A1719-TX

Dual cure epoxy adhesive: UV-Heat cure adhesive

PRODUCT DESCRIPTION:

- Base chemistry: epoxy only, cationic polymerization
- One component, ready for use, solvent-free, UV and/or heat curing, thixotropic

PRODUCT USE:

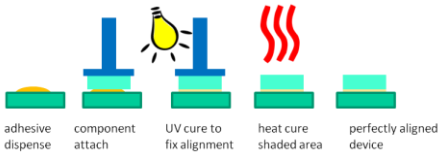
- Active alignment for optoelectronics and semiconductor packaging
- Instant UV fix, then heat post cure to cure the adhesive in shaded areas
- Bonding of opaque substrates

FEATURES:

- Epoxy only, cureable with LED-365nm, high adhesion, high Tg, long working life, 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 fix alignment or to bond
5) Thermal cure: to cure adhesive in shadow area and to improve adhesion of bonded parts



GENERAL USAGE INFORMATION:

Shipment: ship in cold pack, receiving temperature: -5 to 22°C

Storage: After receipt, store cold at 3-5°C, or -40 to -20°C in the original container is required

Before use: The cold adhesive needs to reach RT (23-25°C) before use. Allow the adhesvie to sit at RT, adding heat is not allowed. Room temperature equilibration time is dependent on container size, but a 10-30 gram syringe equilibration time is approximately 30-60 minutes. Condensed water on the container must be removed prior to use

SAFETY AND HANDLING

The uncured adhesive can be cleaned with isopropyl alcohol (IPA), methyl ethyl ketone (MEK), acetone or xylene. Avoid direct skin and eye contact. Use only in well ventilated areas. Use protective clothing, **gloves and safety goggles**. Read Safety Data Sheet before handling.

CURING CONDITIONS: 3 curing ways: UV + heat or heat or UV

1) **UV + Heat curing**: both UV and heat are used in the curing process

First step: UV cure

*Metal halide/Mercury: UV-A (320-400 nm), intensity: 100-1,000 mW/cm^2

*or LED-365 nm, UV light intensity: 100 to 1,000 mW/ cm^2

LED-365 nm		Metal Halide/Mercury(UV-A: 320-400 nm)	
UV intensity (mW/cm^2)	x time (sec)	UV intensity (mW/cm^2)	x time (sec)
100	60 sec or more	100	30 sec or more
or 200	30 sec or more	or 200	15 sec or more
or 500	12 sec or more	or 500	6 sec or more
or 1,000	4 sec or more	or 1,000	3 sec or more

Second step: heat cure: the adhesive is exposed to UV light first, then heat cure

*80 to 85 °C for 30 to 60 minutes

2) **Heat curing**: heat is the only source for curing, the adhesive sees no UV

85°C for 3 hrs, or 90°C for 2hrs, or 95°C for 1hr, or or 100°C for 0.5 to 1 hr

- The actual heat cure time is dependent on the heating time of the components. The heat time of the components must be added to the total cure time of the adhesive for the process

3) **UV Curing**: UV is the only source of curing

1000 mW/cm^2 x 3 to 10 sec metal halide/mercury light source with UV-A (320-400 nm) or with LED-365 nm

- The recommended UV cure dose is at the adhesive if the substrate absorbs curing light, then the actual cure time needs to be increased.
- The effect of humidity is greater for very thin film, if the adhesive layer is <25 µm, then longer cure time might be needed
- To ensure good curing speed, the humidity should be <60% RH
- Epoxy adhesives have post cure properties. Adhesion strength should be conducted at least 24 hrs after part assembly.

TYPICAL PROPERTIES

Liquid	
Viscosity at 25 °C, mPa.s or cps (shear rate 10/s)	9,000 to 10,000
Thixotropic index (shear rate: 1/s over 10/s)	2
Density (g/mL)	1.09
Shelf life (-40 to -20°C)/(3 to 5°C):	6 months/3months
Pot life or working life (20 - 25°C):	7 days
Cured film	
Apperance of cured adhesive	light yellow to tan
Outgas, weight % (per Telcordia GR-1221)	0.07
Outgas, weight % (per MIL-STD 883/5011)	0.4
Water permeability (g/m 24 hrs, 50 °C/95% RH, 75 µm film)	3.2 x 10^{-4}
Shrinkage (volume, %)	1
Hardness, shore D	80
Glass transition temperature (DMA, °C)	164
Coefficient of thermal expansion (DMA)	
below Tg (x10^{-6}), °C^{-1}	41
above Tg (x10^{-6}), °C^{-1}	124
Physical properties tested at 25°C, 50% RH (ASTM D638)	
Tensile strength, MPa	231
Elongation (%)	3
Young's Modulus, MPa	10,700
Operating temperature, °C	-40 to 150

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