

# 3M™ Contrast Enhancement Film

## CEF38XX Series

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

### Product Description

3M™ Contrast Enhancement Film (CEF) 38XX is a specialized optically clear adhesive offering superior clarity and excellent adhesion to various transparent display substrates. 3M CEF38XX is recommended for applications that require soft CEF for filling thick ink step (lens border frame), ITO compatibility and high adhesion. 3M CEF38XX is UV curable which makes it suitable for film touch panel and LCM bonding applications.

### Product Construction

Product	3M CEF3806
Adhesive Type:	Acrylic
Adhesive Carrier:	None
Approximate Thickness:	
Release Liner:	3.0 mil (75 micron) Clear Polyester
Adhesive:	6.0 mil (150 micron)
Release Liner:	4.0 mil (100 micron) 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.

## Typical Physical Properties and Performance Characteristics

**Note:** The following technical information and data is based upon limited 3M testing conditions and should not be used for specification purposes.

### Peel Adhesion:

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

Peel Adhesion to Glass	
Dwell Time	20 min dwell at 25°C/50%RH
Units	N/cm
CEF3806	7.65

### Color:

Ultra Scan Pro (Huner Lab), ASTM E308, D65/100 3M CEF38XX on LCD glass, uncured

3M CEF3806	
L*	96.9
a*	-0.06
b*	0.5

### Refractive Index:

(+ 0.0005 Metricon measurements)  
3M CEF38XX, uncured

3M CEF3806		
405 nm	532 nm	633 nm
1.4914	1.4799	1.4747

### Haze:

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

3M CEF3806	
0.4%	

### 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 CEF3806	3 J/cm <sup>2</sup> UVA	72 ± 2%

## Typical Electrical Properties at Room Temperature:

ASTM-D150-92, 3M CEF38XX, cured at 3J/cm<sup>2</sup>

### Dielectric Constant:

3M CEF3806	
Frequency (KHz)	Dielectric Constant
100	3.70
500	3.36

## Suggested Lamination Process

**Step 1:** Remove secondary liner, and then laminate 3M CEF3806 to first adherent substrate by roller at room temperature

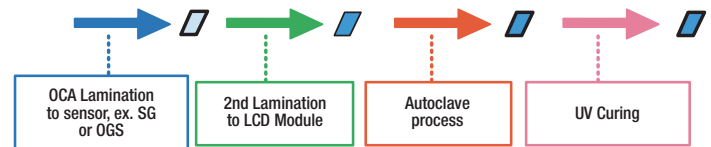
Recommendation: roller pressure 0.1 – 0.2 MPa, roller speed 0.5 – 1 m/min

**Step 2:** Remove primary liner, and then laminate 3M CEF3806/first adherent to second adherent by vacuum lamination

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

**Step 3:** Autoclave process recommendation: 30-60°C/3-5kgf/cm<sup>2</sup>/20-30min

**Step 4:** UV curing with minimum 3J/cm<sup>2</sup> dosage



## UV Cure Guidance

- UV range: 340-375nm (max absorption = 342nm)
- Minimum UV dosage and intensity: 3 J/cm<sup>2</sup>, 10 mW/cm<sup>2</sup>
- 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

- 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.

## 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.

## Regulatory

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

## 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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