A1859-TX

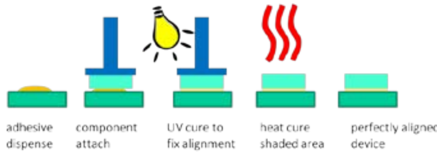
Dual cure epoxy adhesive: UV-Heat cure adhesive

PRODUCT DESCRIPTION:
- Base chemistry: epoxy only, cationic polymerization
- One component adhesive ready for use, solvent-free, UV and/or heat curing, thixotropic, milk-paper white color.

PRODUCT USE:
- Active alignment of components for optoelectronics and semiconductor packaging
- Module bonding with active alignment: example: bond image sensor to board or bonding VCM to lens barrel.
- Bonding of opaque substrates

FEATURES:
- Epoxy only, low thermal cure temperature with short cure time, UV tackable (fixable) with LED-365nm then heat cure to complete cure cycle, high adhesion, high Tg, long working life, 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



CURING CONDITIONS: 2 curing ways: UV + heat or heat

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

First step: UV cure

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

*or LED-365 nm, UV light intensity: 200 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	20 to 40 sec	100	20 to 40 sec
or 200	10 to 20 sec	or 200	10 to 20 sec
or 500	4 to 6 sec	or 500	4 to 6 sec
or 1,000	2 to 3 sec	or 1,000	2 to 3 sec

Second step: heat cure: the adhesive is exposed to UV light first, then heat cure 90 °C for 60 minutes

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

90°C for 90 minutes

or 95°C for 60 minutes

or 100°C for 60 minutes

The adhesive is expected to be cured in the absence of air or sandwiched between two substrates If the adhesive surface is exposed to ai during cure, surface stickiness might result.

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

- The effect of humidity is greater for very thin film, if the adhesive layer is <10 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.

The maximum adhesion strength is achieved by HEAT cure. For best adhesion, UV fix cure should be kept at a minimum and the majority of the bonded components should be cured by HEAT

TYPICAL PROPERTIES

Liquid

Viscosity at 25 °C, mPa.s or cps (shear rate: 10/s)	88,000 to 94,000
Thixotropic index (shear rate: 1/s over 10/s)	5
Density (g/mL)	1.3
Shelf life (-40 to -20°C):	6 months
Pot life or working life (20 - 25°C):	48 hours

Cured film

Apperance of cured adhesive	light yellow to tan
Outgas, weight % (per Telcordia GR-1221)	0.01
Outgas, weight % (per MIL-STD 883/5011)	0.01

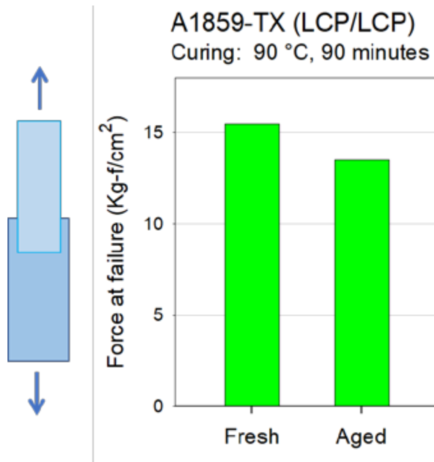
The information presented here represents our best available information and is believed to be reliable, but it and does not constitute any guarantee or warranty. Inasmuch as Addison Clear Wave has no control over the exact manner in which others may use this information, it does not guarantee the results to be obtained. Nor does the company make any expressed or implied warranty of merchantability, or fitness for a particular purpose concerning the effects or results of such use. Purchasers are further responsible for determining the suitability of the product for its intended use and the appropriate manner of utilizing the production processes and applications so as to ensure safety, quality and effectiveness. Addison Clear Wave makes no warranties and assumes no liability in connection with the use or inability to use this product. V4092019

Addison Clear Wave Coatings, Inc., 3555 Legacy Blvd, St. Charles, IL 60174 USA

Tel: +1 630-444-1658, Fax: +1 630-444-1683, www.AddisonCW.com

A1859-TX (page 2)

Reliability Study:



LCP/LCP bonded strip, 25 µm adhesive thickness
Heat cure 90°C 90 minutes
Fresh: test after bonding
Aged: test after aging at 110 °C + 100% relative humidity for 20 hours

Cured film properties (continued)

Property	Value
Water permeability (g/m 24 hrs, 50 °C/95% RH, 75 µm film)	2.2 x 10^{-4}
Shrinkage (volume, %)	1
Hardness, shore D	75-80
Glass transition temperature (DMA, °C)	161
Coefficient of thermal expansion (DMA)	
below Tg (x10^{-6}), °C^{-1}	32
above Tg (x10^{-6}), °C^{-1}	100
Physical properties tested at 25°C, 50% RH (ASTM D638)	
Tensile strength, MPa	125
Elongation (%)	6
Young's Modulus, MPa	1,640
Operating temperature, °C	-40 to 150

GENERAL USAGE INFORMATION:

Shipment: adhesive is shipped in cold pack

Storage: After receipt, cold storage at -20 °C or -40 °C in the original container is required

Before use: The cold adhesive needs to reach RT (20-25°C) before use. The container needs 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 from apparatus with isopropyl alcohol (IPA), methyl ethyl ketone (MEK), acetone 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 Safety Data Sheet before handling.

The information presented here represents our best available information and is believed to be reliable, but it and does not constitute any guarantee or warranty. Inasmuch as Addison Clear Wave has no control over the exact manner in which others may use this information, it does not guarantee the results to be obtained. Nor does the company make any expressed or implied warranty of merchantability, or fitness for a particular purpose concerning the effects or results of such use. Purchasers are further responsible for determining the suitability of the product for its intended use and the appropriate manner of utilizing the production processes and applications so as to ensure safety, quality and effectiveness. Addison Clear Wave makes no warranties and assumes no liability in connection with the use or inability to use this product. V4092019

Addison Clear Wave Coatings, Inc., 3555 Legacy Blvd, St. Charles, IL 60174 USA
Tel: +1 630-444-1658, Fax: +1 630-444-1683, www.AddisonCW.com