

Specifications for 40m Interferometer Recycling Mirrors

Specification 1 [replace only PR3/SR3, don't think about extracting stronger POP]

Radius of Curvature

ROC = 600 meters +/- 50 meters

Sagitta = $0.538^{+0.049}_{-0.042}$ microns [7% λ @633 nm precision needed]

Working Incident angle 41.1 degrees both surfaces

HR side

T < 50 ppm @ 1064 nm, p-Pol

R > 99.995% @ 1064 nm, p-Pol

T > 99.5% @ 532 nm, both s-Pol and p-Pol

AR side

R < 100ppm @ 532 nm, both s and p-Pol

R < 100ppm @ 1064nm, p-Pol

Dimensions

Diameter 2.0 inches

Thickness 10 mm

Horizontal Wedge 2 degrees

Surface

Super polished on both faces with < 1 Angstrom RMS roughness

Clear aperture 80%

Quality 10-5

Marking

Serial number etched on Barrel

Indicate HR side with arrow on barrel

Mark direction of wedge on barrel with mark at thinnest location

Specification 2 [Replace both sets of recycling mirrors, spec PR2 coating such that we can extract stronger POP beam]

Mirror #1 [PR2/SR2]

Radius of Curvature

ROC = 1500 meters +/- 500 meters

Sagitta = $0.22_{-0.05}^{+0.11}$ microns [8% λ @633 nm precision needed]

Working Incident angle 1.5 degrees both surfaces

HR side

500ppm <T<1000 ppm @ 1064 nm, p-Pol

R>99.9% @ 1064nm, p-pol

AR side

R<100ppm @ 1064nm, p-Pol

Dimensions

Diameter 2.0 inches

Thickness 10 mm

Horizontal Wedge 2 degrees

Surface

Super polished on both faces with < 1 Angstrom RMS roughness

Clear aperture 80%

Quality 10-5

Marking

Serial number etched on Barrel

Indicate HR side with arrow on barrel

Mark direction of wedge on barrel with mark at thinnest location

Mirror #2 [PR3/SR3]

Radius of Curvature

ROC = 10000 meters +/- 5000 meters

Sagitta = $0.022_{-0.01}^{+0.043}$ microns [1.5% λ @633 nm precision needed]

Working Incident angle 41.1 degrees both surfaces

HR side

T<50 ppm @ 1064 nm, p-Pol

R>99.995% @ 1064 nm, p-Pol

T>99.9% @ 532 nm, both s-Pol and p-Pol

AR side

R<100ppm @ 532 nm, both s and p-Pol

R<100ppm @ 1064nm, p-Pol

Dimensions

Diameter 2.0 inches

Thickness 10 mm

Horizontal Wedge 2 degrees

Surface

Super polished on both faces with < 1 Angstrom RMS roughness

Clear aperture 80%

Quality 10-5

Marking

Serial number etched on Barrel

Indicate HR side with arrow on barrel

Mark direction of wedge on barrel with mark at thinnest location