

3M™ Contrast Enhancement Film

CEF0805 • CEF0806 • CEF0807 • CEF0808 • CEF0809 • CEF0810

Product Description

3M™ Contrast Enhancement Film (CEF) is specialized optically clear adhesive offering superior clarity and excellent adhesion to various transparent display substrates. 3M CEF0805, CEF0806, CEF0807, CEF0808, CEF0809, and CEF0810 are recommended for display gap filling applications where very high adhesion is critical.

Construction

Products	3M™ Contrast Enhancement Film					
	CEF0805	CEF0806	CEF0807	CEF0808	CEF0809	CEF0810
Adhesive Type:	Acrylic	Acrylic	Acrylic	Acrylic	Acrylic	Acrylic
Adhesive Carrier:	None	None	None	None	None	None
Approximate Thickness:						
Release Liner	2.0 mil (50 micron) Polyester	2.0 mil (50 micron) Polyester	2.0 mil (50 micron) Polyester	2.0 mil (50 micron) Polyester	2.0 mil (50 micron) Polyester	2.0 mil (50 micron) Polyester
Adhesive	5.0 mil (125 micron)	6.0 mil (150 micron)	7.0 mil (175 micron)	8.0 mil (200 micron)	9.0 mil (225 micron)	10.0 mil (250 micron)
Release Liner	2.0 mil (50 micron) Polyester	2.0 mil (50 micron) Polyester	2.0 mil (50 micron) Polyester	2.0 mil (50 micron) Polyester	2.0 mil (50 micron) Polyester	2.0 mil (50 micron) Polyester

Available Sizes

Available in die-cut pieces only.



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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.

Optical Performance to Environmental Conditions:

3M™ Contrast Enhancement Films have withstood the following environmental tests conducted in the 3M laboratory under the conditions specified without any appreciable deterioration in visible appearance, physical integrity or optical performance. Over the entire test duration there was no significant change in transmission over the visible spectrum.

Substrate	Condition	Duration
High Temperature	+85°C	500 hours
Low Temperature	-40°C	500 hours
High Temp/Humidity	+70°C at 90% R.H.	500 hours
Thermal Shock	One hour at -40°C followed by one hour at +85°C	200 cycles
UV	ASTM G-26 Type B, BH	500 hours

Peel Adhesion:

ASTM D3330 modified, 180 degree peel, 12 in./min.
(305 mm/min.) 2.0 mil polyester backing.

Products		3M™ Contrast Enhancement Film											
		CEF0805		CEF0806		CEF0807		CEF0808		CEF0809		CEF0810	
		Oz/in	(N/100mm)	Oz/in	(N/100mm)	Oz/in	(N/100mm)	Oz/in	(N/100mm)	Oz/in	(N/100mm)	Oz/in	(N/100mm)
20 min dwell at RT:	Glass	91	(100)	101	(111)	100	(109)	117	(128)	139	(152)	117	(128)
	Acrylic	73	(80)	85	(93)	88	(96)	77	(84)	97	(106)	113	(124)
	Polycarbonate	87	(95)	96	(105)	95	(104)	98	(107)	115	(126)	118	(129)
72 Hour dwell at RT:	Glass	126	(138)	129	(141)	131	(143)	162	(177)	140	(153)	155	(170)
	Acrylic	85	(93)	97	(106)	100	(109)	99	(108)	115	(126)	126	(138)
	Polycarbonate	93	(102)	101	(111)	108	(118)	111	(121)	139	(152)	129	(141)

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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.

Color:

ASTM E 1164-07 / CIELAB

(BYK Gardner TCS Plus Spectrophotometer, Model 8870)

3M™ Contrast Enhancement Film CEF08XX
L* = 97.12
a* = -0.05
b* = 0.19

Refractive Index:

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

3M™ Contrast Enhancement Film CEF08XX
1.473

Haze:

Haze was measured according to ASTM D1003-92

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0.8%

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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.

Transmission:

ASTM E903, D1003, and E284

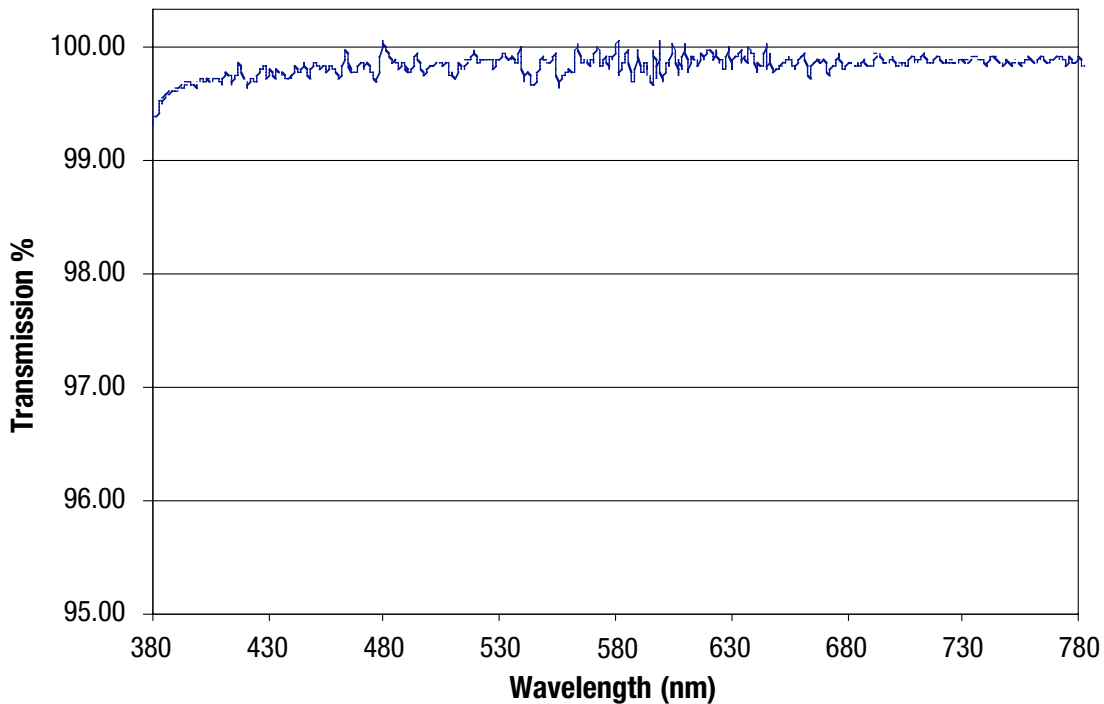
We calculate internal transmittance by correcting sample Transmittance (TLT) for the sample Reflectance (TLR) in accord with the definition of internal transmittance (τ_i) found in ASTM E284. This measurement is meant to show whether the sample has any absorptance in the visible range of the spectrum. A perfect sample with no absorptance would have a value of $\tau_i = 100$ percent (\pm error of measurements, typically ± 0.5 %).

Internal Transmittance (%T_{LT_i}, τ_i) is calculated as follows:

$$\% \text{ TLT}_i = [(\% \text{ TLT}_s) / (\% \text{ TLT}_{100} - \% \text{ TLR}_s)] * 100$$

Transmittance vs. Wavelength

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Typical Electrical Properties of 3M™ Contrast Enhancement Film CEF08XX at 30°C and 1 KHz.

ASTM-D150-92

Product	Dielectric Constant	Tan (Delta)
CEF08XX	4.04	0.0438

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.

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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.

General Information

- Light transmission >99% when corrected for reflection losses.
- 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™ Contrast Enhancement Films 08XX are coated and converted in a clean room.
- 3M™ Contrast Enhancement Films 08XX 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.
- Available in die-cut pieces only.

Application Ideas

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

Processing:

Die-cutting

3M will supply precision die-cut parts.

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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 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 Complaint/REACH Compliant: 3M™ Contrast Enhancement Film CEF08XX complies with the European Union's "Restriction of Hazardous Substances" (RoHs) initiative and with European REACH regulations 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, 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.

Important Notice

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