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Technical Data | May 2026

3M™ Contrast Enhancement Film (CEF31XXAS Series)

- 3M film CEF3102AS
- 3M film CEF3104AS
- 3M film CEF3105AS
- 3M film CEF3106AS

Product Description

3M™ Contrast Enhancement Film (CEF31XXAS Series) are specialized optically clear adhesives offering superior clarity and excellent adhesion to various transparent display substrates. 3M film CEF31XXAS is suitable for bent display applications, and no UV curing is required.

Key Features

- High adhesion to curved applications
- Low initial tack for workability

Product Construction

Product	3M™ film CEF3102AS	3M™ film CEF3104AS	3M™ film CEF3105AS	3M™ film CEF3106AS
Adhesive Type:	Acrylic	Acrylic	Acrylic	Acrylic
Adhesive Carrier:	None	None	None	None
Approximate Thickness:				
Release Liner:	50 µm (2.0 mils) Clear Polyester	50 µm (2.0 mils) Clear Polyester	50 µm (2.0 mils) Clear Polyester	50 µm (2.0 mils) Clear Polyester
Adhesive:	50 µm (2.0 mils)	100 µm (4.0 mils)	125 µm (5.0 mils)	150 µm (6.0 mils)
Release Liner:	75 µm (3.0 mils) Clear Polyester	75 µm (3.0 mils) Clear Polyester	75 µm (3.0 mils) Clear Polyester	75 µm (3.0 mils) Clear Polyester

Note: 3M film CEF31XX is also available without anti-static treated release liner.

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 (CEF31XXAS 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 Performance Conditions:

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 LCD glass/3M film CEF31XXAS/LCD glass.

	Condition	Duration
High Temperature	+95°C	800 hours
High Temp/Humidity-1	+65°C/90%RH	800 hours
High Temp/Humidity-2	+85°C/85%RH	250 hours

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 23°C/50%RH	3 days dwell at 23°C/50%RH
Units	N/cm	N/cm
3M film CEF3102AS	6.4	8.5
3M film CEF3104AS	11.0	14.1
3M film CEF3105AS	11.6	14.6
3M film CEF3106AS	12.0	15.2

Haze:

Haze is measured according to ASTM D1003-92, 3M film CEF31XXAS on LCD glass.

3M™ film CEF3102AS	3M™ film CEF3104AS	3M™ film CEF3105AS	3M™ film CEF3106AS
0.2%	0.2%	0.2%	0.2%

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Color:

Ultra Scan Pro (Hunter Lab) ASTM E308, D65/10° 3M film CEF31XXAS on LCD glass.

3M™ film CEF31XXAS Series			
3M film CEF3102AS	L* = 96.9	a* = 0.00	b* = 0.15
3M film CEF3104AS	L* = 96.9	a* = 0.00	b* = 0.18
3M film CEF3105AS	L* = 96.9	a* = -0.02	b* = 0.20
3M film CEF3106AS	L* = 96.9	a* = -0.03	b* = 0.21

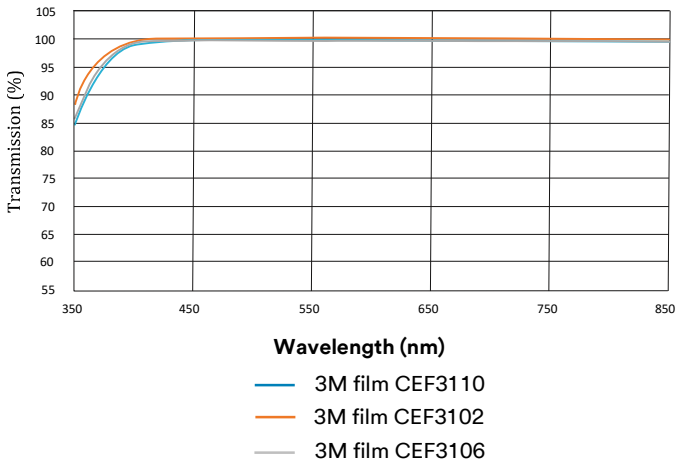
Refractive Index:

(+ 0.0005 Metricon measurements)

3M™ film CEF31XXAS Series		
405 nm	532 nm	633 nm
1.504	1.492	1.487

Transmission Curve:

Transmission vs. Wavelength (Corrected for Reflection Loss of LCD) for 3M film CEF31XXAS on Glass



Typical Electrical Properties at Room Temperature

ASTM-D150-92.

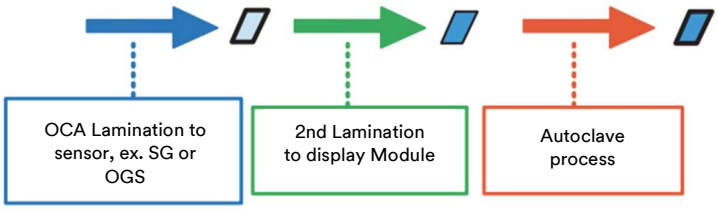
Dielectric Constant:

3M™ film CEF31XXAS Series	
Frequency (kHz)	**Dielectric Constant**
100	3.72
500	3.58

3M™ Contrast Enhancement Film (CEF31XXAS Series)

Suggested Lamination Process

Step 1: Remove secondary liner, and then laminate 3M film CEF31XXAS 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 CEF31XXAS/first adherent to second adherent by vacuum lamination (if rigid-to-rigid bonding) remove primary liner, and then laminate 3M film CEF31XXAS/first adherent to second adherent
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



Storage

- Avoid applying pressure or resting objects on the product to prevent marking, denting, or deforming the surface.
- Store in original packaging or plastic bag
- Wear gloves to prevent fingerprints or nail marks when handling
- Product should be unpacked and handled in a clean-room facility
- Store at room temperature conditions of 22 ± 2°C and 50 ± 20% relative humidity

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

3M™ Contrast Enhancement Film (CEF31XXAS Series)

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