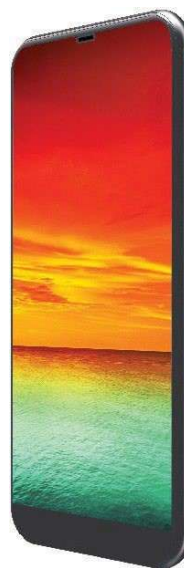


3M™ Contrast Enhancement Film (CEF05XX/OCA 8146-X/OCA 8305-X Series)

- 3M film CEF0502/3M OCA 8146-2/3M OCA 8305-2
- 3M film CEF0504/3M OCA 8146-4/3M OCA 8305-4
- 3M film CEF0506/3M OCA 8146-6/3M OCA 8305-6
- 3M film CEF0508/3M OCA 8146-8/3M OCA 8305-8
- 3M film CEF0510/3M OCA 8146-10/3M OCA 8305-10



Product Description

3M™ Contrast Enhancement Film (CEF05XX/OCA 8146-X/OCA 8305-X Series) are specialized optically clear adhesives offering clarity and adhesion to various transparent display substrates. 3M film CEF05XX is a bare ITO compatible and easy to convert adhesive with no UV curing required. It is recommended for glass cover lens to sensor or sensor to sensor bonding.

Key Features

- Excellent durability in reliability testing
- Easy use, general purpose
- 3M film CEF05XX Series products are die cuts of film
- 3M OCA 8146-X/8305-X Series products are available in roll good form

Product Construction

Product	3M™ film CEF0502 (OCA 8146-2)	3M™ film CEF0504 (OCA 8146-4)	3M™ film CEF0506 (OCA 8146-6)	3M™ film CEF0508 (OCA 8146-8)	3M™ film CEF05010 (OCA 8146-10)
Adhesive Type:	Acrylic	Acrylic	Acrylic	Acrylic	Acrylic
Adhesive Carrier:	None	None	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	75 µm (3.0 mils) Clear Polyester	75 µm (3.0 mils) Clear Polyester
Adhesive:	50 µm (2.0 mils)	100 µm (4.0 mils)	150 µm (6.0 mils)	200 µm (8.0 mils)	250 µm (10.0 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	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 (CEF05XX/OCA 8146-X/OCA 8305-X 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 CEF05XX/optical glass.

	Condition	Duration
High Temperature	+95°C	1000 hours
Low Temperature	-40°C	1000 hours
High Temp/Humidity-1	+85°C/85%RH	1000 hours
Thermal Shock	-40°C and +95°C (1 hour dwell, <1min ramp time)	200 cycles

Optical 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, haze <1%, b* <1). Sample construction is optical glass/3M film CEF05XX/optical glass.

	Condition	Duration
High Temperature	+105°C	1000 hours
UV	0.35W/m ² at 340nm, Boro-soda lime filter	500 hours

Peel Adhesion:

ASTM D3330 modified, 180 degree peel from float glass, 1cm wide peel strips, 12in/min (305 mm/min), 2.0 mil polyester backing, 3M film CEF05XX.

Peel Adhesion to Glass		
Dwell Time	20 min dwell at 23°C/50%RH	3 day dwell at 23°C/50%RH
Units	N/cm	N/cm
3M film CEF0502	7.1	11.1
3M film CEF0504	9.0	14.5
3M film CEF0506	9.9	15.8
3M film CEF05010	14.3	16.0

3M™ Contrast Enhancement Film (CEF05XX/OCA 8146-X/OCA 8305-X Series)

Color:

Ultra Scan Pro (Hunter Lab), ASTM E308, D65/10° 3M film CEF05XX on optical glass.

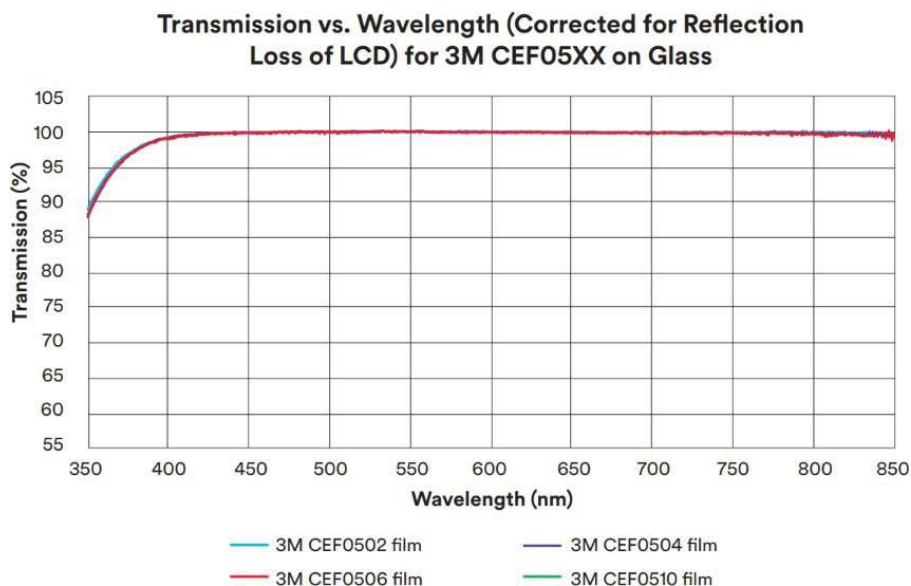
Color			
3M film CEF0502	L* = 96.9	a* = -0.01	b* = 0.16
3M film CEF0504	L* = 96.9	a* = -0.03	b* = 0.16
3M film CEF0506	L* = 96.9	a* = -0.03	b* = 0.17
3M film CEF05010	L* = 96.9	a* = -0.02	b* = 0.18

Refractive Index:

(+ 0.0005 Metricon measurements from standard deviation of ellipsometry) 3M film CEF05XX.

3M™ film CEF05XX Series		
405 nm	532 nm	633 nm
1.4981	1.4860	1.4809

Transmission Curve:



Haze:

Haze is measured according to ASTM D1003-92, 3M film CEF05XX on optical glass.

3M™ film CEF0502	3M™ film CEF0504	3M™ film CEF0506	3M™ film CEF05010
0.1%	0.1%	0.2%	0.2%

3M™ Contrast Enhancement Film (CEF05XX/OCA 8146-X/OCA 8305-X Series)

Typical Electrical Properties at Room Temperature:

ASTM-D150-92. 3M film CEF05XX Series.

Dielectric Constant:

3M™ film CEF05XX	
Frequency (kHz)	Dielectric Constant
100	4.11
500	3.72

Suggested Lamination Process

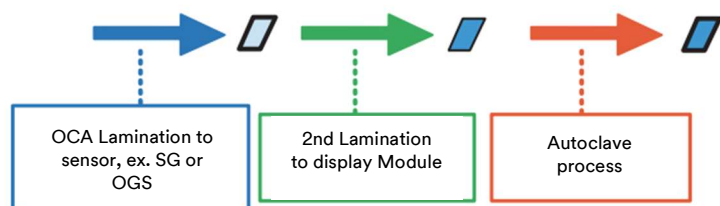
Step 1: Remove secondary liner, and then laminate 3M film CEF05XX to first adherent substrate by roller at room temperature

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

Step 2: Remove primary liner, and then laminate 3M film CEF05XX/first adherent to second adherent by vacuum lamination (if rigid-to-rigid bonding) remove primary liner, and then laminate 3M film CEF05XX/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/cm²/20-30min



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.
- CEF should be properly stored 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 (CEF05XX/OCA 8146-X/OCA 8305-X Series)

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