

# 3M™ Contrast Enhancement Film

## CEF1541 and CEF1541B

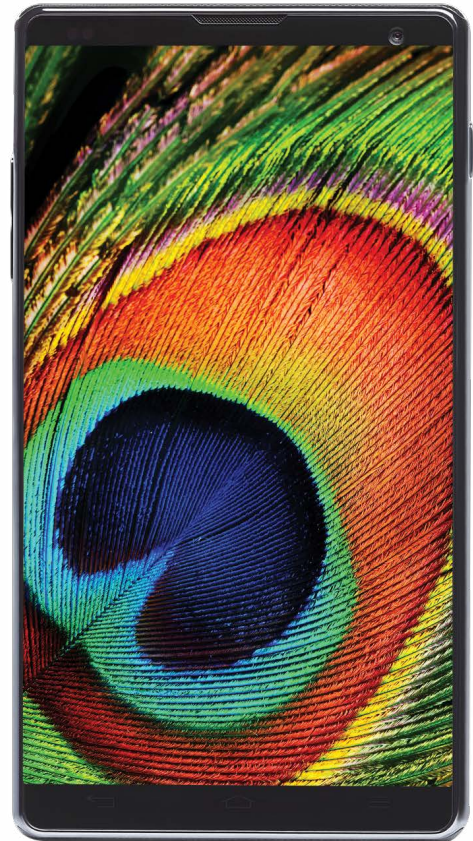
- Excellent conformability to surfaces steps
- Superior lamination uniformity to help minimize display distortion
- Improves drop resistance for displays

### Product Description

3M™ CEF1541-X and CEF1541B-X are specialized optically clear adhesives (OCA) offering excellent clarity and adhesion to various transparent display substrates. CEF1541 and CEF1541B are designed for applications that require soft OCA for filling thick ink step (lens border frame), sensor compatibility and high adhesion. CEF1541 and CEF1541B are UV curable.

### Construction

Product	3M CEF1541-X	3M CEF1541B-X
Adhesive Type:	Acrylic	Acrylic
Adhesive Carrier:	None	None
Approximate Thickness:		
Release Liner:	50 µm (2 mils) Clear Polyester	50 µm (2 mils) Clear Polyester
Adhesive:	25-150 µm (1-6 mils)	25-150 µm (1-6 mils)
Release Liner:	75 µm (3 mils) Clear Polyester	75 µm (3 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.

## 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

CEF1541 and CEF1541B cured 3 J/cm<sup>2</sup> have similar environmental performance.

Property	3M CEF1541-6	3M CEF1541B-6
Dielectric Constant <sup>1</sup> (100 kHz)	4.85	4.79
Dielectric Constant <sup>1</sup> (300 kHz)	4.53	4.47
Dielectric Constant <sup>1</sup> (500 kHz)	4.35	4.35
Refractive Index <sup>2</sup>	1.4766	1.4767
Fully Cured Gel Content <sup>3</sup>	> 76%	> 76%

OCA	Reliability	Tensile Adhesion <sup>4</sup> (N/cm <sup>2</sup> )	Shear Adhesion <sup>4</sup> (N/cm <sup>2</sup> )	Peel Adhesion <sup>5</sup> (N/cm)	L* <sup>6</sup>	a* <sup>6</sup>	b* <sup>6</sup>	% Haze <sup>6</sup>
CEF1541-6	Initial	408	274	6.2	96.9	-0.06	0.30	0.17
	60°C/90%RH/800hrs	277	199	7.8	96.9	-0.09	0.57	0.18
CEF1541-4	Initial	438	322	6.1	96.9	-0.05	0.26	0.17
	60°C/90%RH/800hrs	335	221	7.7	96.9	-0.08	0.55	0.16
CEF1541B-6	Initial	404	276	5.9	97.0	-0.03	0.21	0.23
	60°C/90%RH/800hrs	371	234	8.7	97.0	-0.04	0.28	0.26
CEF1541B-4	Initial	415	306	5.9	97.0	-0.02	0.18	0.21
	60°C/90%RH/800hrs	445	247	8.6	97.0	-0.03	0.25	0.31

### UV Cure Guidance

- Minimum UV dosage: 3 J/cm<sup>2</sup>, using a light source emitting UVA 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.

<sup>1</sup> Dielectric constant measured per ASTM D150-92 on cured OCA at 300 μm thickness

<sup>2</sup> Refractive index measured at 632.8 nm on cured OCA

<sup>3</sup> Gel content is determined by the mass ratio of residual cured and uncured optically clear adhesive following immersion in ethyl acetate

<sup>4</sup> Tensile and shear adhesion construction is float glass/CEF/float glass, measured using MTS equipment at 25mm/min

<sup>5</sup> 180° peel from float glass, 60 mm/min, 2.0 mil polyester backing

<sup>6</sup> Transmission, color and haze measured using Hunter Lab Ultrascan Pro equipment, OCA on LCD glass with liner removed

## Storage and Handling

- 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 at 23°C with desiccant to maintain low humidity conditions.

## 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

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