A1902-FT

Dual cure epoxy light blocking adhesive: UV+heat or 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

PRODUCT USE:

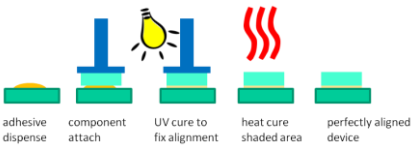
- Active alignment of components for optoelectronics and semiconductor packaging
- High precision bonding
- Bonding of opaque substrates and optical parts

FEATURES:

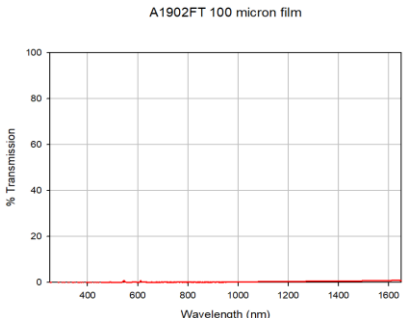
- Epoxy only, high adhesion, high Tg, long shelf and working life, RT stable, excellent reliability performances, robust for solder reflow process
- Cured adhesive thickness of 100 micron blocks greater than 99% of light from 250 nm to 1600 nm
- UV Depth of cure in UV step 1,000 micron

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



UV-VIS NIR FOR CURED A1902-FT:



CURING CONDITIONS: UV + heat or heat only

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

   *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)
500	80 sec or more	500	80 sec or more
or 1,000	40 sec or more	or 1,000	40 sec or more

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

   * 100°C for 60 minutes

2) **Heat curing**: heat is the only source for curing, the adhesive sees no UV light 100°C for 1-2hr or 125°C for 1hr. If the adhesive layer is <10 µm, cure temperature of 125°C might be required.

- The heat time of 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 <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 test 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

Uncured resin	
Viscosity at 25 °C, mPa.s or cps (shear rate: 10/s)	58,000 to 65,000
Thixotropic index (shear rate: 1/s over 10/s)	6
Appearance of cured adhesive	amber to pink brown
Density (g/mL)	1.3
Cured film	
Outgas, weight % (per Telcordia GR-1221)	0.01
Outgas, weight % (per MIL-STD 883/5011)	0.02
Water permeability (g/m 24 hrs, 50 °C/95% RH, 75 µm film)	3 x 10^{-4}
Shrinkage (volume, %)	1
Hardness – Shore D	90-95
Glass transition temperature (DMA, °C)	145
Physical properties tested at 25°C, 50% RH (ASTM D638)	
Tensile strength, MPa	50
Elongation (%)	8
Young's Modulus, MPa	2,500
Operating temperature, °C	-60 to 200

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 3-30 gram syringe equilibration time is approximately 30-60 minutes. Condensed water on the container must be removed prior to use

Shelf life (-40 to -20°C): 6 months

Pot life or working life (20 - 25°C): 7 days

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 Safety Data Sheet before handling.

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