

Date: August 2024
Rev: XXXII
No. of Components: Two
Mix Ratio by Weight: 10 : 1
Specific Gravity: Part A: 1.20 | Part B: 1.02
Syringe: 1.18
Pot Life: ≤3 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
 150°C / 1 Minute
 120°C / 5 Minutes
 100°C / 10 Minutes
 80°C / 30 Minutes

Product Description:

EPO-TEK® 353ND is a two component, high temperature epoxy designed for semiconductor, hybrid, and fiber optic 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, and 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.

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 crystallizes in storage, place container in warm oven until crystallization disappears. Please refer to Tech Tip #7 on website
- TOTAL MASS SHOULD NOT EXCEED 25 GRAMS

Physical Properties	Details
* Color (before cure)	Part A: Clear (Gardner < 5), Part B: Amber (Gardner < 18)
* Consistency	Pourable liquid
* Viscosity (23°C) @ 100 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

SELLER MAKES NO OTHER WARRANTY OR GUARANTEE OF ANY KIND REGARDING FITNESS OF THE PRODUCT FOR A PARTICULAR PURPOSE.

BUYER ASSUMES FULL RESPONSIBILITY FOR QUALITY CONTROL, TESTING AND DETERMINATION OF SUITABILITY OF PRODUCT FOR ITS INTENDED APPLICATION OR USE.

Electrical & Thermal Properties	Details
Thermal Conductivity	N/A
Volume Resistivity @ 23°C	$\geq 1.8 \times 10^{13}$ Ohm-cm
Dielectric Constant (1KHz)	3.17
Dissipation Factor (1KHz)	0.005

Optical Properties @23°C	Details
Spectral Transmission:	$\geq 50\%$ @ 550 nm $\geq 95\%$ @ 1100-1600 nm $\geq 98\%$ @ 800-1000 nm
Refractive Index:	1.5694 @589 nm

EPO-TEK® 301-2 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 l221 - 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.
- For an ISO 10993 biocompatible version, see EPO-TEK® MED-353ND.



EPOXY TECHNOLOGY, INC.

14 FORTUNE DRIVE | BILLERICA
 MA 01821 (978) 667-3805
 FAX (978) 663-9782 | www.epotek.com