

3M™ Contrast Enhancement Film (CEF38XX Series)

- 3M film CEF3804
- 3M film CEF3806



Product Description

3M™ Contrast Enhancement Film (CEF38XX Series) are a specialized optically clear adhesive offering superior clarity and excellent adhesion to various transparent display substrates. 3M film CEF38XX Series is recommended for applications that require soft CEF for filling thick ink step (lens border frame), ITO compatibility and high adhesion. 3M film CEF38XX is Ultraviolet (UV) curable which makes it suitable for film touch panel and LCM bonding applications.

Key Features

- Excellent conformability to surfaces steps
- Anti-corrosion to help improve touch sensor lifetime

Product Construction

Product	3M™ film CEF3804	3M™ film CEF3806
Adhesive Type:	Acrylic	Acrylic
Adhesive Carrier:	None	None
Approximate Thickness:		
Release Liner:	75 µm (3.0 mils) Clear Polyester	75 µm (3.0 mils) Clear Polyester
Adhesive:	100 µm (4.0 mils)	150 µm (6.0 mils)
Release Liner:	100 µm (4.0 mils) Clear Polyester	100 µm (4.0 mils) Clear Polyester

The 3M family of optically clear adhesives for electronic displays are usually available in two forms. 3M OCA come in roll good form. 3M Contrast Enhancement Films (CEF) are available in die-cut form.

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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.

Environmental Testing:

The following environmental tests were conducted in the 3M laboratory under the conditions specified without any appreciable deterioration in visible appearance (no bubbles, delamination, etc.). Sample construction is optical glass/3M film CEF38XX/ optical glass, after 3 J/cm² UV dosage.

	Condition	Duration
High Temperature	+85°C	800 hours
Low Temperature	-40°C	800 hours
High Temp/Humidity	+65°C/90%RH	800 hours

Peel Adhesion:

ASTM D3330 modified, 180 degree peel from glass, 1 cm wide peel strips, 12in/min (305 mm/min), 2.0 mil polyester backing, 3M film CEF38XX Series.

Peel Adhesion to Glass	
Dwell Time	20 min dwell at 25°C/50%RH
Units	N/cm
3M film CEF38XX	7.65

Color:

Ultra Scan Pro (Hunter Lab), ASTM E308, D65/10° 3M film CEF38XX on optical glass.

3M™ film CEF38XX Series
L* = 96.9
a* = -0.06
b* = 0.5

Refractive Index:

(+ 0.0005 Metricon measurements from standard deviation of ellipsometry) 3M film CEF38XX, uncured

3M™ film CEF38XX Series		
405 nm	532 nm	633 nm
1.4914	1.4799	1.4747

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Gel Content:

Gel content is determined by the mass ratio of residual cured and uncured optically clear adhesive following immersion in ethyl acetate.

	UV Dose	Gel Content
3M™ film CEF38XX	3 J/cm ² UVA	72 +/- 2%

Haze:

Haze is measured according to ASTM D1003-92, 3M film CEF38XX on LCD glass.

3M™ film CEF38XX Series
0.4%

Typical Electrical Properties at Room Temperature:

ASTM-D150-92. 3M film CEF38XX, cured at 3 J/cm²

Dielectric Constant:

3M™ film CEF38XX Series	
Frequency (kHz)	Dielectric Constant
100	3.70
500	3.36

Suggested Lamination Process

Step 1: Remove secondary liner, and then laminate 3M film CEF38XX Series to first adherent substrate by roller at room temperature

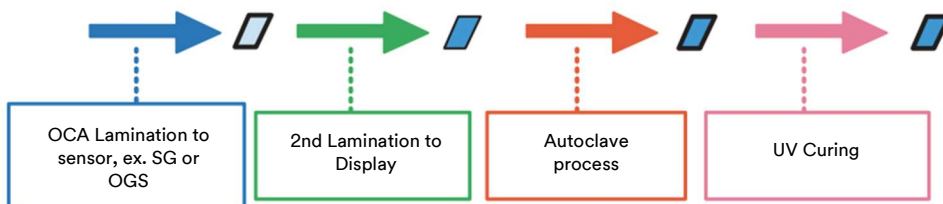
Recommendation: roller pressure 0.1 – 0.2 MPa, roller speed 0.5 – 1m/min

Step 2: Remove primary liner, and then laminate 3M film CEF38XX/first adherent to second adherent by vacuum lamination (if rigid-to-rigid bonding)

Recommendation: Vacuum condition < 50 Pa, pressure around 0.1 – 0.2 MPa

Step 3: Autoclave process recommendation: 30-60°C/3-5kgf/cm²/20-30min

Step 4: UV curing with minimum 3 J/ cm² dosage



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UV Cure Guidance

- UV range: 340-375nm (max absorption = 342nm)
- Minimum UV dosage and intensity: 3 J/cm², 10 mW/cm²
- Suggest using lower wavelengths of the UV-A spectra. Suitable UV sources would be Fusion D bulb and medium pressure Hg
- LED sources, which output at longer UV-A wavelengths would be less ideal.

Storage

- Store in original packaging or plastic bag.
- Avoid applying pressure or resting objects on the product to prevent marking, denting, or deforming the surface.
- Wear gloves to prevent fingerprints or nail marks when handling.
- Product needs to be unpacked and handled in a clean-room facility.
- Product must be protected from light exposure.
- Store in sealed, foil bag under -20°C to 30°C and 50 ± 10% relative humidity. If removed from cold storage, ensure no condensation on packaging.
- Do not stack sheets more than fifteen pieces high.

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

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3M Display & Electronics
3M Center, Building 223-3S-32
St. Paul, MN 55144-1000 U.S.A.

Phone 1-800-3M HELPS
Web 3M.com/oca

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