

3M™ Optically Clear Adhesives 8171CL • 8172CL

Product Description

3M™ Optically Clear Adhesives (OCA) are highly specialized optically clear free-film adhesive, offering superior clarity and excellent adhesion to various types of transparent substrates.

3M™ Optically Clear Adhesive 8171CL and 8172CL are specifically designed for use on moisture containing plastic substrates (e.g. PMMA, PC, etc.) with improved bubble resistance caused by substrate outgassing under higher temperature and humidity aging conditions.

Construction

Products	3M™ Optically Clear Adhesives	
	8171CL	8172CL
Adhesive Type:	Acrylic	Acrylic
Adhesive Carrier:	None	None
Approximate Thickness:		
Release Liner	2.0 mil (50 micron) Clear Polyester	2.0 mil (50 micron) Clear Polyester
Adhesive	1.0 mil (25 micron)	2.0 mil (50 micron)
Release Liner	2.0 mil (50 micron) Clear Polyester	2.0 mil (50 micron) Clear 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	
8171CL	8172CL
1.47	1.47

Haze:

Haze was measured according to ASTM D1003-92.

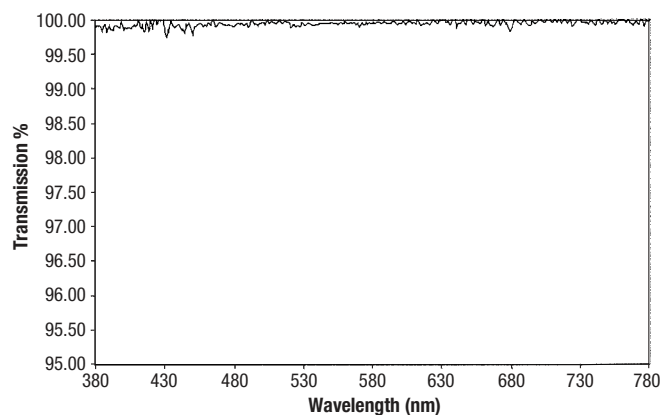
3M™ Optically Clear Adhesives	
8171CL	8172CL
0.6%	0.8%

Transmission:

ASTM E903, D1003, and E284

Reflective-Corrected Total Luminous Transmission vs. Wavelength

Typical 3M™ Optically Clear Adhesive 817XCL



3M™ Optically Clear Adhesives 8171CL • 8172CL

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		8171CL	8172CL
Initial (20 minute dwell)	Glass	50 oz/in (55 N/100mm)	50 oz/in (55 N/100mm)
	Acrylic	37 oz/in (40 N/100mm)	38 oz/in (42 N/100mm)
	Polycarbonate	49 oz/in (54 N/100mm)	52 oz/in (57 N/100mm)
72 Hour Room Temperature	Glass	48 oz/in (53 N/100mm)	52 oz/in (57 N/100mm)
	Acrylic	46 oz/in (50 N/100mm)	57 oz/in (62 N/100mm)
	Polycarbonate	60 oz/in (66 N/100mm)	60 oz/in (66 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	
8171CL	8172CL
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.

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 8171CL / 8172CL	180 yards or 540 feet
Available Widths (subject to minimum order requirements):	
Maximum width - 3M™ Optically Clear Adhesives 8171CL / 8172CL	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 < 2% for 3M™ Optically Clear Adhesive 8171CL.
- Non-birefringent.
- 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 8171CL and 8172CL 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.

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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 products 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 an article under the Toxic Substances Control Act and therefore, are exempt from inventory listing requirements.

RoHs Complaint/REACH Compliant: These products comply with the European Union's "Restriction of Hazardous Substances" (RoHs) initiative and with European REACH regulations 2002/95/ECj 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, 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.

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