Science. Applied to Life.™

Technical Data | May 2026

3M™ Contrast Enhancement Film (CEF61XX Series)

- 3M film CEF6104
- 3M film CEF6106
- 3M film CEF6112

Product Description

3M™ Contrast Enhancement Film (CEF61XX Series) are a specialized optically clear adhesive designed to improve touch sensitivity in devices with a high and constant Dk over a wide variety of process conditions. 3M film CEF61XX Series offers excellent clarity and adhesion to various substrates including glass and polarizers. 3M film CEF61XX is Ultraviolet (UV) curable which makes it suitable for film touch panel and LCM or OLED bonding applications.

Product Construction

Product	3M™ film CEF6104	3M™ film CEF6106	3M™ film CEF6112
Adhesive Type:	Acrylic	Acrylic	Acrylic
Adhesive Carrier:	None	None	None
Approximate Thickness:			
Release Liner:	75 µm (3.0 mils) Clear Polyester	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)	300 µm (12.0 mils)
Release Liner:	75 µm (3.0 mils) Clear Polyester	75 µm (3.0 mils) Clear Polyester	75 µm (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.

3M™ Contrast Enhancement Film (CEF61XX Series)
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 CEF61XX/optical glass, after 3 J/cm^2 UV dosage.

	Condition	Duration
High Temperature	+95°C	1000 hours
Low Temperature	-40°C	1000 hours
High Temp/Humidity-1	+65°C/90%RH	1000 hours
High Temp/Humidity-2	+85°C/85%RH	1000 hours
Thermal Shock	40°C and +85°C (1 hour dwell, <1 min ramp time)	300 cycles
UV	0. 55W/m² at 340nm, Daylight filter	500 hours

Peel Adhesion:

ASTM D3330 modified, 180 degree peel from glass, 1cm wide peel strips, 12in/min (305 mm/min), 2.0 mil polyester backing, 3M film CEF61XX cured at 3J/cm^2.

Peel Adhesion to Glass		
Dwell Time	20 min dwell at 25°C/50%RH	3 days dwell at 25°C/50%RH
Units	N/cm	N/cm
3M film CEF6104	5.1	6.8
3M film CEF6106	5.7	7.6
3M film CEF6112	6.9	9.8

Color:

Ultra Scan Pro (Hunter Lab), ASTM E308, D65/10° 3M film CEF61XX on optical glass.

3M™ film CEF61XX Series			
3M film CEF6104	L* = 96.4	a* = -0.29	b* = 0.15
3M film CEF6106	L* = 96.4	a* = -0.30	b* = 0.17
3M film CEF6112	L* = 96.4	a* = -0.32	b* = 0.19

3M™ Contrast Enhancement Film (CEF61XX Series)

Refractive Index:

(+ 0.0005 Metricon measurements from standard deviation of ellipsometry) 3M film CEF61XX, uncured

3M™ film CEF61XX Series			
Wavelength	405 nm	532 nm	633 nm
Uncured	1.4972	1.4856	1.4829
Cured	1.4968	1.4848	1.4803

Haze:

Haze is measured according to ASTM D1003-92, 3M film CEF61XX on optical glass, uncured

3M™ film CEF61XX Series
0.2%

Typical Electrical Properties at Room Temperature:

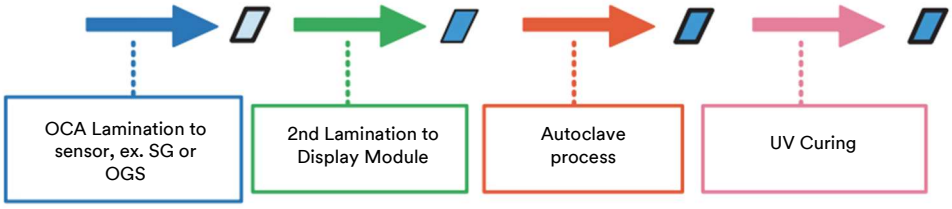
ASTM-D150-92. 3M film CEF61XX, cured at 3 J/cm^2.

Dielectric Constant:

3M™ film CEF61XX Series	
Frequency (kHz)	**Dielectric Constant**
100	9.0
300	8.1
1000	7.5

Suggested Lamination Process

Step 1: Remove secondary liner, and then laminate 3M film CEF61XX 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 CEF61XX/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/cm^2/20-30min
Step 4: UV curing with minimum 3 J/ cm^2 dosage



3M™ Contrast Enhancement Film (CEF61XX Series)

UV Cure Guidance

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

3M™ Contrast Enhancement Film (CEF61XX 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.

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. As a result, customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment and reviewing all applicable regulations and standards (e.g., OSHA, ANSI, etc.). Failure to properly evaluate, select, and use a 3M product in accordance with all applicable instructions and with appropriate safety equipment, or to meet all applicable safety regulations, may result in injury, sickness, death, and/or harm to property.

Warranty, Limited Remedy, and Disclaimer: Unless a different warranty is specifically stated on the applicable 3M product packaging or product literature (in which case such warranty governs), 3M warrants that each 3M product meets the applicable 3M product specifications on the Certificate of Analysis, which is established when the product is manufactured and deemed commercially available and is provided at the time 3M ships the product. **3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE.** If a 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement or repair of the 3M product or refund of the purchase price.

Limitation of Liability: Except for the limited remedy stated above, and except to the extent prohibited by applicable law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability.

Disclaimer: For industrial use only. Not intended, labeled or packaged for consumer sale or use.

3M

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

60-5005-0629-4