Permacolor Dichroic Filters

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Permacolor Technical Specifications

Rosco Permacolor dichroic filters are manufactured to exacting tolerances in a state-of-the-art, 36" vacuum deposition chamber. This optimally sized manufacturing line allows for unprecedented control of color and film density. Permacolor filters are extremely durable and precisely repeatable, meeting the high expectations of entertainment and architectural lighting designers throughout the world.

Description of Film: All films are manufactured using dielectric materials (TiO2 and SiO2) that are evaporated by an electron beam source in a high vacuum (10x-6 torr) and high temperature (>240ºC) environment. This produces a dense film (85-90% packing density) that is highly resistant to damage from abrasion, humidity, chemicals and spectral radiation. Under normal conditions, the life expectancy of these films is greater than 10 years. However, dielectric films are porous by nature. Long term exposure to high humidity or high temperature environments, may cause color shifts of ±5 nm.

Available Sizes:
20 - 343mm round
10 - 242mm square

Cutting Tolerance: ± .5mm

Standard Thickness:
1.75mm ±.2mm

Optional Thickness:
1.1mm ±.2mm

Aperture:
> 95% (guaranteed useable area)

Surface Defects:
80 - 50- Mil. O-13830 Scratch/Dig Test (.08mm Scratch or .5mm Dig per 20 sq. Viewed by unaided eye w/40 watt source)

Adhesion:
Passes Mil. C-48497 (Cellophane Tape Test)

Abrasion:
Passes Mil. C-48497 (Moderate; 50 strokes with cheesecloth under 1 lb. force, and Severe, 20 strokes with coarse eraser under 2 lbs. of force)

Temperature:
Maximum Short Term (< 1 hour): -50º C to 450º C
Maximum Continuous (> 24 hours): 200º C
RTD < 90K (hot spotting)

Humidity
Passes Mil. C-48497 (95 - 100% at 50º C per 24 hour period)

Color Tolerance:
± 5nm of designed Half Height

Angle of Incidence:
0º to 45º. Minimal shift (± 5nm) towards shorter wavelengths beyond this range.

Transmission:
Spectral distribution curves are available for all Permacolor filters.
Contact Rosco for specifics.

Definition of Failure:

All tests are based on the mechanical properties of the film to resist cracking, flaking, peeling or blistering. They do not include spectral performance or color shifting tolerances caused by extreme temperature and humidity conditions. These are highlighted as side notes within appropriate subjects.

Disclaimer:

The statements regarding the above subjects are theoretical in nature and are assumed to be accurate. Testing for adhesion and abrasion was performed on a 3" x 3" sample of No.3650 Woods Glass, the thickest coating available in the Permacolor range and therefore most likely to fail during testing. Additionally, a "Torch Test" was conducted in which the coated surface of the filter was slowly heated with a propane torch until the substrate failed (~450° C) with no visible damage done to the coating.

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