

Date: March 2023
Rev: XXXI
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 **Syringe:** ≤ 2 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 below
 150°C / 1 Minute
 120°C / 5 Minutes
 100°C / 10 Minutes
 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 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**

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 | |

Epoxyes 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.

EPOXY TECHNOLOGY, INC.

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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.
- 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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