

3M™ Optically Clear Adhesives 8171 • 8172

Product Description

3M™ Optically Clear Adhesives:

- 8171** 1.0 mil (25 microns) optically clear laminating adhesive for bonding smooth, transparent substrates.
- 8172** 2.0 mils (50 microns) optically clear laminating adhesive for bonding smooth or textured transparent substrates.

Construction

Products	3M™ Optically Clear Adhesives	
	8171	8172
Adhesive Type:	Acrylic	Acrylic
Adhesive Carrier:	None	None
Approximate Thickness:		
Release Liner	2.0 mils (50 microns) Polyester	2.0 mils (50 microns) Polyester
Adhesive	1.0 mil (25 microns)	2.0 mils (50 microns)
Release Liner	2.0 mils (50 microns) Polyester	2.0 mils (50 microns) Polyester

Typical Physical 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.

Refractive Index:

(± 0.0005 measured for Sodium D line @ 25°C)

3M™ Optically Clear Adhesives	
8171	8172
1.4750	1.4741

Haze:

Haze was measured according to ASTM D1003-92.

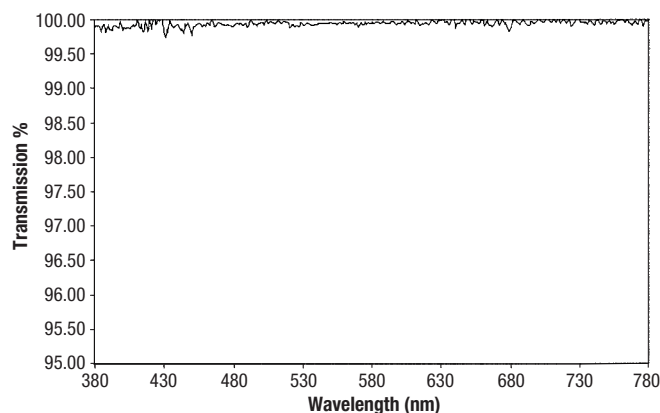
3M™ Optically Clear Adhesives	
8171	8172
0.6%	0.8%

Transmission:

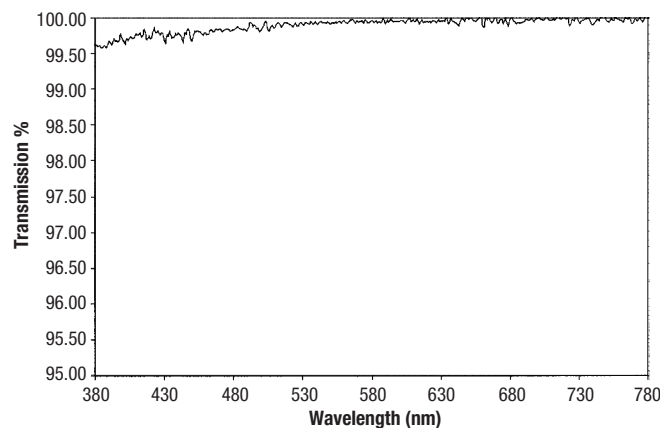
ASTM E903, D1003, and E284

Reflective-Corrected Total Luminous Transmission vs. Wavelength

3M™ Optically Clear Adhesive 8171



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Typical Physical Properties and Performance Characteristics (continued)

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

Peel Adhesion:

ASTM D3330 modified, 180 degree peel, 12 in./min. 305 mm/min. 2.0 mil polyester to various surfaces.

		3M™ Optically Clear Adhesives	
Substrate		8171	8172
Initial (20 minute dwell)	Glass	42 oz/in (46 N/100mm)	45 oz/in (49 N/100mm)
	Acrylic	29 oz/in (32 N/100mm)	32 oz/in (35 N/100mm)
	Polycarbonate	32 oz/in (35 N/100mm)	38 oz/in (42 N/100mm)
	Stainless Steel	33 oz/in (36 N/100mm)	35 oz/in (39 N/100mm)
72 Hour Room Temperature	Glass	37 oz/in (40 N/100mm)	43 oz/in (47 N/100mm)
	Acrylic	35 oz/in (39 N/100mm)	38 oz/in (42 N/100mm)
	Polycarbonate	39 oz/in (43 N/100mm)	44 oz/in (48 N/100mm)
	Stainless Steel	45 oz/in (49 N/100mm)	48 oz/in (53 N/100mm)

Shear Adhesion:

ASTM D-3654 Procedure H

1/2" x 1" Overlap, minutes to failure.

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Heat Aged (70°C) 500g, stainless steel	>10,000	>10,000

Color:

ASTM – E1164-07 / CIELAB

(BYK Gardner TCS Plus spectrophotometer, model 8870)

3M™ Optically Clear Laminating Adhesives	
8171	8172
L* = 97.10	L* = 97.08
a* = 0.04	a* = 0.05
b* = 0.17	b* = 0.22

Chemical Resistance:

When properly applied, 3M™ Optically Clear Adhesives can withstand splashes of numerous chemicals including acetone, isopropyl alcohol, and cleaners.

Water Resistance:

Immersion in water has no appreciable effect on the bond strength at room temperature.

Relative Temperature Resistance:

Short Term High Temperature 350°F (177°C)

Long Term High Temperature 185°F (85°C)

Long Term Low Temperature -40°F (-40°C)

Shelf Life:

Product retains its performance and properties for two years from date of manufacture if properly stored at room temperature conditions of 72°F (22°C) and 50% relative humidity. Storage in a plastic bag is recommended.

Available Sizes

Available Lengths (subject to minimum order requirements):
Maximum length - 3M™ Optically Clear Adhesives 8171 / 8172 180 yards or 540 feet

Available Widths (subject to minimum order requirements):
Maximum width - 3M™ Optically Clear Adhesives 8171 / 8172 26 inches

Normal Slitting Tolerance ± 1/32 in. (0.8 mm)

Core Size 3.0 in. (76.2 mm)

Application Techniques

For maximum bond strength the surface should be thoroughly cleaned and dried. To obtain greatest benefit, laminations should be done in a class 10,000 cleanroom or better and using equipment with static charge elimination.

Bond strength can be improved with firm application pressure and moderate heat causing the adhesive to develop intimate contact with the bonding surface.

Maximum bond strength is achieved after 72 hours of dwell time.

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General Information

- Light transmission >99% when corrected for reflection losses.
- Haze level < 5% for 3M™ Optically Clear Adhesive 8171.
- Non-birefringent when removed from carrier film.
- High temperature, humidity, and UV resistance.
- Long term durability without yellowing, delaminating, or degrading.
- High cohesive and peel strength for reliably bonding most transparent substrates.
- 3M™ Optically Clear Adhesives 8171 and 8172 are coated and converted in a clean room.
- 3M optically clear adhesives are inspected to reduce the occurrence of bubbles, dirt, gels and other optical distortions.
- Wound on plastic cores and wrapped in plastic to eliminate paper fiber contamination.
- Two film liners for optimum adhesive smoothness and differential release for ease of processing and protection from contamination.

Application Ideas

- Touchscreens- for bonding film and glass laminates.
- Transparent graphic overlays.
- Projection screens.
- Avionics/military displays.
- Optical management films for LCD.

Processing:

Laminating

Recommended nip roll or roller platen press type laminator to maintain optical aesthetics when laminated. Hand lamination not advised. Use best process control standards possible to control variables. (See **3M Laminating Technical Bulletin** for additional information.)

Die-cutting

Use high precision, tight tolerance tooling designed to cleanly cut film and pressure-sensitive adhesive.

Certification/Recognition

MSDS: 3M has not prepared a MSDS for these products which are not subject to the MSDS requirements of the Occupational Safety and Health Administration's Hazard Communication Standard, 29 C.F.R. 1910.1200(b)(6)(v). When used under reasonable conditions or in accordance with the 3M directions for use, these products should not present a health and safety hazard. However, use or processing of the product in a manner not in accordance with the directions for use may affect their performance and present potential health and safety hazards.

TSCA: These products are defined as articles under the Toxic Substances Control Act and therefore, are exempt from inventory listing requirements.

RoHS: These products comply with the requirements of EU Directive 2002/95/EC and 2005/618/EC.

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, Building 21-1W-10, 900 Bush Avenue, 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.

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