

Date: September 2017
Rev: VII
No. of Components: Two
Mix Ratio by Weight: 10 : 1
Specific Gravity: Part A: 1.31 Part B: 1.34
Pot Life: 1 Day
Shelf Life- Bulk: One year at room temperature

Recommended Cure: 150°C / 1 Hour

Minimum Alternative Cure(s):
May not achieve performance properties listed below
 150°C / 30 Minutes
 125°C / 60 Minutes

NOTES:

- Container(s) should be kept closed when not in use.
- Filled systems should be stirred thoroughly before mixing and prior to use.
- Performance properties (rheology, conductivity, others) of the product may vary from those stated on the data sheet when bi-pak/syringe packaging or post-processing of any kind is performed. Epoxy's warranties shall not apply to any products that have been reprocessed or repackaged from Epoxy's delivered status/container into any other containers of any kind, including but not limited to syringes, bi-paks, cartridges, pouches, tubes, capsules, films or other packages.

Product Description: EPO-TEK® T7139 is a two component, electrically insulating, encapsulating epoxy designed for semiconductor glob top applications and package assembly.

Typical Properties: Cure condition: 150°C / 1 Hour Different batches, conditions & applications yield differing results.

Data below is not guaranteed. To be used as a guide only, not as a specification. * denotes test on lot acceptance basis

PHYSICAL PROPERTIES:

* Color (before cure):	Part A: Black	Part B: Tan
* Consistency:	Smooth paste	
* Viscosity (23°C) @ 50 rpm:	5,000 - 7,000	cPs
Thixotropic Index:	2.5	
* Glass Transition Temp:	≥ 90	°C (Dynamic Cure: 20-200°C/ISO 25 Min; Ramp -10-200°C @20°C/Min)
Coefficient of Thermal Expansion (CTE):		
Below Tg:	30	x 10 ⁻⁶ in/in°C
Above Tg:	76	x 10 ⁻⁶ in/in°C
Shore D Hardness:	86	
Lap Shear @ 23°C:	2,000	psi
Die Shear @ 23°C:	≥ 10	Kg 3,556 psi
Degradation Temp:	438	°C
Weight Loss:		
@ 200°C:	0.19	%
@ 250°C:	0.34	%
@ 300°C:	0.48	%
Suggested Operating Temperature:	< 350	°C (Intermittent)
Storage Modulus:	598,884	psi
* Particle Size:	≤ 50	microns

ELECTRICAL AND THERMAL PROPERTIES:

Thermal Conductivity:	0.4	W/mK
Volume Resistivity @ 23°C:	≥ 3 x 10 ¹²	Ohm-cm
Dielectric Constant (1KHz):	3.39	
Dissipation Factor (1KHz):	0.006	

OPTICAL PROPERTIES @ 23°C:

Spectral Transmission:	< 0.01% @ 400	nm
	< 1% @ 900	nm
	< 5% @ 2000	nm
Refractive Index:	N/A	

Epoxyes and Adhesives for Demanding Applications™

This information is based on data and tests believed to be accurate. Epoxy Technology, Inc. makes no warranties (expressed or implied) as to its accuracy and assumes no liability in connection with any use of this product.

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EPO-TEK® T7139 Advantages & Suggested Application Notes:

- A pot life of at least one day is mass production friendly and convenient for consecutive manufacturing shifts.
- Its thixotropic nature allows for dispensing “domes or hemispheres” directly over the IC without the need for using a dam or cavity to control flow.
- Suggested applications:
 - Semiconductor:
 - Glob top encapsulant for COB die attach.
 - Plastic semiconductor package filling instead of traditional epoxy transfer molding compound.
 - Electronic/PCB: general protection of SMDs.
 - Opto-electronics: black and opaque epoxy for adhesive and sealing applications while blocking IR and VIS light.
- In some cases, it is advantageous to pre-warm the epoxy $< 50^{\circ}\text{C}$ in order to decrease its thixotropic nature, while increasing capillary and flow rate.
- Low CTE makes it ideal for keeping stresses to a minimum.