EPO-TEK® 353ND

Technical Data Sheet

For Reference Only

High Temperature Epoxy

Date: Feb 2014
Rev: XXVIII

Recommended Cure: **150°C / 1 Hour**

	Two	Frozen Syringe
No. of Components:		
Mix Ratio by Weight:	10 : 1	
Specific Gravity:		1.18
Part A:	1.20	
Part B:	1.02	
Pot Life:	≤ 3 Hours	2 Hours
Shelf Life:	One year at 23°C	Six months at -40°C

Minimum Alternative Cure(s):
may not achieve performance properties below
150°C / 1 Minute
120°C / 5 Minutes
100°C / 10 Minutes
80°C / 30 Minutes

*NOTE: Container(s) should be kept closed when not in use. - TOTAL MASS SHOULD NOT EXCEED 25 GRAMS - -- IF PART A CRYSTALIZED IN STORAGE, PLACE CONTAINER IN A WARM OVEN UNTIL CRYSTALIZATION DISAPPEARS. ALLOW TO COOL TO ROOM TEMPERATURE BEFORE MIXING WITH THE PART B HARDENER -- *Please refer to Tech Tip #7 on our website*

Product Description: EPO-TEK® 353ND is a two component, high temperature epoxy designed for semiconductor, hybrid, fiber optic, and medical applications. It is one of the most popular EPO-TEK® brand products, and is known throughout the world for its performance and reliability. Also available in a single component frozen syringe.

Typical Properties:

To be used as a guide only, not as a specification. Different batches, conditions & applications yield differing results.
Cure condition: 150°C/1 Hour * denotes test on lot acceptance basis Data below is not guaranteed.

PHYSCIAL PROPERTIES:

*	**Color (before cure):**	Part A: Clear (Gardner <5)	Part B: Amber (Gardner <18)
*	**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^{-6}	**in/in°C**
	Above Tg:	206 x 10^{-6}	**in/in°C**
	Shore D Hardness:	85	
	Lap Shear @ 23°C:	> 2,000	**psi**
	Die Shear @ 23°C:	≥ 15 **Kg**	5,100 **psi**
	Degradation Temp:	412	**°C**
	Weight Loss: @ 200°C	0.22	**%**
	@ 250°C	0.39	**%**
	@ 300°C	0.87	**%**
	OperatingTemp: : Continuous:	- 55**°C to** 250**°C**	
	Intermittent:	- 55**°C to** 350**°C**	
	Storage Modulus:	516,912	**psi**
	Ion Content: Cl:	329	**ppm**
	NH_4^+:	409 **ppm**	**K^+:** 5 **ppm**
*	**Particle Size:**	N/A	

ELECTRICAL AND THERMAL PROPERTIES:

Thermal Conductivity:	N/A	
Volume Resistivity @ 23°C:	≥ 1.8 x 10^{13}	**Ohm-cm**
Dielectric Constant (1KHz):	3.17	
Dissipation Factor (1KHz):	0.005	

OPTICAL PROPERTIES @ 23°C:

Spectral Transmission:	≥ 50% @ 550 **nm**	≥ 98% @ 800 - 1,000 **nm**
	≥ 95% @ 1,100 - 1,600 **nm**	
Index of Refraction (uncured):	1.5694 @ **589 nm**	

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

EPO-TEK® 353ND Advantages & Suggested Application Notes:

- Reasonable pot-life that allows for low temperature curing to be realized. It has an amber color change upon cure.
- Passes NASA low outgassing standard ASTM E595 with proper cure - http://outgassing.nasa.gov/
- Semiconductor suggested applications: wafer-wafer bonding of CSP; fabrication of MEMs devices; flip chip underfill.
- Hybrid suggested applications: providing near hermetic seals and UHV seals in sensor devices, resisting high temperature packaging.
  - ◊ Down-Hole petrochemical fiber optic sensors, resisting >200°C field conditions.
- 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.
- Medical suggested applications:
  - ◊ Potting fiber optic bundles into ferrules for light guides and endoscopes; capable of resisting several sterilization techniques including ETO, gamma, ION beam, H202 plasma, and >200 autoclave steam cycles; excellent adhesion to surfaces including SST, diamond, titanium, brass, ceramics, glass and most plastics.
  - ◊ Adhesive for catheter devices including stents and guide wires.
  - ◊ Certified to USP Class VI and ISO 10993 biocompatibility standards for medical implants.
  - ◊ Compatible with CIDEX®OPA sterilization.
- 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.

EPOXY TECHNOLOGY, INC.

14 FORTUNE DRIVE, BILLERICA, MA 01821 (978) 667-3805 FAX (978) 663-9782

www.epotek.com