

Date: Feb 2014

Rev: XXVIII

No. of Components: Two

Mix Ratio by Weight: 10 : 1

Specific Gravity:
Part A: 1.20
Part B: 1.02

Pot Life: ≤ 3 Hours

Shelf Life: One year at 23°C

Recommended Cure: 150°C / 1 Hour

Frozen Syringe

1.18

2 Hours

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 CRYSTALLIZED IN STORAGE, PLACE CONTAINER IN A WARM OVEN UNTIL CRYSTALLIZATION
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.

PHYSICAL 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	

Epoxyes and Adhesives for Demanding Applications™

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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, H2O2 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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