



aLIGO ISC optics: 1" and 2" 50:50 beam splitters

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DCC RELEASE							

1 Description

1" Ø and 2" Ø 50:50 beam splitters @ 1064nm

2 Material

Corning HPFS 7980 (high purity fused silica, UV grade)
Grade 0A (Low inclusion class: <0.3 mm² cross section, 0.1 mm max. size;
Homogeneity < 1ppm)

3 Dimensions, Surface Roughness and Figure

E1000671-v1-01

1"Ø +.000/-.005" X .250" ± .020" tk., Plano / Plano

Wedge: 30 arc minutes ± 5 arc minutes

Surface Roughness:

Side 1

Super polish

Surface Roughness: <1Å RMS in CA

Surface Quality: 10-5

Side 2

Commercial Polish

Surface Roughness: <5Å RMS in CA

Surface Quality: 20-10

Surface Figure:

Side 1

Flat < λ/10 at 632.8 over central 80%

Side 2

Flat < λ/4 at 632.8 over central 80%



SPECIFICATION

aLIGO ISC optics: 1" and 2" 50:50 beam splitters**E1000671-v1-02**

2"Ø +.000/-.005" X .375" ± .020" tk., Plano / Plano

Wedge: 30 arc minutes ± 5 arc minutes

Surface Roughness:**Side 1**

Super polish

Surface Roughness: <1Å RMS in CA

Surface Quality: 10-5

Side 2

Super Polish

Surface Roughness: <1Å RMS in CA

Surface Quality: 20-10

Surface Figure:**Side 1**

Flat < $\lambda/10$ at 632.8 over central 80%

Side 2

Flat < $\lambda/5$ at 632.8 over central 80%

4 Coating

Wavelength: 1064nm

Angle of incidence: 45°

Side 1

50:50 (R:T) for **p** polarization

Absolute value of (R-T) < 1%

Side 2

AR coating, R < 0.1% (best effort) for **p**-polarization

Arrow pointing to side 1, serial numbers and registration marks shall be scribed or etched on the barrel of the optic for in-vacuum use.

Coating vendor to provide:

1. Two spectrophotometer graphs of the reflectance and transmittance of the HR coatings; one covering the spectrum from 530nm to 1200nm; the other, with increased sensitivity, showing wavelengths from 900nm to 1100nm
2. Spectrophotometer graphs of the reflectance of the AR coating taken as cited above.