

3M™ Printable – Liquid Optically Clear Adhesive 1088

Product Description

3M™ Printable – Liquid Optically Clear Adhesive 1088 offers the combination of low modulus and low shrinkage of the cured adhesive to reduce stress induced defects in the display appearance. The adhesive is stencil printed which improves thickness, pattern and dimensional control compared to typical dispensed liquid adhesives.

General Features

3M™ Printable – Liquid Optically Clear Adhesive 1088 is a high viscosity liquid adhesive designed for gap filling of touch module assemblies or direct display bonds or other applications requiring optical bonding. Gap filling reduces reflection and increases transmission of light at touch panel/LCD interfaces. 3M LOCA 1088 is a one part liquid that cures rapidly when exposed to UV light and exhibits excellent clarity, softness, and low percent volume shrinkage.

Key Features

- Liquid Dispense
- Low Modulus
- Mura Prevention
- Rapid Cure

Typical Properties and Performance Characteristics

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

Typical Print Properties

Property	Value
Viscosity ¹	42 - 48 Pa.s
Density	1.02 g/cm ³
Refractive Index	1.47

Cured Optical Properties

Property	Value
Refractive Index	1.47
Transmission ^{2,3}	> 99%
Haze ^{2,4}	< 0.5%
Color ^{2,5} a* b*	-0.5 0.5

¹ Measured using AR2000 Rheometer 40mm, 1 degree cone, 25°C, Shear Rate 1 sec⁻¹.

² Measured for 250 micron thick layer on LCD glass.

³ Test method based on ASTM E903.

⁴ Test method based on ASTM D-1003-92.

⁵ Measured using Hunter Lab Ultrascan Pro.

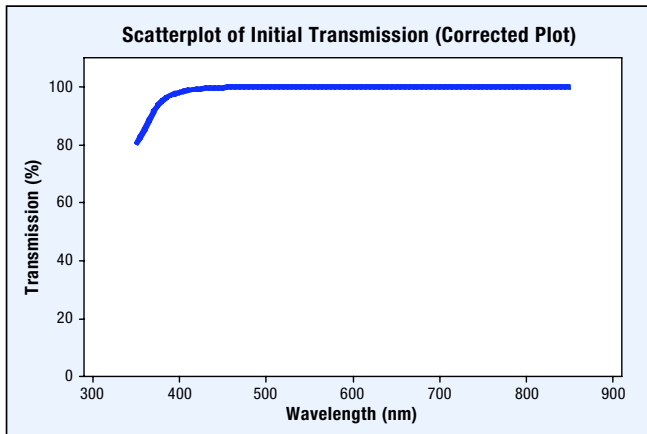
Typical Properties and Performance Characteristics (continued)

Cured Physical Properties

Property	Value
Shear Modulus ⁶	> 2 kPa
Glass Transition Temperature ⁶	< -50°C
Dielectric Constant ⁷ (100kHz)	4.4
Volume Shrinkage	< 2%
Tensile Adhesion ⁸ Glass – to – Glass	> 30 N/cm ²
Shear Adhesion ⁹ Glass – to – Glass	> 20 N/cm ²
Peel Adhesion ¹⁰ vs. Glass	> 1.2 N/cm ²

Performance – Transmission vs. Wavelength

The graph shown below includes data for the Percent Light Transmission as a function of wavelength. The graph below was corrected for light reflections from the outer glass layers



⁶Measured using Dynamic Mechanical Analysis in Shear Mode at 1Hz and 25°C.

⁷Measured using Novocontrol High Temperature Broadband Dielectric Spectrometer. Sample thickness 1.2mm. Sample diameter 40mm.

⁸Measured using MTS Mechanical Test Instrument. Sample thickness 300 microns. Tensile test speed 25mm/min.

⁹Measured using MTS Mechanical Test Instrument. Sample thickness 300 microns. Shear test speed 25mm/min.

¹⁰Measured using IMASS Test Instrument. Sample thickness 300 microns. Peel test speed 60mm/min. Substrate float glass. Backing 2 mil thick Aluminum film. All samples dwell up to 24hr at 25°C x 50%rh.

Assembly Process Techniques

Directions for Use

The Assembly Process for 3M™ Printable – Liquid Optically Clear Adhesive 1088 requires three steps:

1. Printing
2. Laminating
3. UV Curing

Specific equipment is required to print, laminate, and cure the adhesive for optimal assembly. For more information about the specific equipment contact your local Technical Service Representative.

Assembly Process Precautions

The adhesive must be protected from ambient light to prevent cure advancement prior to laminating.

The proper UV light intensity is necessary to insure the correct degree of cure. This light intensity will depend on exposure time, intensity and spectral distribution of the light source, distance of adhesive from the light source, and light transmittance through the substrates. Also, surfaces exposed to oxygen may be inhibited during cure resulting in a tackier, under-cured surface layer. Minimum UV dosage requirement is 3000mJ/sq.cm measured using UVA spectra.

Other Handling Information

Storage

This product is light sensitive. Minimize exposure of adhesive to daylight, UV light and artificial light during storage and handling. Store in original container at 77°F (25°C) or below. Shelf life is 12 months when stored at 77°F (25°C) or below.

Regulatory

For regulatory information about this product, please contact your 3M representative.

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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