

**Date:** August 2024  
**Rev:** XIII  
**No. of Components:** Two  
**Mix Ratio by Weight:** 10 : 1  
**Specific Gravity:** Part A: 1.22 Part B: 1.02  
**Pot Life:** < 2 Hours  
**Shelf Life- Bulk:** One year at room temperature  
**Shelf Life- Syringe:** Six months at -40°C

**Recommended Cure: 150°C / 1 Hour**

Minimum Alternative Cure(s):  
*May not achieve performance properties listed below*  
 150°C / 1 Minute  
 120°C / 5 Minutes  
 100°C / 10 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.
- Syringe packaging will impact initial viscosity and effective pot life, potentially beyond stated parameters.
- **TOTAL MASS SHOULD NOT EXCEED 25 GRAMS**
- Black color is cosmetic only, and not intended to be photonic, spectral, or lampblack. All users need to confirm its opacity versus wavelength.

**Product Description:** EPO-TEK® 353ND Black is a two component, high temperature epoxy designed for semiconductor, hybrid, and fiber optic applications.

**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: Amber	
* Consistency:	Pourable liquid		
* Viscosity (23°C) @ 50 rpm:	3,000 - 5,000	cPs	
Thixotropic Index:	N/A		
* 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:	54	x 10 <sup>-6</sup> in/in°C	
Above Tg:	206	x 10 <sup>-6</sup> in/in°C	
Shore D Hardness:	85		
Lap Shear @ 23°C:	> 2,000	psi	
Die Shear @ 23°C:	≥ 15	Kg	5,334 psi
Degradation Temp:	420	°C	
Weight Loss:			
@ 200°C:	0.92	%	
@ 250°C:	1.24	%	
@ 300°C:	1.83	%	
Suggested Operating Temperature:	< 325	°C (Intermittent)	
Storage Modulus:	516,912	psi	
Ion Content:	Cl <sup>-</sup> : 595 ppm	Na <sup>+</sup> :	52 ppm
	NH <sub>4</sub> <sup>+</sup> : 1149 ppm	K <sup>+</sup> :	16 ppm
Particle Size:	N/A		

ELECTRICAL AND THERMAL PROPERTIES:		
Thermal Conductivity:	N/A	
Volume Resistivity @ 23°C:	≥ 1.6 x 10 <sup>13</sup>	Ohm-cm
Dielectric Constant (1KHz):	3.09	
Dissipation Factor (1KHz):	0.005	

OPTICAL PROPERTIES @ 23°C:		
Spectral Transmission:	< 3 % @ 1500	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® 353ND Black Advantages & Suggested Application Notes:**

- EPO-TEK® 353ND Black has been color-coded black for optical applications requiring opacity against light in IR and VIS region.
- Reasonable pot-life that allows for low temperature curing to be realized.
- Semiconductor suggested applications: wafer-wafer bonding of CSP, fabrication of MEMs devices, flip chip underfill.
- Hybrid suggested applications: providing near hermetic seals in sensor devices, resisting high temperature packaging.
- Fiber optic adhesive designed to meet Telecordia 1221 - suggested applications:
  - Sealing fiber into ferrules, transmitting light in the optical pathway from 800- 1550 nm range.
  - Fiber component packaging; adhesive for active alignment of optics, environmental seal of opto-package, V-groove arrays.
  - Down-Hole petrochemical fiber optic sensors, resisting >200 C field conditions
- Electronics Assembly suggested applications:
  - Used as dielectric layer in the fabrication of capacitors; laminating PZT ferroelectrics found in ultrasound or ink-jetting devices.
  - Impregnating and insulating copper coil windings in motors and inductor coils. Bonding ferrite cores and magnets.
  - Structural grade epoxy found in hard-disk drive devices; bonding of SST metals, kapton, and magnets.
- For an ISO 10993 biocompatible version, see EPO-TEK® MED-353ND BLACK.

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