EPO-TEK® 301

Technical Data Sheet
For Reference Only
Spectrally Transparent Epoxy

Date: Mar 2015 **Rev:** IX

No. of Components: Two

Mix Ratio by Weight: 20 : 5

Specific Gravity: Part A: 1.15 Part B: 0.87

Pot Life: 1-2 Hours

Shelf Life- Bulk: One year at room temperature

Recommended Cure: **65°C / 2 Hours**

Minimum Alternative Cure(s):
may not achieve performance properties below
65°C / 1 Hour
23°C / 24 Hours

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) may vary from those stated below when syringe packaging and/or post-processing is required.
- 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® 301 is a two component, room temperature curing, medical grade epoxy featuring very low viscosity, and excellent optical-mechanical properties.

Typical Properties: ***Cure condition: varies as required *denotes test on lot acceptance basis Data below is not guaranteed. To be used as a guide only, not as a specification. Different batches, conditions & applications yield differing results.***

PHYSICAL PROPERTIES:

* **Color (before cure):**	Part A: Clear/Colorless	Part B: Clear/Colorless	
* **Consistency:**	Pourable liquid		
* **Viscosity (23°C) @ 100 rpm:**	100-200	cPs	
Thixotropic Index:	N/A		
* **Glass Transition Temp:**	≥ 65	°C	(Dynamic Cure:20-200°C/ISO 25 Min; Ramp -10-200°C @ 20°C/Min)
Coefficient of Thermal Expansion (CTE):			
Below Tg:	39	x 10^{-6} in/in°C	
Above Tg:	98	x 10^{-6} in/in°C	
Shore D Hardness:	85		
Lap Shear @ 23°C:	> 2,000	psi	
Die Shear @ 23°C:	≥ 10	Kg	3,400 psi
Degradation Temp:	430	°C	
Weight Loss: @ **200°C**	0.12	**%**	
@ **250°C**	0.13	**%**	
@ **300°C**	0.39	**%**	
Suggested Operating Temperature:	< 300	°C	(Intermittent)
Storage Modulus:	327,463	psi	
* **Particle Size:**	N/A		

ELECTRICAL AND THERMAL PROPERTIES:

Volume Resistivity @ 23°C:	≥ 1 x 10^{13}	Ohm-cm
Dielectric Constant (1KHz):	4.00	
Dissipation Factor (1KHz):	0.016	

OPTICAL PROPERTIES @ 23°C:

Spectral Transmission:	≥ 99% @ 382-980	nm
	≥ 97% @ 980-1,640	nm
	≥ 95% @ 1,640-2,040	nm
Index of Refraction:	1.519 @ 589	nm

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EPO-TEK® 301 Advantages & Suggested Application Notes:

- Semiconductor: optical glob top or underfill; adhesion to common wafer passivation, solder mask and flex circuits; compatible with LED die, Si, GaAs.
- PCB: general potting and protection over FR4, flex, or ceramic PCBs.
- Medical:
  - It is NONTOXIC-complies with ISO 10993 biocompatibility testing and certified for USP Class VI biocompatibility standards. Suggested for medical devices such as catheters, hand tooling, dental, and endoscopic products; adhesion to stainless steel, titanium, and most plastics; resisting sterilizing techniques like ETO, gamma, and autoclave (65°C/1 hour cure); resisting X-ray radiation; potting and protection of scintillator crystals; CT Detector packaging; adhesive for the optical beam pathway in photo-diode arrays.
  - Successfully passed 12-week implant study for biocompatibility.
  - Compatible with CIDEX® OPA sterilization.
- Fiber Optic:
  - Adhesive for glass and plastic fibers; wicking into fiber bundles used in patch cords, endoscopes or sensor devices; adhesive/seal/encapsulant used for fiber packaging and components; transmission of IR up to 2500 nm; terminating fibers into ferrules; fiber coupling and splicing.
- Opto-electronic:
  - LCD/LED adhesive for laminating glass layers; adhesion to PET plastic; general potting, encapsulation, and protection; spectral transmission in VIS and IR light; adhesive/encapsulant for VCSEL's packaged devices; resisting yellowing per ASTM D1925; adhesive for precision optics including lens, prism, beam splitter cubes, mirrors, and diodes, found in medical, university, or research communities.
- NASA approved, low outgassing epoxy - http://outgassing.nasa.gov/

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