

Date: February 2021
Rev: VIII
No. of Components: Two
Mix Ratio by Weight: 10 : 1
Specific Gravity: Part A: 1.33 Part B: 1.02
Pot Life: 4 Hours
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 / 10 Minutes
 100°C / 4 Hours
 80°C / 8 Hours

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.
- Syringe packaging will impact initial viscosity and effective pot life, potentially beyond stated parameters.

Product Description: EPO-TEK® T7109 is a two component, thermally conductive epoxy designed for die attach and heat-sinking applications found in the semiconductor, hybrid, medical and optical industries.

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: White	Part B: Amber	
* Consistency:	Smooth paste		
* Viscosity (23°C) @ 20 rpm:	14,000-20,000	cPs	
Thixotropic Index:	1.8		
* Glass Transition Temp:	≥ 45	°C (Dynamic Cure: 20-200°C/ISO 25 Min; Ramp -10-200°C @20°C/Min)	
Coefficient of Thermal Expansion (CTE):			
	Below Tg:	46	x 10 ⁻⁶ in/in°C
	Above Tg:	239	x 10 ⁻⁶ in/in°C
Shore D Hardness:	83		
Lap Shear @ 23°C:	> 2,000	psi	
Die Shear @ 23°C:	≥ 15	Kg	5,334 psi
Degradation Temp:	377 °C		
Weight Loss:			
	@ 200°C:	0.02	%
	@ 250°C:	0.25	%
	@ 300°C:	0.98	%
Suggested Operating Temperature:	< 300	°C (Intermittent)	
Storage Modulus:	258,593	psi	
* Particle Size:	≤ 20	microns	

ELECTRICAL AND THERMAL PROPERTIES:			
Thermal Conductivity:	0.7	W/mK (40 mil);	1.5 W/mK (3 mil)
Volume Resistivity @ 23°C:	≥ 8 x 10 ¹²	Ohm-cm	
Dielectric Constant (1KHz):	3.50		
Dissipation Factor (1KHz):	0.004		

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.

EPOXY TECHNOLOGY, INC.
 14 FORTUNE DRIVE, BILLERICA, MA 01821 (978) 667-3805, FAX (978) 663-9782
www.epotek.com

EPO-TEK® T7109 Advantages & Suggested Application Notes:

- Reliability report available describing its performance; see Technical Paper #42 - <http://www.epotek.com/technical-papers.asp>
 - Thermal resistance compared to three other epoxies.
 - Thermal resistance and how it relates to overall thermal conductivity.
 - Strength measurements plotted versus pot-life, versus Tcycles and damp heat (85°C/85%RH).
- Thixotropic paste allows for application by automatic dispensers or screen printers. It can also be applied by hand or spatula.
- Excellent adhesion to Aluminum, ferrous and non ferrous metals, and most plastics including Kapton.
- Suggested applications:
 - Semiconductor - Thermally conductive underfill / Electrically non conductive die-attach, low stress for large die exceeding 500 mil x 500 mil.
 - Hybrid Micro-electronics - Large die attach, adhesion to GaAs devices, ceramic substrate attach to housing.
 - Fiber Optic Packaging - Substrate attach of optical bench; TECooler attach; good adhesion to Au, Kovar and ceramic; can be used for laser diode and photo-diode attach.
 - Liquid Crystal Displays - die-attach micro-LCDs onto flex circuits like Kapton, or rigid carriers like FR4, ceramic, or silicon
- Low temperature cure between 80°C and 150°C allows use on lower cost plastics and temperature sensitive devices.
- Can be suggested as a lower stress, more resilient alternative of EPO-TEK® 930-4.

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