



# AC A535-AN

## UV-curable Adhesive

### PRODUCT DESCRIPTION:

- Base chemistry: epoxy only, cationic polymerization
- One component adhesive ready for use, solvent-free, UV curable, 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:

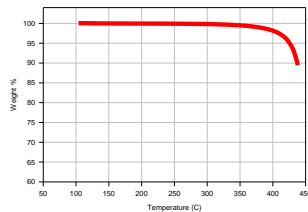
- Epoxy only, high adhesion, high Tg, long shelf and working life, room temperature stable, not sensitive to oxygen in cure process, excellent reliability performances, robust for solder reflow process

### 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.

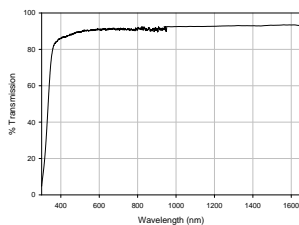
### TGA DATA:

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/ cm<sup>2</sup>
- LED-365 nm with UV light intensity: 100 to 1,000 mW/ cm<sup>2</sup>

LED-365 nm		Metal Halide/Mercury(UV-A: 320-400 nm)	
UV intensity(mW/cm <sup>2</sup> )	time (sec)	UV intensity(mW/cm <sup>2</sup> )	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.
- 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

Outgas, weight % (125°C, 120 hr, air)	0.10
Outgas, weight % (per MIL-STD 883/5011)	0.15
Outgas, weight % (per Telcordia GR-1221)	0.10

Water absorption (% , 100 °C until saturation)	0.2
Water permeability (g/m 24 hrs) (50 °C/95% RH, 75 µm film)	2.4 x 10 <sup>-4</sup>

Shrinkage (volume, %) < 1

Hardness – Shore D 95

Glass transition temperature (DMA, °C) 165 - 175

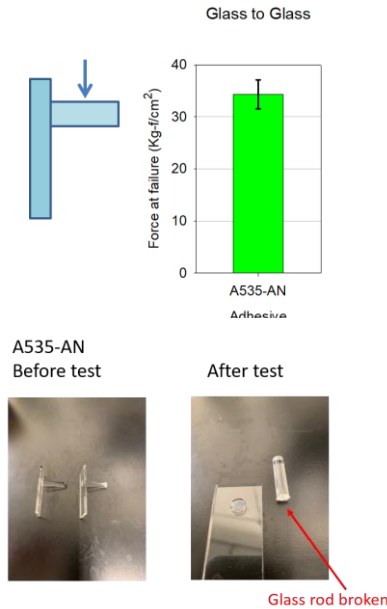
Dielectric Strength (estimated, kV/mm) 20-25

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**Adhesion strength of A535-AN**

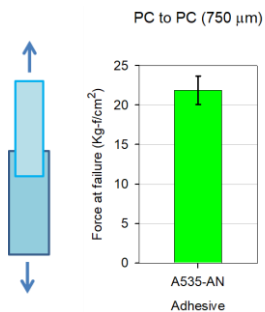
Glass to Glass



**Glass rod to glass plate bonding**

Adhesive thickness: 10 μm  
 UV dose: 2J/cm<sup>2</sup> + 85°C/1hr  
 Glass rod broken

PC to PC lap shear



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

Cured film properties continue

Refractive index of cured film (25°C)

@ 589 nm	1.578
@ 1310 nm	1.562
@ 1550 nm	1.558

Coefficient of thermal expansion (DMA by compression), 4-5 mm thick sample

below Tg (x10 <sup>-6</sup> ), °C <sup>-1</sup>	28
above Tg (x10 <sup>-6</sup> ), °C <sup>-1</sup>	82

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.