

3M™ Liquid Optically Clear Adhesive 2321

Product Description

3M™ Liquid Optically Clear Adhesive 2321 is designed for gap filling of large display parts or curved/non-flat surfaces or other applications requiring optical bonding.

Key Features

- UV curable.
- Good adhesion to glass-to-glass substrates.
- Minimum volume shrinkage for large size panel applications.

Suggested Light Source Wavelength Ranges

Curing wavelength: 315- 420nm

Curing energy: 3000 mJ/cm² UVA

Recommended Sources: Fusion H or D bulbs; high pressure Hg vapor lamps and spot cure sources; LED (365, 385, and 395 nm); pulsed Xenon lamps; metal halide lamps.

Example 1: Fusion Systems D bulb (high intensity UV Lamp)

Power: 1 W/cm² UVA

Line speed: 6 meters/minute

Dose: ~3 J/cm² (3 passes)

Example 2: Clearstone Technologies Inc. LED UV Light Source JL2-385C-SFL2 (385 nm)

Power: 700 mW/cm² at a distance of 5 inches from the LED source

Exposure time: 4.3 seconds

Dose: ~3 J/cm²

Typical Uncured Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Chemistry	Acrylate	
Viscosity (cps)	3000	Brookfield DV-II + Pro Viscometer / Spindle : #52, cone 3°, 25°C
Density (g/ml)	1.021	Pycnometry
Refractive Index n_D	1.48	Abe, 25°C

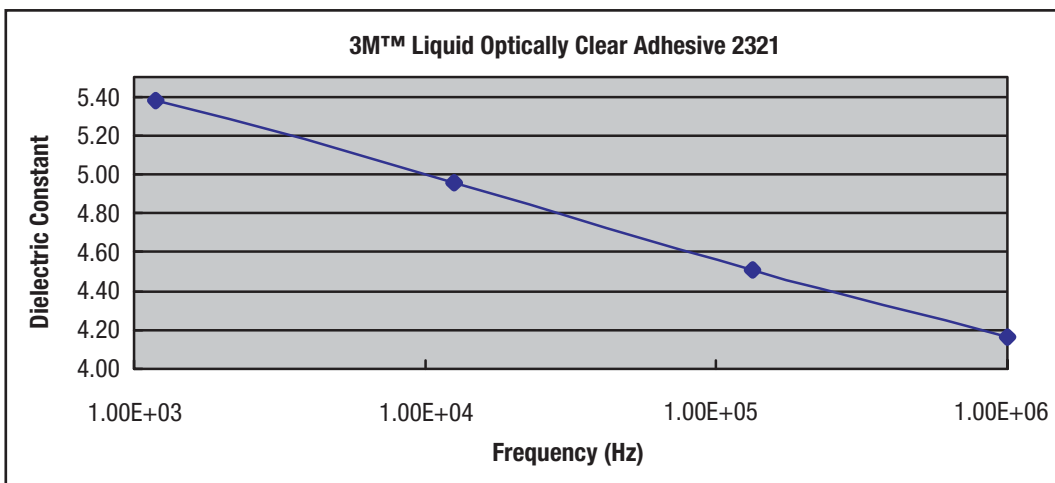
Typical Cured Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Chemistry	Acrylate	
Cure energy (mJ/cm ²)	3000	Radiometer, UVA
Refractive Index n_D	1.49	Abe, 25°C
Storage modulus (Pa), 25°C	1.30E+5	DMA, Shear Mode, 1 Hz
Color L*a*b* (corrected for substrate, 250um)	L* >99 a* <0.1 b* <0.5	Spectrophotometry, Lambda 950
Density (g/ml)	1.081	Pycnometry
Volume Shrinkage (%)	5.6% 4.7%	Pycnometry Water densitometer
Haze (%)	<1%	ASTM D1003
Transmittance (%) (average 380-780 nm)	>99%	ASTM E903
Adhesion to Glass (N/cm ²)	200	Pluck Testing

Dielectric Constant

Measurements were made according to the Standard ASTM D150 using conformal copper electrodes with a conductive z-axis adhesive.



Hz	DC
1.00E+06	4.16
1.33E+05	4.51
1.26E+04	4.96
1.20E+03	5.38
1.13E+02	5.68
1.00E+01	5.86

Directions for Use

Normal Applications:

Dispense adhesive, fixture parts to be bonded, expose to suitable light source. 4 minutes exposure time at 9 mW/cm² intensity is recommended. Degree of cure will depend on exposure time, intensity and spectral distribution of the light source, distance of adhesive from the light source, and light transmittance of the substrates. Post baking may be necessary when UV light is not evenly distributed.

Applications with Non Sticky Edge or Higher Productivity Demand:

Dispense adhesive on one plate and brush Edge Hardening Agent around edge, fixture parts to be bonded, 1 minutes exposure time at 9 mW/cm² intensity is recommended to fix the set. 3 minutes UV exposure or post baking at 60°C for 5 minutes are recommended to fully cure the material.

Applications with Shadow Area:

Dispense adhesive on one plate and brush Edge Hardening Agent on shadow area, expose to suitable light source for 1 minute to activate the material. Beware not to let 3M™ Liquid Optically Clear Adhesive 2321 and Edge Hardening Agent to contact before the set is bonded. Fixture parts to be bonded quickly after the adhesive is activated, 3 minutes further UV exposure at 9 mW/cm² followed by Post Baking at 60°C for 5 minutes is recommended to fully cure the material under shadow area.

Storage and Shelf Life

This product is light sensitive. Minimize exposure of adhesive to daylight, UV light and artificial light during storage and handling. Store in original container. Store at 32~23°F (0~-5°C) or lower. Shelf life is 6 months.

Precautionary Information

Refer to Product Label and Material Safety Data Sheet for Health and Safety Information before using this product.

Regulatory

For regulatory information about this product, refer to our website at 3M.com/electronics.

For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-800-251-8634. Address correspondence to: 3M, Electronics Markets Materials Division, 3M Center, Building 225-3S-06, St. Paul, MN 55144-1000. Our fax number is 651-778-4244 or 1-877-369-2923. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

Technical Information

The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

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60-5002-0650-7

