



EPO-TEK® MED-353ND Black

Technical Data Sheet
For Reference Only

Biocompatible/High Temperature Black Epoxy
ISO 10993-5 Tested/Compliant

Date: July 2019
Rev: IV
No. of Components: Two
Mix Ratio by Weight: 10 : 1
Specific Gravity: Part A: 1.22 Part B: 1.01
Pot Life: < 2 Hours
Shelf Life- Bulk: One year at room temperature
Shelf Life- Syringe: Six months at -40°C

Biocompatible Certified Cure: 150°C / 1 Hour

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

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.
- **TOTAL MASS SHOULD NOT EXCEED 25 GRAMS**

Product Description: EPO-TEK® MED-353ND Black is a biocompatible, black, high Tg, high strength, high temperature epoxy, based on our well known EPO-TEK® 353ND adhesive. It was formulated for use in many medical applications, especially fiber optic, endoscopes, and implants.

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: Black	Part B: Amber	
* 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:	56	x 10 ⁻⁶ in/in°C
	Above Tg:	175	x 10 ⁻⁶ in/in°C
Shore D Hardness:	85		
Lap Shear @ 23°C:	> 2,000	psi	
Die Shear @ 23°C:	≥ 20	Kg	7,112 psi
Degradation Temp:	402 °C		
Weight Loss:			
	@ 200°C:	0.05	%
	@ 250°C:	0.15	%
	@ 300°C:	0.67	%
Suggested Operating Temperature:	< 350 °C (Intermittent)		
Storage Modulus:	520,099	psi	
Particle Size:	N/A		

OPTICAL PROPERTIES @ 23°C:		
Spectral Transmission:	< 1% @ 300-1740	nm
Refractive Index:	N/A	

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.

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Fiber and Electro-Optics

- Impregnating and terminating fiber optic image bundles and light guides, 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, broncho-scopes and micro ophthalmoscopes; healthcare optics for colonoscopy, urology, and otolaryngology
- Adhesive for capsule endoscope manufacture
- Fiber optic enabled OCT imaging delivered via catheter
- Fiber optic adhesive for surgical lighting and optics including loupes and endoscopic aftermarket repair adhesive
- Fiber optic catheter lasers for Photo Dynamic Therapy (PDT) in tumor removal treatments

Imaging Technologies

- OCT using NIR laser for cardiac and ophthalmic imaging
- Endoscopy with camera and video interface
- Ultrasound imaging, capsule endoscopes for GI tract viewing and monitoring
- Ultrasound imaging
- Dental reconstruction using hand-held laser scanner
- Vitreo-Retinal imaging using micro ophthalmic optics
- Temperature probes integration, subcomponent bonding and final assembly of MRI and CT machines

Ultrasound / Ultrasonic

- Adhesive for catheter delivered surgical mapping, 3D imaging and mapping catheters; catheter ultrasound for cardiac therapy, such as AFib treatments
- Front-end ultrasound fabrication adhesive responsible for PZT arrays
- Back-end PZT processes enabling transducers, ultrasound probe repair adhesive
- Repair adhesive for ultrasound probe
- Final assembly of fetal ultrasound wand
- Imaging modalities based on Doppler Radar

Life Sciences and MicroFluidics

- DNA and gene sequencers, readers and amplification circuits
- Water purity, testing, monitoring and flow- delivery systems
- Potting, over-coating and weather proofing, fitness style wrist watches and activity trackers. Widespread use in wearable devices

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
- SpO2 patient monitoring; capnography, gas analyzers and flow meters
- Adhesive for anesthesia and gas analyzers, and flow meters
- Widely used adhesive for pressure and pH monitoring catheters

Implantable Devices

- Subcomponents for Ventricular Assist Devices (VAD) fabrication including pumps, coils and magnets
- Adhesive for ophthalmic implants; plastic bonding in intraocular lens (IOL). Micro sensors for intraocular pressure
- Hearing aids and implants; acoustic circuits and structural assembly
- Enabling neurostimulator technologies used for sleep apnea and bladder control
- Adhesive for pacemaker devices, ICDs and IPGs
- Neurovascular implants treating aneurysm, stroke, epilepsy and Parkinson's Disease 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.
- Capsule endoscopes for gastro-intestinal management

Surgical Tools

- High power laser optics for general, reconstructive and cosmetic surgery
- Dental device adhesive, whether lighting or hand instrument, withstanding hundreds of autoclave sterilizations
- Adhesive for neurovascular surgical delivery systems and coils for treating aneurysms
- Fabrication of Rf Ablation catheters
- Electro-surgical tool for tissue removal; adhesion to ceramic, SST and plastics
- Single use microwave ablation probes for tumor removal
- Laser for peripheral artery disease (PAD); atherectomy technologies
- Occlusion balloon catheters
- General catheter delivery and extraction tools
- Fiber Optic laser enabled biopsies



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Biocompatibility Approvals

- EPO-TEK® MED-353ND Black cured at 150°C for 1 hour 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-353ND Black 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-353ND Black for their given application.
 - MED-353ND Black is generally capable of resisting hundreds of autoclave and Sterrad® sterilization cycles.
 - MED-353ND Black is generally regarded for resisting few cycles of ETO and gamma radiation.
- 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-353ND Black is available in specialty packaging such as Bi-Paks, or bulk (A & B containers).
- A Bi-Pak video tutorial can be found here:
<http://www.epotek.com/site/technical-material/application-video-tutorials/117-effective-handling-and-mixing-of-epo-tek®-bi-packs.html>



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