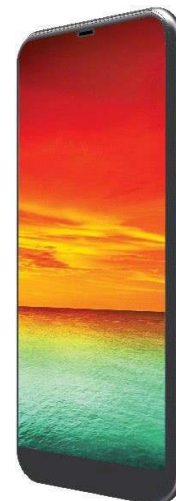


3M™ Contrast Enhancement Film (CEF2180-X Series)

- 3M film CEF2180-3.8
- 3M film CEF2180-4



Product Description

3M™ Contrast Enhancement Film (CEF2180-X Series) are specialized optically clear adhesives offering clarity and adhesion to various transparent display substrates. 3M film CEF2180-X Series is designed for applications that require OCA for blocking UV transmittance (under 380 nm wavelength) and high adhesion. 3M film CEF2180-X is Ultraviolet (UV) curable.

Product Construction

Product	3M™ film CEF2180-3.8	3M™ film CEF2180-4
Adhesive Type:	Acrylic	Acrylic
Adhesive Carrier:	None	None
Approximate Thickness:		
Release Liner:	50 µm (2.0 mils) Clear Polyester	50 µm (2.0 mils) Clear Polyester
Adhesive:	95 µm (3.8mils)	100 µm (4.0 mils)
Release Liner:	75 µm (3.0 mils) Clear Polyester	75µm (3.0 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.).

Product	Condition	Tensile Adhesion (N/cm ²)	Peel Adhesion (N/cm)	% Transmission (380/420nm)	Color-a*	Color-b*	% Haze
3M film CEF2180-X	Initial	342	5.6	2% / 92%	-0.23	0.70	0.1
	+65°C/90%RH for 800 hours	487	7.5	Not Tested	-0.29	0.71	0.15

Tensile Adhesion: Construction is on float glass/3M film CEF2180-X/float glass, measured using MTS equipment at 25mm/min

Peel Adhesion: ASTM D3330 modified, 180-degree peel from float glass, 1cm wide peel strips, 25mm/min, 2.0 mil polyester backing

% Transmission measured on Lambda, film only

Color and haze: Ultra Scan Pro (Hunter Lab), ASTM E308, D65/10° 3M film CEF2180-X on LCD glass

Refractive Index:

(+ 0.0005 Metricon measurements from standard deviation of ellipsometry) 3M film CEF2180-X, uncured and cured at 3 J/cm².

3M™ film CEF2180-X	
Wavelength	633 nm
Cured	1.482

Typical Electrical Properties at Room Temperature:

ASTM-D150-92. 3M film CEF2180-X, cured at a minimum 1J/cm².

Dielectric Constant:

3M™ film CEF2180-X	
Frequency (kHz)	Dielectric Constant
100	4.28
300	4.02

3M™ Contrast Enhancement Film (CEF2180-X Series)

Suggested Lamination Process

Step 1: Remove secondary liner, and then laminate 3M film CEF2180-X to first adherent substrate by roller at room temperature

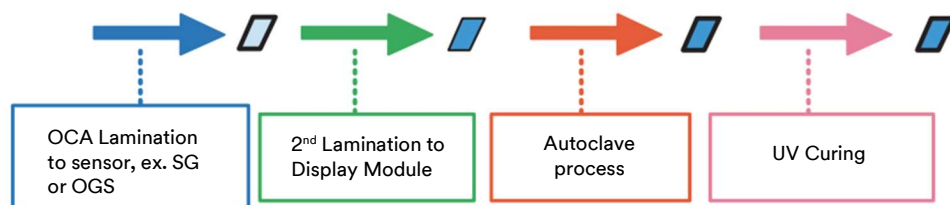
Recommendation: roller pressure 0.1 – 0.2 MPa, roller speed 0.5 – 1 m/min

Step 2: Remove primary liner, and then laminate 3M film CEF2180-X/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 1J/cm² dosage (UVA at 405nm)



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.
- CEF should be properly stored at room temperature in a sealed, foil bag and between 40-60% relative humidity.

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

3M™ Contrast Enhancement Film (CEF2180-X Series)

Technical Information: The technical information, guidance, and other statements contained in this document or otherwise provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.

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