EPOXY TECHNOLOGY

EPO-TEK® 353ND

Technical Data Sheet
For Reference Only
High Temperature Epoxy

Date: Feb 2014
Rev: XXVIII

Recommended Cure:			**150°C / 1 Hour**
No. of Components:	Two	Frozen Syringe	
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**	

Epoxies 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 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.

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