



Technica 3D Beamsplitter Mirror Specification

High Performance Glass

1.0 Description

This specification defines the product requirements for the **high-performance** 45 degree beamsplitters (50T-50R) produced in MAC. These beamsplitters are designed to include a 45 degree HEA on the back side.

2.0 Reference Documents

The following documents form a part of this specification to the extent specified herein:

MIL-C-675C Coating of Glass Optical Elements (Antireflection)

MIL-C-14806A Coating, Reflection Reducing for Instrument Cover Glasses and Lighting Wedges.

3.0 Performance/Operating Characteristics Required

3.1 Spectral

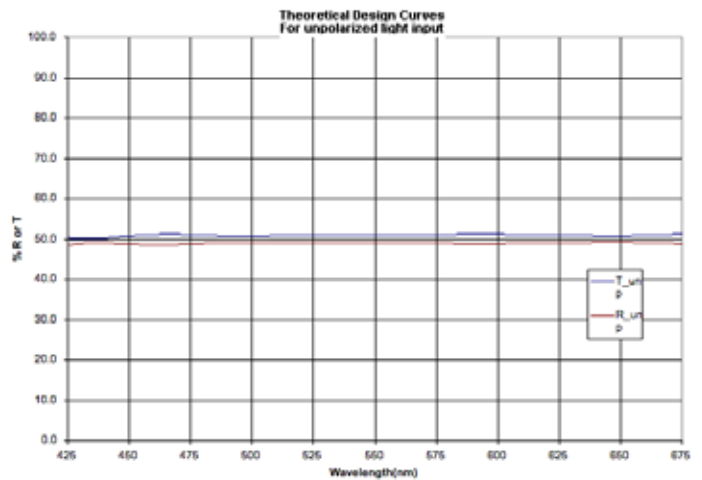
3.1.1 The overall reflectance specification for the beamsplitters measured at 45 degrees with the beamsplitter side as the front surface will be as follows:

Product	Reflectance	Tolerance	Wavelength Range
50T-50R	50%	±5%	450 nm - 650 nm

3.1.2 The typical overall transmission of the beamsplitters measured at 45 degrees with the beamsplitter side as the front surface will be as follows:

Product	Transmission
50T-50R	46%

Transmission values can change depending on the reflection, coating absorption, and glass thickness.





3.2 Coating Environmental and Durability Requirements

3.2.1 Adhesion

The coating shall show no evidence of damage after "snap tape" test by which Scotch brand #610 cellulose tape is pressed firmly against the coated surface and removed quickly with a snap of the wrist as referenced in paragraph 4.5.12 of MIL-C-675C.

3.2.2 Abrasion Resistance

The coating shall show no damage after a 500 rub abrasion test with a cheesecloth pad approximately 3/8 inch in diameter and L inch thick with a bearing force of one pound according to paragraph 4.5.11 of MIL-C-675C.

3.2.3 Humidity Resistance

The coating shall be subjected to continuous exposure for 24 hours in an atmosphere of 120 degrees F. ± 4 degrees and 98% ±2% relative humidity without evidence of deterioration as referenced in paragraph 4.5.8 of MIL-C-675C.

3.2.4 Solubility (verified periodically)

The coating shall show no evidence of deterioration after being immersed for 24 hours in water containing six ounces of Sodium Chloride per gallon as referenced in paragraph 4.5.7 of MIL-C-675C.

3.2.5 Temperature Resistance (verified periodically)

The coating shall show no evidence of deterioration after being exposed to an ambient temperature of -65 degrees F. and +160 degrees F. for a period of four hours at each specified temperature as referenced in paragraph 3.11.3 of MIL-C-14806A.

3.3 Surface Quality

Inspection Conditions and Area: The parts will be inspected by transmission and reflection at a distance of approximately 18 inches against a flat black background using fluorescent lighting adjusted to 85 ±20 foot-candles. Inspection time is to be no more than 30 seconds for 32" x 50" stock sheets and less for smaller parts.

Transmission Inspection: Inspect the parts in front of the flat black background at a normal angle and inspect the glass by transmission.

Reflection Inspection: Inspect the parts at approximately a 45 degree angle in front of the flat black background and use the overhead fluorescent lights to inspect by reflection.

3.3.1 Substrate: Schott Borofloat, polished

3.3.2 Linear Defects (such as scratches and lint marks) (Widest Area)

> 0.003" None Allowed

0.0015" - 0.003" Maximum Single Length 1.0"

Maximum Accumulated Length 3.0"

< 0.0015" Disregard

3.3.3 Stain (such as color shifts or surface irregularities)

The surface shall be free from distinct and objectionable color or stain. Heavy or distinct stains visible under transmission inspection are not allowed. Light stains visible only under reflection inspection conditions are acceptable. Stains that do not exceed the circular or linear defect criteria are allowed.

3.3.4 Edges

Safety bevelled 0.030" max face width. Edge chips per MIL-PRF-13830, stone chips larger than 0.020".

3.3.5 Fractures (visible to the unaided eye)

None Allowed.

3.3.6 Clear Aperture: To within 0.20" from edges, except at the corners the clear aperture limit will form a 50mm radius.

3.3.7 Flatness: <1/2 wave irregularity (best effort for <1/4 wave irregularity) over any 100mm diameter area within the clear aperture. This will be verified on polished substrate prior to coating and final part sizing.

4.0 Quality Assurance Provisions

Each part is certified to meet the requirements of this specification.

5.0 Preparation for Delivery

Finished parts shall be clean and packaged in a manner to ensure protection against breakage or damage during reasonable handling and transportation.

Product will be taped on both sides with blue Nitto SPV224.

6.0 Safety Information

NA



All size tolerances will be $\pm 0.020''$, thickness is 3.0mm ± 0.2 mm

