



FP4545FC

July 2010

PRODUCT DESCRIPTION

FP4545FC provides the following product characteristics:

Technology	Epoxy
Appearance	Black
Product Benefits	<ul style="list-style-type: none"> • High purity • Forms a rigid, low stress seal • Low CTE • Good toughness • Improved toughness
Filler Weight, %	55
Components	One-component
Cure	Heat cure
Application	Underfill
Typical Applications	Flip Chip

FP4545FC epoxy encapsulant designed as underfill and helps dissipate stress on solder joints and extends thermal cycling performance. This material is specially suited for flip-chip devices requiring improved crack/fracture resistance and no-clean flux compatibility.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Brookfield - Cone & Plate, 25 °C, mPa·s (cP):	
cp #52, Speed 20, rpm	6,500
Rheology @ 90 °C,	1.5
Pot life @ 25 °C, hours:	
(Time required to double viscosity)	12
Gel Time @ 121 °C, minutes	16
Shelf Life @ -40°C, months	9
Flow Rate @ 100°C, seconds	30
500mil travel, 3mil gap	
Specific Gravity	1.6
Work Life, hours	8

Flash Point - See MSDS

TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties:

Coefficient of Thermal Expansion, ppm/°C:	
Below Tg	28
Above Tg	100
(Cured 120 minutes @ 165°C)	
Glass Transition Temperature (Tg), °C	120
Flexural Modulus, ASTM D790	N/mm ² 7,100
	(psi) (1,029,500)
Extractable Ionic Content, ppm:	
Chloride (Cl-)	20
Sodium (Na+)	5

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 other strong oxidizing materials.

Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on specifications for this product.

THAWING:

1. Warm at room temperature until no longer cool to the touch (normally 60 to 90 minutes).
2. Frozen packages must be completely thawed before use.
3. DO NOT thaw in an oven.

Directions for use

1. To encapsulate flip chips by capillary action, the chip and substrate must be thoroughly cleaned.
2. For best results, the material should be dispensed onto a substrate that has been preheated to approximately 100 to 120°C and held at that temperature until flow stops.
3. Devices with wet encapsulant should not be exposed to humidity in the air.
4. If the material cannot be initially gelled to a hard finish within 1 hour after dispensing, storage in desiccator cabinet is suggested until full curing is possible.
5. A bead of FP4545FC is then applied to one or two sides (L-shape) of the chip perimeter.

Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

Optimal Storage: -40 °C

Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

Conversions

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$
 $\text{kV/mm} \times 25.4 = \text{V/mil}$
 $\text{mm} / 25.4 = \text{inches}$
 $\text{N} \times 0.225 = \text{lb}$
 $\text{N/mm} \times 5.71 = \text{lb/in}$
 $\text{N/mm}^2 \times 145 = \text{psi}$
 $\text{MPa} \times 145 = \text{psi}$
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$
 $\text{mPa}\cdot\text{s} = \text{cP}$

Note

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