



AC A535-AN

UV-curable Adhesive

PRODUCT DESCRIPTION:

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

PRODUCT USE:

- Bonding glass to glass or glass to metal or glass to ceramic.
- Optoelectronics: fiber to v-groove, lens bonding
- Semiconductor: lens or prism to substrates

FEATURES:

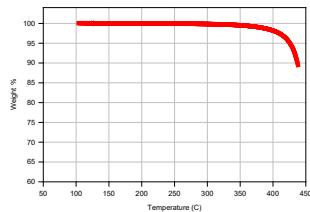
- Epoxy only, high adhesion, high Tg, long shelf and working life, room temperature stable, not sensitive to oxygen in cure process, excellent reliability performances, robust for solder reflow process

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 to enhance adhesion and full cure.

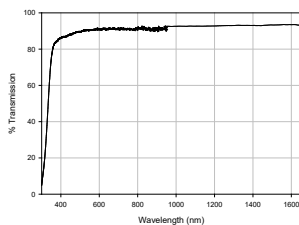
TGA DATA:

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



UV-VIS and NIR Spectra

A535-AN 20 micron film between glass slides



UV CURING CONDITIONS:

- UV Metal Halide or Mercury UV light source with UV-A (320-400 nm) with UV light intensity: 100 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)
100	100 sec or more	100	50 sec or more
or 200	50 sec or more	or 200	25 sec or more
or 300	35 sec or more	or 300	17 sec or more
or 400	25 sec or more	or 400	13 sec or more
or 500	20 sec or more	or 500	10 sec or more
or 1,000	10 sec or more	or 1,000	5 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.

TYPICAL PROPERTIES

Uncured resin

Viscosity (cps, 25 °C)	3,500 to 4,500
Density (g/mL)	1.1
Storage (°C)	15 – 25
Shelf life (15 - 25 °C)	6 months
Working life (15 - 25 °C)	3 months

Cured film properties

NASA low outgas requirements: TML + CVCM	
Total Mass Loss, TML, limit < 1%	0.41%
Collected Volatile Condensable Materials, CVCM, limit <0.1%	<0.01%
Outgas, weight % (MIL-STD 883/5011, limit: 1%)	0.15
Outgas, weight % (Telcordia GR-1221, limit: 0.25%)	0.10
Water Transmission Rate (50 °C/95% RH, g/m ² 24hrs, ASTM E96-80)	3
Water permeability (g/m 24 hrs) (50 °C/95% RH, 75 μm film)	2 x 10 ⁻⁴
Shrinkage (volume, %)	< 1
Hardness – Shore D	95
Glass transition temperature (DMA, °C)	165 - 175
Dielectric Strength (estimated, kV/mm)	20-25

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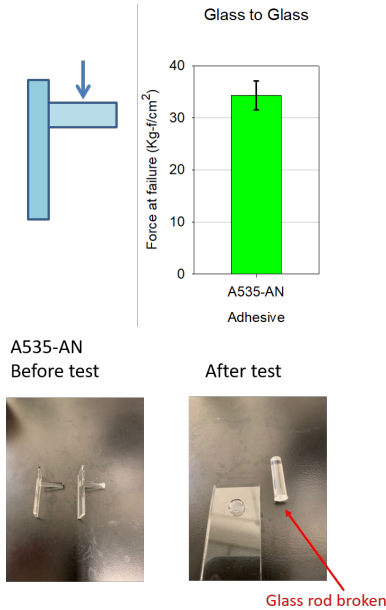
Addison Clear Wave Coatings, Inc., 3555 Legacy Blvd, St. Charles, IL 60174 USA

Tel: +1 630-444-1658, addisoncw.com



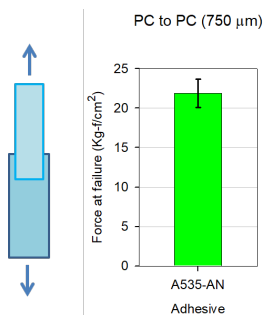
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Adhesion strength of A535-AN
Glass to Glass



Glass rod to glass plate bonding
Adhesive thickness: 10 μm
UV dose: 2J/cm² + 85°C/1hr
Glass rod broken

PC to PC lap shear



PC substrate thickness: 750 μm
Adhesive thickness: 20 μm
UV dose 2J/cm² + 85°C/1hr
PC substrate failure is at 20 Kg-f/cm²
Failure mode: pc failure NOT adhesion failure

Cured film properties continue

Refractive index of cured film (25°C) @ 589 nm	1.585
Coefficient of thermal expansion (TMA, Scan rate 5°C/min) below Tg (x10 ⁻⁵), °C ⁻¹	4
above Tg (x10 ⁻⁵), °C ⁻¹	13
Physical properties tested at 25°C, 50% RH (ASTM D638)	
Tensile strength, MPa	62
Elongation (%)	4
Young's Modulus, MPa	2,300
Operating temperature, °C	-60 to 200

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.

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