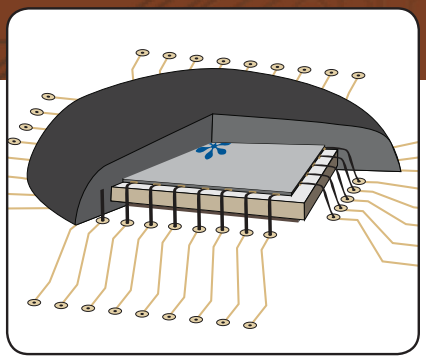
Glob Top



What Is A Glob Top?

Glob tops are encapsulations that protect fragile semiconductor die and wire bonds. They are placed over chips as an environmental barrier, mechanical reinforcement, or tamper proof layer. There are two main types: ***single material hemispherical*** and ***two material dam-and-fill***. The single material glob top utilizes a thixotropic material to form a dome of protection over a semiconductor and wire bonds. Alternatively, a dam-and-fill glob top uses two materials, in a two-step process. First, a thixotropic epoxy dam is placed around the area and then a low viscosity epoxy fills the cavity. Both provide the same protection to underlying components but dam-and-fill is often preferred when a specific optical transmission is required that.

Why Use A Glob Top?

Proper use of glob tops can substantially increase the lifetime of a product and allow it to operate in harsh environments. Both types, when properly applied, are capable of resisting 85°C/85%RH testing for more than 2,000 hours. They can also resistant thermal cycling and many other industry standard environmental testing.

Which EPO-TEK Products Are Best Suited For Glob Tops?

- Hemispherical Glob Tops:
  - *Thermal Cure:* H70E-2, T7109-19, T7139
  - *UV Cure:* OG116-31, OG133-8, OG675
- Dam-and-Fill Glob Tops:
  Dam
  - *Thermal Cure:* 353ND-T, 730, H70E-2
  - *UV Cure:* OG116-31, OG198-55

  Fill
  - *Thermal Cure:* 301, 301-2, 301-2FL, 310M-2
  - *UV Cure:* OG142-87, OG142-112, OG198-54, OG653

Characteristics To Help Choose Your Glop Top

		EPO-TEK	Key advantages/ Characteristics
Hemispherical	Epoxy	H70E-2	Black, thixotropic, heat cure with long pot life
		T7109-19	Gray, RT or heat cure with flexibility and thermally conductivity
		T7139	Black, heat cure with long pot life and low shrinkage
	UV	OG116-31	Cloudy, high viscosity and Tg, UV cure, chemically resistant & ISO 10993 compliant
		OG133-8	Cloudy, slightly thixotropic, low Tg, low stress with good flexibility
		OG653	Green, low viscosity, low stress, fast UV cure
Dam	Epoxy	353ND-T	Tan, high thixotropy, high strength, heat cure with non-flow and high temperature resistance, ISO 10993 compliant
		730	Tan, thixotropic, RT or heat cure with low stress
		H70E-2	Black, thixotropic, heat cure with long pot life
	UV	OG116-31	Cloudy, high viscosity and Tg, UV cure, chemically resistant & ISO 10993 compliant
		OG198-55	Cloudy, thixotropic, UV/shadow cure with high Tg and high strength
Fill	Epoxy	301	Clear, very low viscosity, RT/low temp, fast heat cure, ISO 10993 compliant with excellent opto-mechanical properties
		301-2	Clear, low viscosity, RT or low temp cure, ISO 10993 compliant with long pot life
		301-2FL	Clear, very low viscosity, low Tg, RT or low temp cure, flexible with longest pot life
		310M-2	Clear, low viscosity, RT or low temp cure, low Tg, flexible with low hardness
	UV	OG142-87	Optically clear, low viscosity, high Tg, UV cure with excellent strength and moisture resistance
		OG142-112	Clear, low viscosity, UV cure with excellent strength and moisture resistance
		OG198-54	Clear, low viscosity, UV/shadow cure with high strength and moisture resistance
		OG653	Green, low viscosity, low stress, fast UV cure

RT - Room Temperture cure

EPOXY TECHNOLOGY

How Do The EPO-TEK Properties Compare?

	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 @ 589nm)	SPECTRAL TRANSMISSION	TGA DEGRADATION TEMPERATURE	CTE Below Tg/ Above Tg (in/in/°C)	POT LIFE (@ room temp.)	SHELF LIFE (@ room temp. unless noted)
EPOXY	301	Two	Clear/ Colorless	65°C – 2 hours 23°C – 24 hours	100 - 200 cPs @ 100 rpm	≥65°C	≥10 kg/3,400 psi	1.5605	>99% @ 380-980nm >97% @ 980-1640nm >95% @ 1640-2040nm	430°C	39×10^{-6} 98×10^{-6}	1-2 hours	1 year
EPOXY	301-2	Two	Clear/ Colorless	80°C – 3 hours 23°C – hours	225 - 425 cPs @ 100 rpm	≥80°C	≥15 kg/5,100 psi	1.5654	>94% @ 320nm >99% @ 400-1200nm >98% @ 1200-1600nm	360°C	61×10^{-6} 180×10^{-6}	8 hours	1 year
EPOXY	301-2FL	Two	Clear/ Colorless	80°C – 3 hours 23°C – 3 days	100 - 200 cPs @ 100 rpm	≥45°C	≥10 kg/3,400 psi	1.5506	>99% @ 400-1000nm >97% @ 1000-1600nm	325°C	56×10^{-6} 211×10^{-6}	10 hours	1 year
EPOXY	310M-2	Two	Clear/ Colorless	65°C – 2 hours 23°C – 24 hours	250 - 325 cPs @ 100 rpm	≤30°C	5 kg/1,700 psi	1.4947 (uncured)	>98% @ 380-1660nm	331°C	67×10^{-6} 201×10^{-6}	1.5 hours	1 year
EPOXY	353ND-T	Two	Tan/ Dark Red	150°C – 1 min 80°C – 30 min	9,000 - 15,000 cPs @ 20 rpm	≥90°C	≥15 kg/5,100 psi	N/A	N/A	409°C	43×10^{-6} 231×10^{-6}	3 hours	1 year
EPOXY	730	Two	Tan/ Tan	100°C – 30 min 23°C – 24 hours	80,000 - 120,000 cPs @ 2.5 rpm	≥55°C	≥10 kg/3,400 psi	N/A	N/A	364°C	66×10^{-6} 248×10^{-6}	1 hour	1 year
EPOXY	H70E-2	Two	Black/ Black	175°C – 1 min 80°C – 90 min	9,000 - 15,000 cPs @ 20 rpm	≥80°C	≥5kg/1,700psi	N/A	N/A	447°C	20×10^{-6} 112×10^{-6}	2 days	1 year
EPOXY	T7109-19	Two	Grey/ Grey	80°C – 2 hours 23°C – 2 days	40,000 - 70,000 cPs @ 5 rpm	≤40°C	5kg/1,700 psi	N/A	N/A	338°C	59×10^{-6} 216×10^{-6}	2 hours	1 year
EPOXY	T1739	Two	Black/ Black	150°C – 30 min 125°C – 60 min	5,000 - 7,000 cPs @ 50 rpm	≥90°C	≥10 kg/3,400 psi	N/A	<0.01% @ 400nm <1% @ 900nm <5% @ 2000nm	438°C	30×10^{-6} 76×10^{-6}	1 day	1 year
UV CURING	OG116-31	One	White/ White	100mW/cm² for >2 min @ 240-365nm	20,000 - 30,000 cPs @ 10 rpm	≥115°C	≥10 kg/3,400 psi	1.5842	>96% @ 660-1640nm >92% @ 500nm	409°C	41×10^{-6} 170×10^{-6}	N/A	1 year
UV CURING	OG133-8	One	Cloudy/ Cloudy	100mW/cm² for >2 min @ 240-365nm	1,000 - 1,500 cPs @ 100 rpm	<10°C	3.2 kg/1,088 psi	1.5244	≥95% @ 900nm ≥90% @ 640nm	353°C	43×10^{-6} 222×10^{-6}	N/A	1 year
UV CURING	OG142-87	One	Clear/ Colorless	100mW/cm² for >2 min @ 240-365nm	250 - 600 cPs @ 100 rpm	≥100°C	>20 kg/6,800 psi	1.5058	>97% @ 580-1660nm	384°C	50×10^{-6} 162×10^{-6}	N/A	1 year refrigerated
UV CURING	OG142-112	One	Clear/ Colorless	100mW/cm² for >2 min @ 240-365nm	1,200 - 1,700 cPs @ 100 rpm	≥90°C	>20 kg/6,800 psi	1.5560	≥97% @ 500-1660nm	384°C	55×10^{-6} 158×10^{-6}	N/A	1 year refrigerated
UV CURING	OG198-54	One	Clear/ Colorless	100mW/cm² for >2 min @ 240-365nm	200 - 450 cPs @ 100 rpm	131°C	≥10 kg/3,400 psi	1.5256	≥97% @ 460-1680nm	369°C	74×10^{-6} 145×10^{-6}	N/A	1 year refrigerated
UV CURING	OG198-55	One	Cloudy/ Cloudy	100mW/cm² for >2 min @ 240-365nm	1,200 - 2,000 cPs @ 100 rpm	≥120°C	>20 kg/6,800 psi	1.5196	>97% @ 560-1680nm	354°C	72×10^{-6} 120×10^{-6}	N/A	1 year refrigerated
UV CURING	OG653	One	Green/ Green	100mW/cm² for >1 sec @ 365nm	650 - 850 cPs @ 100 rpm	≥40°C	≥3 kg/1,020 psi	1.5106	≥97% @ 440-2220nm	310°C	75×10^{-6} 162×10^{-6}	N/A	1 year
UV CURING	OG675	One	Clear/ Colorless	100mW/cm² for >2 sec @ 240-365nm	3426 cPs @ 100 rpm	0.24°C	N/M	1.4950	≥98% @ 400-1660nm	365°C	41×10^{-6} 201×10^{-6}	N/A	1 year

N/A - not available/applicable

N/M - not measured

Please consult our *Application Experts* to find the most suitable adhesives for specific technical challenges at: techserv@epotek.com.

EPOXY TECHNOLOGY

Epoxy Technology Inc. • 14 Fortune Drive • Billerica, MA 01821
phone 978-667-3805 fax 978-663-9782 techserv@epotek.com