



**Flex PCB Epoxies** (F-PCBs) use epoxy adhesive for electrical connections, structural bonding, stress relief, potting and protection as well as IC glob tops. **EPO-TEK®** adhesives are used for many reasons, including: curing at temperatures below a thermoplastic substrate melt temperature ( $T_m$ ); as an alternative to solder where there are temperature or stress limitations, and for applications that require a flexible epoxy; found in smart cards, RFIDs, LCD connections, OLEDs, solar cells, keyboard membranes, medical devices and ink-jetting.

LCD/OLED/  
DISPLAYS

RFID

SOLAR  
CELLS

IMPLANTABLE  
MEDICAL DEVICES

INK JETTING  
INDUSTRY

EPO-TEK	NO. of COMPONENTS	COLOR Before/ After CURE (thin film)	CURE TEMPERATURE (minimal)	VISCOSITY @ 23°C	GLASS TRANSITION TEMPERATURE (Tg)	DIE SHEAR STRENGTH @ RT (80mil x 80mil)	INDEX OF REFRACTION (Nd)	SPECTRAL TRANSMISSION	TGA DEGRADATION TEMPERATURE	CTE Below Tg/ Above Tg (in/in/°C)	POT LIFE (@ room temp.)	SHELF LIFE (@ room temp.)	
ITO	EJ2189	Two	Silver/Silver	150°C – 15 min 23°C – 3 days	55,000-90,000 @1 rpm	≥30°C	≥9 kg/3,060 psi	N/A	N/A	316°C	53 x 10 <sup>-6</sup> 107 x 10 <sup>-6</sup>	4 hours	1 year
	H20E	Two	Silver/Silver	175° – 45 seconds 80°C – 3 hours	2,200 - 3,200 @100 rpm	≥80°C	> 5 kg/1,700 psi	N/A	N/A	425°C	31 x 10 <sup>-6</sup> 158 x 10 <sup>-6</sup>	2.5 days	1 year
GLOB TOP LCD TO KAPTON	OG116-31	One	White/White	100mW/cm² for >2 min @ 320-500 nm	20,000 - 30,000 @10 rpm	≥115°C	≥10 kg/3,400 psi	1.5662	>96% @ 660-1640 nm >92% @ 500 nm	409°C	41 x 10 <sup>-6</sup> 170 x 10 <sup>-6</sup>	N/A	1 year
	T7109-19	Two	Grey/Grey	80°C – 2 hours 23°C – 24hours	44,738 @ 5 rpm	27°C	8.3 kg/2,822 psi	N/A	N/A	338°C	59 x 10 <sup>-6</sup> 216 x 10 <sup>-6</sup>	1.5 hours	1 year
DIE ATTACH	EE129-4	Two	Silver/Silver	100°C – 15 min 23°C – 24 hours	2,000-4,000 @100 rpm	≥30°C	≥5 kg/1,700 psi	N/A	N/A	303°C	30 x 10 <sup>-6</sup> 227 x 10 <sup>-6</sup>	3 hours	1 year
	EJ2189	Two	Silver/Silver	150°C – 15 min 23°C – 3 days	55,000-90,000 @1 rpm	≥30°C	≥9 kg/3,060 psi	N/A	N/A	316°C	53 x 10 <sup>-6</sup> 107 x 10 <sup>-6</sup>	4 hours	1 year
ELECTRICAL CONNECTIONS	TV2001	Two	Yellow/ Brown	160°C – 5 min 80°C – 90 min	10,000 - 20,000 @ 20 rpm	≥35°C	≥15 kg/5,100 psi	N/A	N/A	466°C	67 x 10 <sup>-6</sup> 189 x 10 <sup>-6</sup>	2 days	1 year
	H20E	Two	Silver/Silver	175° – 45 seconds 80°C – 3 hours	2,200 - 3,200 @100 rpm	≥80°C	>5 kg/1,700 psi	N/A	N/A	425°C	31 x 10 <sup>-6</sup> 158 x 10 <sup>-6</sup>	2.5 days	1 year
ELECTRICAL CONNECTIONS AU/KAPTON	H20E	Two	Silver/Silver	175° – 45 seconds 80°C – 3 hours	2,200 - 3,200 @100 rpm	≥80°C	>5 kg/1,700 psi	N/A	N/A	425°C	31 x 10 <sup>-6</sup> 158 x 10 <sup>-6</sup>	2.5 days	1 year
STRUCTURAL AND PROTECTION	301	Two	Clear/ Colorless	65°C – 1 hour 23°C – 24 hours	100-200 @ 100 rpm	>65°C	>10 kg/3,400 psi	1.5190	>98% @ 400-700 nm >97% @ 700-2500 nm	430°C	39 x 10 <sup>-6</sup> 98 x 10 <sup>-6</sup>	1-2 hours	1 year
	353ND	Two	Amber/ Dark Red	150°C – 1 min 80°C – 30 min	3,000-5,000 @ 50 rpm	≥90°C	≥15 kg/5,100 psi	1.5694	> 50% @ 550 nm >98% @ 800-1000 nm >95% @ 1100-1600 nm	412°C	54 x 10 <sup>-6</sup> 206 x 10 <sup>-6</sup>	≤3 hours	1 year
	302-3M	Two	Clear/ Colorless	65°C – 3 hours 23°C – 24 hours	800-1,600 @100 rpm	≥55°C	≥10 kg/3,400 psi	1.5446	>95% @ 460-1620 nm	351°C	57 x 10 <sup>-6</sup> 193 x 10 <sup>-6</sup>	1 hour	1 year
ELECTRICAL BRIDGE FPCB TO AU/PZT PADS	E2101	Two	Silver/Silver	175°C – 15 min 150°C – 1 hours	15,000-18,000 @20 rpm	≥90°C	≥5 kg/1,700 psi	N/A	N/A	455°C	56 x 10 <sup>-6</sup> 131 x 10 <sup>-6</sup>	5 days	1 year
	H20E-PFC	Two	Silver/Silver	175°C – 45 seconds 80°C – 3 hours	3,000 - 4,000 @100 rpm	≥80°C	≥5 kg/1,700 psi	N/A	N/A	407°C	21 x 10 <sup>-6</sup> 94 x 10 <sup>-6</sup>	3 days	1 year
	353ND	Two	Amber/ Dark Red	150°C – 1 min 80°C – 30 min	3,000-5,000 @ 50 rpm	≥90°C	≥15 kg/5,100 psi	1.5694	>50% @ 550 nm >98% @ 800-1000 nm >95% @ 1100-1600 nm	412°C	54 x 10 <sup>-6</sup> 206 x 10 <sup>-6</sup>	≤3 hours	1 year

N/A - not applicable, as these are filled systems



For downloading Data Sheets and MSDS, visit the Technical Info section of our website: [www.epotek.com](http://www.epotek.com), or email our Technical Services Group at: [techserv@epotek.com](mailto:techserv@epotek.com)

For ordering information contact us at: Epoxy Technology, Inc. • 14 Fortune Drive • Billerica, MA 01821 Tel: 978-667-3805 • Fax: 978-663-9782