b>California</b> TEL: 626.968.6511 FAX: 626.336.0160	<b>Hong Kong</b> TEL: 852.2730.1101 FAX: 852.2730.1119	<b>Japan</b> TEL: 81.45.812.3731 FAX: 81.45.812.2771	<b>Malaysia</b> TEL: 6.03.512.6200 FAX: 6.03.512.6211
<b>New York</b> TEL: 716.372.6300 FAX: 716.372.6864	<b>Germany</b> TEL: 49.89.329.0000 FAX: 49.89.329.4988	<b>Singapore</b> TEL: 65.482.3881 FAX: 65.482.2661	

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Users should review the Material Safety Data Sheet (MSDS) and product label for the material to determine possible health hazards, appropriate engineering controls and precautions to be observed in using the material. Copies of the MSDS and label are available upon request.