

EPO-TEK® Specialty UV Curing Adhesives

**Epoxy-Based Systems
&
Acrylate-Based Systems**



**EPOXY
* TECHNOLOGY**

Innovative Epoxy Adhesive Solutions for Over 45 Years™

What's Special About EPO-TEK® UV Curing Epoxies

Epoxy-Based UV Benefits

Excellent adhesion and reliability

- Due to the **epoxy backbone** (rather than acrylate backbone)

Low shrinkage

- Average shrinkage is approximately 1-5% (acrylate is typically 10-15%)
- Low shrinkage leads to low internal stress aiding adhesion

Not subject to oxygen inhibition

- Cationic photoinitiators are not quenched by oxygen

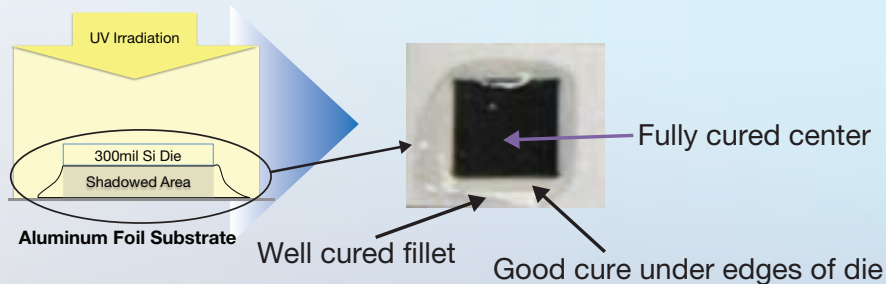
Capable of “Dark” Cure

- Cation creates the “living polymer” and continues to be active in the absence of UV light
- Enables a small degree of curing in areas never seen by the UV light, for a limited distance

Most are thermally post-curable

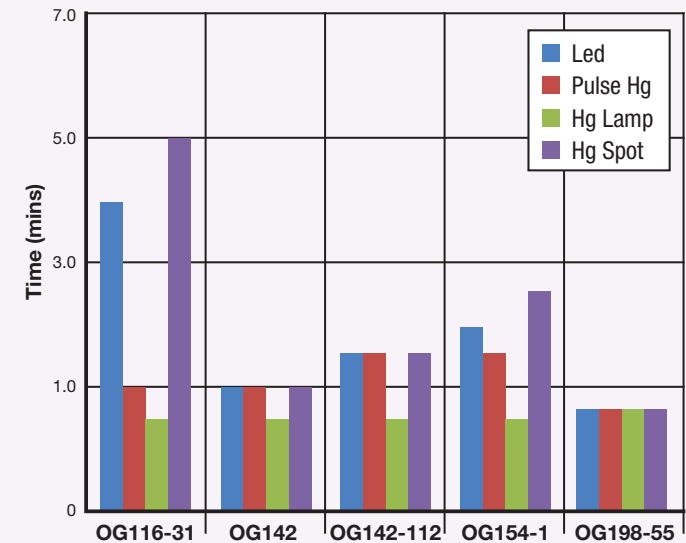
- Greater degree of conversion than UV cure alone (*Initial UV cure is required for best thermal post cure results*)

Effect after UV cure with a thermal post cure on shadowed areas



Shadow curing is often critical to designs where access to UV light is limited

Epoxy UVs can be cured in ≤ 1 minute*



For complete listing of UV products visit EPO-TEK.com

*With proper optimization through:

- UV lamp selection
- Using a UV source that generates heat
- Warming the formulation or substrate before application
- Down stream thermal curing following UV exposure-May also improve water resistance

EPO-TEK® Specialty UV Curing Selector Guide

Epoxy-Based

Epoxy Technology Inc. offers an exclusive line of high performance epoxy resins.
Our unique formulations provide superior performance.

UV + Thermal Post Cure

For Enhanced Performance

Product	Viscosity @ 23°C (cPs)	Tg	Hardness	Nd*	Performance Features	Applications
OG116	88,979 @ 2.5rpm	146°C	88D	1.5892	Higher viscosity version of OG116-31 High chemical resistance High Tg & high index Very high strength	Edge seal Fiber optic assembly Glob top
OG116-31	20,000 - 30,000 @ 10rpm	>115°C	83D	1.5842	High chemical resistance High Tg & high index ISO 10993 compliant	Fiber optic assembly Gasket seal and glob top Medical devices
OG142-87	250 - 600 @ 100rpm	>100°C	82D	1.5058	Low viscosity Excellent bond strength Moisture resistance	Fiber bundling/assembly Glob top fill Micromolded lens
OG142-95	534 @ 100rpm	>100°C	82D	1.5123	Low viscosity Excellent bond strength Moisture resistance	Fiber optic assembly Glob top fill Optical packaging
OG142-112	1,200 - 1,700 @ 100rpm	>90°C	83D	1.5560	Medium viscosity High moisture resistance Exceptional bond strength	Glob top fill Micromolded lens Optical packaging
OG146-104	164 @ 100rpm	81°C	80D	1.5251	Very low viscosity Excellent non-yellowing properties Fast cure	Fiber bundling/assembly LCD/Haptic Medical devices
OG146-178	164 @ 100rpm	82°C	82D	1.5354	Low viscosity & excellent flow Plastic bonding Fast cure	Fiber bundling/assembly LCD/Haptic OLED/OPV
OG159-2	100,000 - 140,000 @ 2.5rpm	>30°C	69D	1.5715	Thixotropic Contains 1 mil glass beads Excellent moisture resistance	Glob top LCD/OLED gasket seal Optical packaging
UJ1190	501 @ 100rpm	100°C	80A	1.5091	Low viscosity Good for thick sections	OLED

This Guide will assist in determining which product(s) may be best suited for your application.

Additional assistance in material selection, optimal lamp choice, and cure recommendations are readily available by contacting our Technical Application Experts at techserv@epotek.com or +1 978-667-3805.

performance, UV curing adhesives based on **Epoxy** and **Acrylate** systems.
 Superior performance for a wide variety of applications.



UV Cure Only

Product	Viscosity @ 23°C (cPs)	Tg	Hardness	Nd*	Performance Features	Applications
OG133-8	1,000 - 1,500 @ 100rpm	<10°C	65A	1.5244	Thixotropic Low Tg & hardness Excellent flexibility	Flex edge seal/glob top Fiber optic assembly Optical packaging
OG142	9,000 - 15,000 @ 20rpm	>95°C	86D	1.5809	Medium viscosity High strength Moisture resistance	LCD plug and gasket seal Dental applications Glob top/OLED
OG154-1	26,000 - 34,000 @ 5rpm	>100°C	80D	1.5692	High viscosity High Tg Low Modulus	Fiber optic/packaging assembly Glob top LCD gasket seal

UV + Thermal Post Cure

For Shadow Curing

Product	Viscosity @ 23°C (cPs)	Tg	Hardness	Nd*	Performance Features	Applications
OG198-54	200 - 450 @ 100rpm	131°C	86D	1.5256	Low viscosity High Tg Excellent bond strength	Fiber optic assembly Optical packaging V-groove alignment
OG198-55	1,200 - 2,000 @ 100rpm	>120°C	85D	1.5196	Thixotropic High viscosity High Tg	Fiber optic assembly Optical packaging V-groove alignment

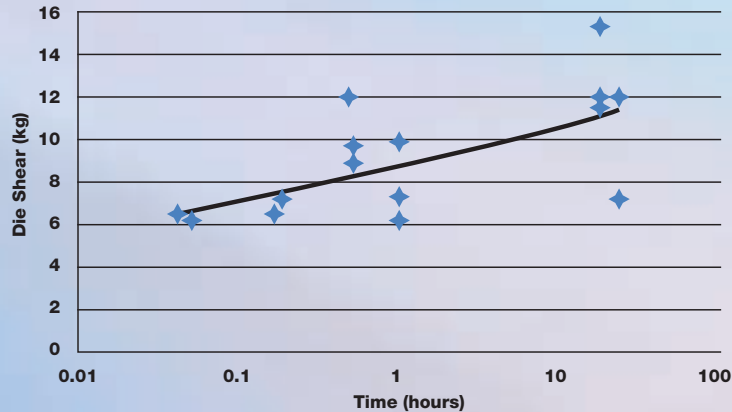
UV/Visible Light Cure

Product	Viscosity @ 23°C (cPs)	Tg	Hardness	Nd*	Performance Features	Applications
OG178	300 - 600 @ 100rpm	>50°C	86D	1.5445	Low viscosity Low Tg Excellent bond strength	Optical packaging

* Cured index measured at 589nm

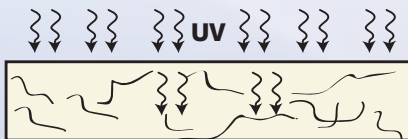
Additional Epoxy UV Benefits

Die Shear Increases Over Time*



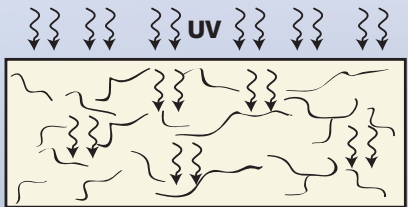
*Above test results for OG116-31 show a die shear increase over time after 30 second UV cure. This type of result is representative of the EPO-TEK® Epoxy-Based UV line.

Both Thin And Thick Sections Can Be Cured With Epoxy UV's



Thin Section

UV passes easily through highly mobile polymer chains, *cures well.*



Thick Section

Using a lower intensity, longer wave length and longer cure time, *a good cure can be achieved.*

Selecting Best UV Lamps/Cure Time

Product	365nm Flood LED	Pulsed Hg Lamp	F Style Hg Flood Cure	F Style Hg Spot Cure
OG116	**	***	****	**
OG116-31	***	****	****	**
OG142	****	****	****	****
OG142-112	***	***	****	***
OG142-87	***	****	****	***
OG142-95	***	****	****	***
OG146-178	****	****	****	****
OG154-1	***	***	****	***
OG159-2	****	****	****	****
OG198-54	****	****	****	****
OG198-55	****	****	****	****
UJ1190	◆	***	****	◆
OG146-104	****	****	****	****
OG178	*	***	****	◆

Cure Time (min): <1 **** 1-3 *** 3-5 ** 5-10 * >10 ◆

EPO-TEK® Specialty UV Curing Selector Guide

Acrylate-Based UV Benefits

Extremely fast cure (seconds)

Generally optically clear

No thermal post cure needed

Not sensitive to moisture or other bases



Selecting Best UV Lamps/Cure Time

Product	365nm Flood LED	Pulsed Hg Lamp	F Style Hg Flood Cure	F Style Hg Spot Cure
OG603	****	****	****	****
OG653	****	****	****	****
OG675	****	****	****	****

Cure Time (min): <1 **** 1-3 *** 3-5 ** 5-10 * >10 ◆

UV Cure Only

Product	Viscosity @ 23°C (cPs)	Tg	Hardness	Nd*	Performance Features	Applications
OG603	150 - 250 @ 100rpm	>70°C	84D	1.5037	Low viscosity USP Class VI adhesive Fast cure	Fiber optic components Medical implants Optical assembly
OG653	650 - 850 @ 100rpm	>40°C	76D	1.5106	Low viscosity, green colored Light blocking properties Very fast cure (1-3 sec @ 365nm)	RFID glob top
OG675	3,426 @ 100rpm	0°C	70A	1.4950	Medium viscosity Fast cure Low Tg	Fiber optic assembly LCD lamination

* Cured index measured at 589nm

For additional information, please visit us at: www.epotek.com, or email our Technical Services Group at: techserv@epotek.com



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