

3M™ Contrast Enhancement Film

CEF30XXAS Series

- High adhesion to curved applications
- Low initial tack for workability
- High conformability to surfaces steps

Product Description

3M™ Contrast Enhancement Films (CEF) are specialized optically clear adhesives offering superior clarity and excellent adhesion to various transparent display substrates. 3M CEF30XXAS is recommended for applications that require soft CEF for filling thick ink step (lens border frame), ITO compatibility and high adhesion. 3M CEF30XXAS film is UV curable and suitable for curved and bent applications.



Construction

Product	3M CEF3004AS	3M CEF3005AS	3M CEF3006AS	3M CEF3008AS
Adhesive Type:	Acrylic	Acrylic	Acrylic	Acrylic
Adhesive Carrier:	None	None	None	None
Approximate Thickness:				
Release Liner:	50 µm (2.0 mils) Anti-Static Treated Clear Polyester	50 µm (2.0 mils) Anti-Static Treated Clear Polyester	50 µm (2.0 mils) Anti-Static Treated Clear Polyester	50 µm (2.0 mils) Anti-Static Treated Clear Polyester
Adhesive:	100 µm (4.0 mils)	125 µm (5.0 mils)	150 µm (6.0 mils)	200 µm (8.0 mils)
Release Liner:	75 µm (3.0 mils) Anti-Static Treated Clear Polyester	75 µm (3.0 mils) Anti-Static Treated Clear Polyester	75 µm (3.0 mils) Anti-Static Treated Clear Polyester	75 µm (3.0 mils) Anti-Static Treated Clear Polyester

Note: 3M CEF30XX is also available without anti-static treated release liner.

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.

Performance to Environmental 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 CEF30XXAS/LCD glass, cured 1J/cm².

	Condition	Duration
High Temp/Humidity-1	+65°C/90%RH	800 hours
Thermal Shock	-40°C and +85°C (1 hour dwell, 1< min ramp time)	200 cycles

Peel Adhesion:

ASTM D3330 modified, 180 degree peel from float glass, 1 cm wide peel strips, 12 in/min (305 mm/min), 2.0 mil polyester backing, 3M CEF30XXAS cured 1J/cm²

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 CEF3004AS	11.2	14.0
3M CEF3005AS	13.7	16.7
3M CEF3006AS	15.1	17.4

Color:

Ultra Scan Pro (Hunter Lab), ASTM E308, D65/10°. 3M CEF30XXAS on LCD glass, uncured.

3M CEF3004AS	3M CEF3005AS	3M CEF3006AS
L* = 96.9	L* = 96.9	L* = 96.9
a* = -0.03	a* = -0.03	a* = -0.03
b* = 0.18	b* = 0.18	b* = 0.20

Refractive Index:

3M CEF30XXAS uncured and cured (1J/cm²)
+ 0.0005 Metricon measurements

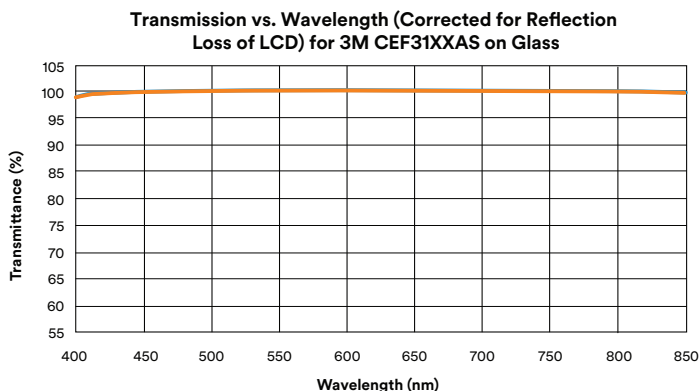
3M CEF30XXAS			
Wavelength	405nm	532nm	633nm
Uncured	1.4989	1.4862	1.4819
Cured	1.4991	1.4869	1.4818

Haze:

Haze is measured according to ASTM D1003-92. 3M CEF30XXAS on LCD glass, uncured.

3M CEF3004AS	3M CEF3005AS	3M CEF3006AS
0.1%	0.1%	0.1%

Transmission Curve:



Typical Electrical Properties at Room Temperature:

ASTM-D150-92, 3M CEF30XXAS cured 1J/cm²

Dielectric Constant:

3M CEF30XXAS	
Frequency (kHz)	Dielectric Constant
100	3.44
500	3.21

Suggested Lamination Process

Step 1: Remove secondary liner, then laminate 3M CEF30XXAS to first adherent substrate by roller at room temperature

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

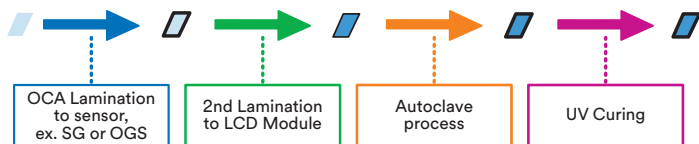
Step 2: Remove primary liner, then laminate 3M CEF30XXAS/first adherent to second adherent by vacuum lamination

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

Step 3: Autoclave process

Recommendation: 30-60°C/3-5kgf/cm²/20-30min

Step 4: UV curing with minimum 1J/cm² dosage (UVA)



UV Cure Guidance

- UV range: 340-375nm (max absorption = 342nm)
- Minimum UV dosage and intensity: 1 J/cm², 10 mW/cm²
- Suggest using lower wavelengths of the UV-A spectra.
- Suitable UV sources would be Fusion D bulb and med 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 the clean-room facility
- Product must be protected from light exposure
- Store in sealed, foil bag under -20°C to 30°C and less than 70% relative humidity. If removed from cold storage, ensure no condensation on packaging

Regulatory

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

Technical Information

The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use

Many factors beyond 3M’s control and uniquely within the 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 user’s method of application.

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