



A1445

UV-curable High Tg Epoxy Adhesive

PRODUCT DESCRIPTION:

- Base chemistry: epoxy only, cationic polymerization
- One component adhesive ready for use, solvent-free, UV cure-able, room temperature stable

• Antimony-free product

PRODUCT USE:

- Glass substrate bonding

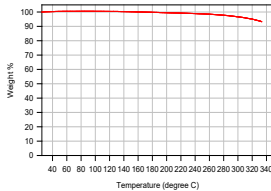
FEATURES:

- Epoxy only, high adhesion, high Tg, long shelf and working life, room temperature stable, not sensitive to oxygen in cure process, excellent reliability performances, robust for solder reflow process

INSTRUCTIONS FOR USE:

- 1) Clean the substrates to remove contamination, dust, moisture, salt and/or oil
- 2) Dispense adhesive on substrates
- 3) Bond substrates (with active alignment – optional)
- 4) UV cure to bond
- 5) Thermal post cure (optional)

TGA DATA: Conditions: scan rate 10°C/min, in air



PROPERTIES of UNCURED FILM

Viscosity (cps, 25 °C): 26,000 to 30,000

Density (g/mL): 1.1

Storage (°C): 15 – 30

Shelf life (15 - 25 °C): 6 months

Working life (15 - 25 °C): 3 months

GENERAL USAGE INFORMATION:

Shipment: no restriction on shipment and no cold shipment is needed

Storage: After the adhesive is received in black syringes or amber HDPE bottles, room temperature storage (15-30°C) in the original container is required.

SAFETY AND HANDLING

The uncured adhesive can be cleaned from apparatus with isopropyl alcohol (IPA), methyl ethyl ketone (MEK), or commercial alcohol based cleaning solution. Avoid direct skin and eye contact. Use only in well ventilated areas. Use protective clothing, gloves and safety goggles. Read [Material Safety Data Sheet](#) before handling.

TDS was updated on 2/27/2021

UV CURING CONDITIONS for film thickness of 5 to 125 micron:

- UV Metal Halide or Mercury UV light source with UV-A (320-400 nm) with UV light intensity: 200 to 1,000 mW/ cm²
- LED-365 nm with UV light intensity: 100 to 1,000 mW/ cm²

LED-365 nm		Metal Halide/Mercury(UV-A: 320-400 nm)	
UV intensity(mW/cm ²)	time (sec)	UV intensity(mW/cm ²)	time (sec)
200	75 sec or more	200	60sec or more
or 300	50 sec or more	or 300	40 sec or more
or 400	40 sec or more	or 400	30 sec or more
or 500	30 sec or more	or 500	15 sec or more
or 1,000	15 sec or more	or 1,000	10 sec or more

- Thermal post cure at 80 to 100°C for 30 to 60 minutes will promote full cure and improve adhesion of bonded parts. Thermal post cure is optional.
- The recommended UV cure dose is at the adhesive. If the substrates absorb curing light, then the actual cure dose needs to be increased.

Application notes for curing at thick film: 0.75 to 1.2 mm

It is possible to cure A1445 at thick section with UV dose of ≥ 40 J/cm²

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LED-365 nm		Metal Halide/Mercury(UV-A: 320-400 nm)	
UV intensity(mW/cm ²)	time (sec)	UV intensity(mW/cm ²)	time (sec)
200	200 sec or more	200	200 sec or more
or 400	100 sec or more	or 400	100 sec or more
or 500	80 sec or more	or 500	80 sec or more
or 1,000	40 sec or more	or 1,000	40 sec or more

- Thermal post cure at 80 to 100°C for 30 to 60 minutes will promote full cure and improve adhesion of bonded parts. Thermal post cure is optional.
 - At thick layer, after UV the adhesive might feel flexible and the hardness will increase as the post cure is continue at room temperature for 24 hrs
- Epoxy adhesives have post cure properties. Adhesion strength test should be conducted at least 24 hrs after part assembly.

TYPICAL PROPERTIES of CURED Thin Film

Cured film

Outgas, weight % (125°C, 120 hr, air)	0.10
Outgas, weight % (per MIL-STD 883/5011)	0.19
Outgas, weight % (per Telcordia GR-1221)	0.13
Water absorption (% , 100 °C until saturation)	0.2
Water Transmission Rate (50 °C/95% RH, g/m ² 24hrs, ASTM E96-80)	3
Shrinkage (volume, %)	< 1
Hardness – Shore D	90
Glass transition temperature (DMA, °C)	96
Dielectric Strength (estimated, kV/mm)	20-25
Coefficient of thermal expansion (ASTM E831)	
below Tg (x10 ⁻⁶), °C ⁻¹ / above Tg (x10 ⁻⁶), °C ⁻¹	51/157
Physical properties tested at 25°C, (ASTM D638)	
Tensile strength, MPa	50
Elongation (%)	3
Young's Modulus, MPa	3,000

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