

3M™ Visible-light Reflective Cover

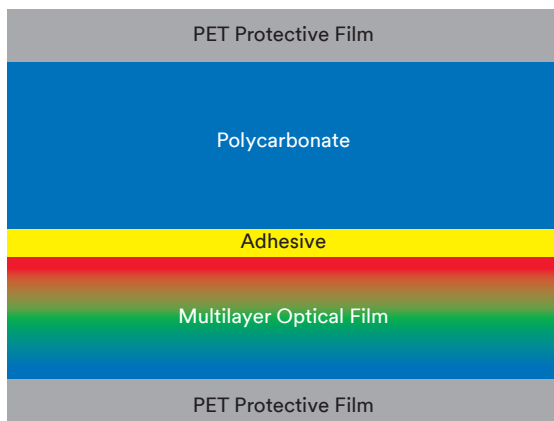
VRC1-PC380

Product Description

3M VRC1-PC380 is a multi-layer reflective polarizing mirror film laminated to a polycarbonate substrate for use in automotive head up display systems. In these systems, through polarizing mirror functionality, one polarization state is transmitted while the other polarization state is reflected. By reflecting away half of the visible ambient light, the temperature can be reduced in the head up display system.

Construction/Performance

Multilayer structure with polycarbonate (PC), adhesive, multi-layer optical film and polyethylene (PE) and polyethylene terephthalate (PET) protective films.



Type	Specification	VRC1-PC380
Optical	Effective Transmission	Minimum 1.55
Physical	Thickness	497 um ± 40 um

Automotive Environmental Testing

Factor	Condition	Time
Heat resistance	95°C	1,000 hours
Cold resistance	-40°C	1,000 hours
Humidity resistance	65°C, 95%RH	1,000 hours
Thermal shock	(-40°C x 1hr/95°C x 1hr) x 100 cycles	

Specification

Item	Judgment
Appearance	No significant appearance change by naked eye observation
Change of effective transmission	Minimum 80% vs. initial value
Change of color	Maximum 2.0 in ΔE^*

Measurement

Item	Method
Effective Transmission	<p>Sample: 76.2 mm x 127 mm (3" x 5") 0 degree, bias</p> <p>Light source: Fostec-DCR II DC regulated light source Equipment L Spectra Colorimeter, Model PR-650 SpectraScan – Photo Research, Inc., Polarizer assembly</p> <p>Procedure: Measure luminance with VRC sample on the illuminated Teflon box in correct orientation</p> <p>Effective Transmission is given by following equation: $ET = L_d/L_n$</p> <p>L_n: Luminance at normal axis of polarizer</p> <p>L_d: Luminance with VRC between backlight and polarizer</p>
Color change (ΔE^*)	<p>3M TM-019, ASTM E 1164</p> <p>Light Source: D65/10</p> <p>Measurement: transmission</p> <p>Size: 76.2 mm x 127 mm (3" x 5") 0 deg. Bias</p> <p>Equipment: BYK Color Sphere (equivalent to Minolta Co., Ltd., Spectrophotometers CM-3700)</p> <p>Procedure:</p> <p>Measure color (L^*, a^*, b^*) of transmitted light through VRC before and after environmental testing.</p> <p>Then, color change of environmental testing (ΔE^*) is calculated,</p> $\Delta E^* = \sqrt{\Delta L^{*2} + \Delta a^{*2} + \Delta b^{*2}}$

Storage and Handling

Product must be stored flat, in its original 3M packaging, out of sunlight, and in a clean, dry (relative humidity between 30% and 60%) area that is maintained at a temperature between 10°C and 30°C. Avoid applying pressure to, or resting objects on the product to prevent marking, denting or deforming. Hold product by the edges to prevent soiling of the viewing area and wear gloves to prevent fingerprint or nail marks. Do not slide the product.

Limited Warranty

3M warrants that each product will conform to the customer quality specification (the “3M Warranty”) for six months after 3M’s Product shipment (“Warranty Period”). Any engineering or technical information, recommendations, installation instructions, jumbo delivery standards, certificates of analysis, and other information or materials relating to Product (“Other Product Information”) is provided for the Product buyer’s convenience and is not warranted. 3M will have no obligations under the 3M Warranty with respect to any Product that has been: (a) not stored, handled, or transported in accordance with the customer quality specification or Other Product Information; or (b) modified or damaged by anyone other than 3M.



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