EPO-TEK® MED-HYB-353ND PMF Syringe

Technical Data Sheet
For Reference Only
Biocompatible/UV Hybrid Curing Epoxy
ISO 10993-5 Tested/Compliant

Date:	February 2021
Rev:	IV
No. of Components:	Single
Mix Ratio by Weight:	N/A
Specific Gravity:	1.17
Pot Life:	< 2 Hours
Shelf Life- Syringe:	Six months at -40°C

Recommended Cure: UV 100mW/cm2 for 20 seconds @ 240-365nm + 150°C/30 Minutes

Alternative biocompatible cure schedules may be possible, but have not been certified. Contact med@epotek.com with any questions.

NOTES:

- To prevent gelation, keep containers away from light sources.
- 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.
- *TOTAL MASS SHOULD NOT EXCEED 25 GRAMS*

Product Description: EPO-TEK® MED-HYB-353ND is a biocompatible, high temperature specialty UV hybrid curing epoxy, formulated for process improvement (assembly) for photonic packaging. It has very high strength and moisture resistance.

Typical Properties: Cure condition: UV 100mW/cm2 for 20 seconds @ 240-365nm + 150°C/30 Minutes
To be used as a guide only, not as a specification. Different batches, conditions & applications yield differing results.
* denotes test on lot acceptance basis Data below is not guaranteed.

PHYSICAL PROPERTIES:		
* Color (before cure):	Clear/Slight yellow	
* Consistency:	Pourable liquid	
* Viscosity (23°C) @ 10 rpm:	3,000-7,000	cPs
Thixotropic Index:	N/A	
* Glass Transition Temp:	≥ 100	°C (Dynamic Cure: 20-200°C/ISO 25 Min; Ramp -10-200°C @20°C/Min)
Coefficient of Thermal Expansion (CTE):		
Below Tg:	55	x 10^{-6} in/in°C
Above Tg:	182	x 10^{-6} in/in°C
Shore D Hardness:	85	
Die Shear @ 23°C:	≥ 20	Kg 7,112 psi
Degradation Temp:	404	°C
Weight Loss:		
@ 200°C:	0.18	%
@ 250°C:	0.72	%
@ 300°C:	1.99	%
Suggested Operating Temperature:	< 350	°C (Intermittent)
Storage Modulus:	425,849	psi

OPTICAL PROPERTIES @ 23°C:		
Spectral Transmission:	≥ 98% 660-2100	nm
Refractive Index:	1.5264 @ 589	nm

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Selected Applications for EPO-TEK® MED-HYB-353ND

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Fiber and Electro-Optics

- Adhesive for flexible endoscopes; adhesion to plastic and glass optical fibers, structural and near hermetic sealing of glass, ceramic and metals
- Manufacture of all kinds of endoscopes, such as, laryngoscopes, gastroscopes, bronchoscopes and ophthalmoscopes; healthcare optics for colonoscopy, urology, and otolaryngology
- Fiber optic enabled OCT imaging delivered via catheter – active alignment of lens, optics, diodes and components
- General, all purpose fiber optic adhesive for surgical lighting and optics including loupes; endoscopic aftermarket repair adhesive
- Fiber optic catheter lasers for Photo Dynamic Therapy (PDT) for tumor removal treatments

Radiation and Imaging

- OCT using NIR laser for cardiac and ophthalmic imaging
- Endoscopy with camera and video interface
- Ingestible, or capsule endoscopes for GI tract viewing and monitoring
- Ultrasound imaging

Ultrasound / Ultrasonic

- Adhesive for catheter delivered, surgical mapping; 3D imaging and mapping catheters; catheter ultrasound for cardiac therapy

Device and Diagnostics

- Sensor integration and subcomponents for respiratory, anesthesia, vapor and suction; gas and liquid flow monitoring
- Irrigation and pharmaceutical delivery via ultrasonic nebulizers
- Adhesive for CO, anesthesia and gas analyzers and flow meters
- Adhesive for pressure and pH monitoring catheters

Implantable Devices

- Hearing aids and implants; acoustic circuits and structural assembly
- Adhesive for orthopedic and musculoskeletal implants including spinal and joint repair devices using precious metals, ceramics and composite plastics

Surgical Tools

- High power laser optics for general, reconstructive and cosmetic surgery
- Dental device adhesive, lighting or hand instrument
- Adhesive for neurovascular surgical delivery systems and coils for treating aneurysms
- Fabrication of Rf Ablation catheters
- Electro-surgical tool for urological tissue removal; adhesion to ceramic, SST and plastics
- Single use microwave ablation probes for tumor removal
- Occlusion balloon catheters for removing plaque, neurovascular flow diverters
- General catheter delivery and extraction tools

Biocompatibility Approvals

- EPO-TEK® MED-HYB-353ND cured at 100mW/cm2 UV + 150°C for 30 min has been tested and is ISO 10993-5 certified (Cytotoxicity testing by MEM Elution methodology).

Sterilization Information

- Epoxy performance is most influenced by surface preparation and cleanliness, overall process and handling, and finally proper curing selection. While bulk samples of MED-HYB-353ND may resist sterilization technologies such as autoclave steam, gaseous technologies, gamma radiation as well as liquid disinfectants, the glue joints may differ. All users need to determine the suitability of MED-HYB-353ND for their given application.
- MED-HYB-353ND is generally regarded for resisting few cycles of ETO and gamma radiation and is anecdotally known for resisting large cycle counts of autoclave.
  See Technical Tip # 29: Gamma Sterilization for Medical Devices and its Effect on Epoxies for more information:
  http://www.epotek.com/site/files/Techtips/pdfs/techtips_29.pdf

Packaging Availability

- EPO-TEK® MED-HYB-353ND is available in specialty packaging which are black colored Premixed Frozen Syringes (PMF).
- A video tutorial on handling frozen syringes can be found here:
  http://www.epotek.com/site/technical-material/application-video-tutorials/231-proper-receiving-and-thawing.html

Medical Grade EPOXY TECHNOLOGY EPO-TEK®

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