Manufacturer:
Epoxy Technology

Product Name:
EPO-TEK® 353ND High Temperature Epoxy, Heat Cure - Pre-Mixed and Frozen (3cc Syringe)

Manufacturer Part Number:
ET353ND-3CC

EPO-TEK® 353ND

Technical Data Sheet
For Reference Only
High Temperature Epoxy

Date:	March 2023			**Recommended Cure: 150°C / 1 Hour**
Rev:	XXXI			
No. of Components:	Two			Minimum Alternative Cure(s):
Mix Ratio by Weight:	10 : 1			*May not achieve performance properties below*
Specific Gravity:	Part A: 1.20	Part B: 1.02	**Syringe**: 1.18	150°C / 1 Minute
Pot Life:	≤ 3 Hours		**Syringe**: ≤ 2 Hours	120°C / 5 Minutes
Shelf Life- Bulk:	One year at room temperature			100°C / 10 Minutes
Shelf Life- Syringe:	Six months at -40°C			80°C / 30 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.
- If product crystalizes in storage, place container in warm oven until crystallization disappears.
- *TOTAL MASS SHOULD NOT EXCEED 25 GRAMS*

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 single component frozen syringe.

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: 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	5,334 psi
Degradation Temp:	412	°C	
Weight Loss:			
@ 200°C:	0.22	%	
@ 250°C:	0.39	%	
@ 300°C:	0.87	%	
Suggested Operating Temperature:	< 350	°C (Intermittent)	
Storage Modulus:	508,298	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	
	≥ 95% @ 1100-1600	nm	
	≥ 98% @ 800-1000	nm	
Refractive Index (uncured):	1.5694 @589	nm	

Epoxies 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.
- 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.