

## 50/50 Beamsplitter Product Specification

### 1.0 Description

This specification defines the product requirements for the 45 degree beamsplitters  
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%	+3%, -7%	425 nm – 650 nm

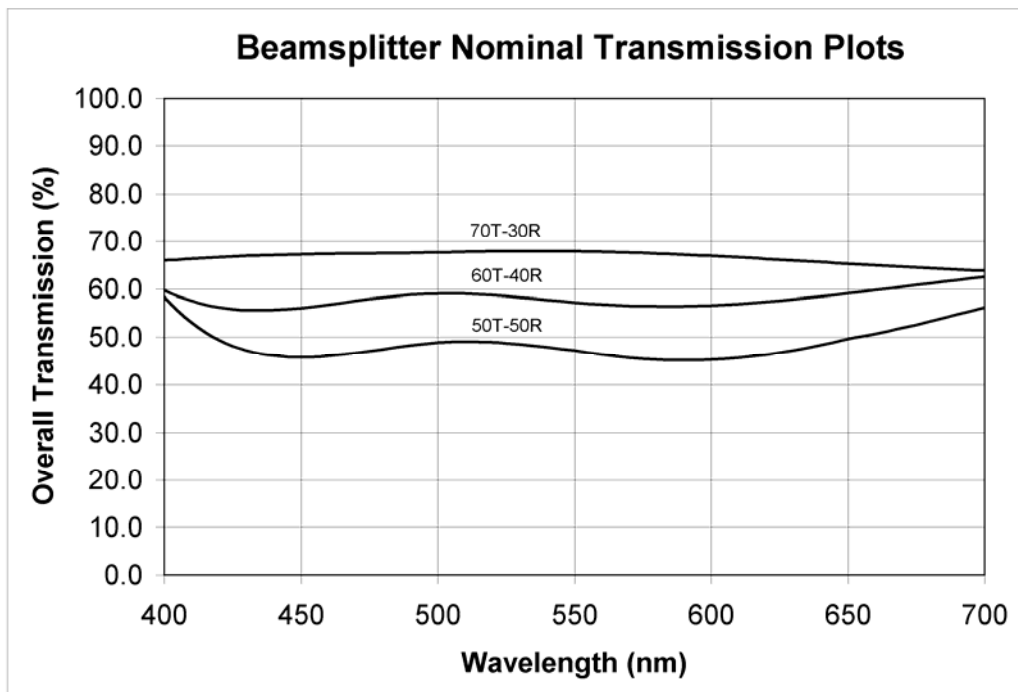
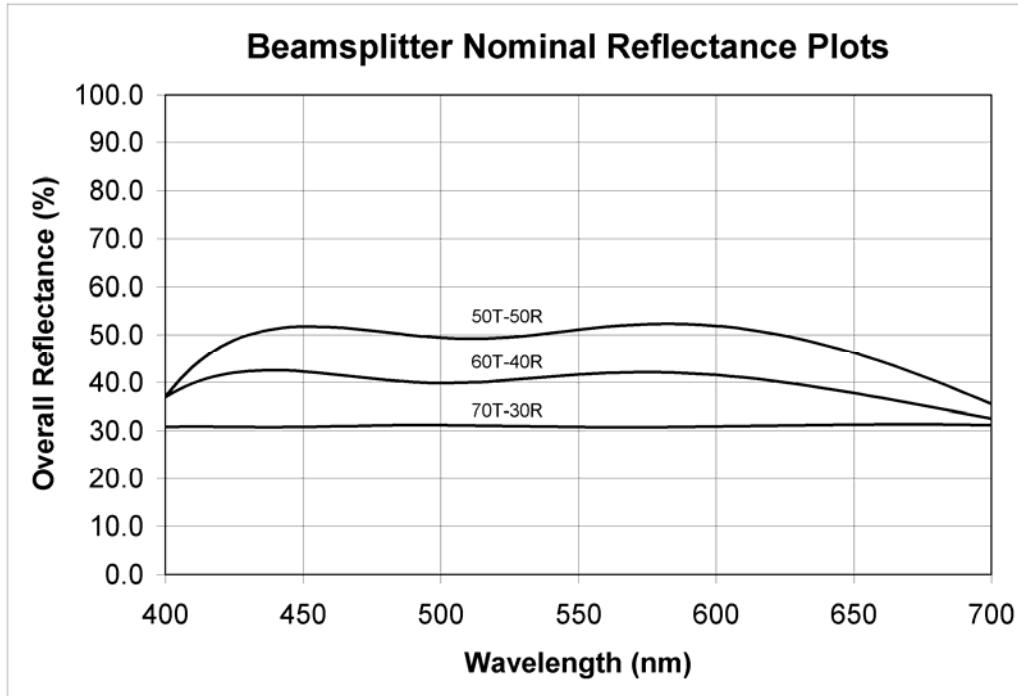
3.1.2 The typical overall transmission of the beamsplitters measured at 45 degrees with the beamsplitter side as the front surface will be as follows:

Product	Transmission
50T-50R	46%

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

## 50/50 Beamsplitter Product Specification

Nominal spectral performance of the three beamsplitters is shown below:



## **50/50 Beamsplitter Product Specification**

### **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 1/4 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.  $\pm$  4 degrees and 98%  $\pm$  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  $\pm$  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.

## 50/50 Beamsplitter Product Specification

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 Circular Defects (such as digs, pinholes or spot stains) (L + W)/ 2

> 0.024"	None Allowed
0.010" - 0.024"	3 Maximum per 4" Circle Area, 6 per Panel
< 0.010"	Disregard

### 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 Edge Chips.

Intrusion of edge chips shall not be greater than 0.125". Depth of edge chips shall not be greater than half the glass thickness. Accumulated length shall not be greater than 0.5" over any 10" length and the maximum length of a single chip shall be less than 0.5".

### 3.3.5 Fractures (visible to the unaided eye)

None Allowed.

## 3.4 Stocksheets

3.4.1 This coating is available on a variety of glass sheet sizes and thicknesses or can be purchased to specific sizes. Maximum sheet size is 32" x 50".

3.4.2 The useable area of a 32" x 50" stock sheet is 28" x 48".

3.4.3 Individual stock sheets (32" x 50") will yield a minimum of 90% useable parts when cut into pieces 5" x 6". Other stock sheet sizes will have similar acceptance criteria for area yield.

## **50/50 Beamsplitter Product Specification**

### **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 Definitions**

NA

### **7.0 Notes**

Customer Cleaning of Coated Surfaces

Dusting with a dry, soft, clean cloth is sufficient. Heavier contaminants may be removed with:

Detergent and water - Joy, Sparkle, Alconox, Liquinox  
Window cleaner - Windex, Glass X

### **8.0 Safety Information**

NA