aLIGO ISC Optics: Super-polished Lenses

APPROVALS	DATE	REV	DCN NO.	BY	CHECK	DCC	DATE
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1 Description

Super-polished fused silica lenses, AR/AR coated for 1064nm and 532nm

2 Material

Corning 7980-0F

3 Surface Roughness

Side 1
Super polish
Surface Roughness: <2Å RMS in CA
Surface Quality: 10-5
Side 2
Super polish
Surface Roughness: <2Å RMS in CA
Surface Quality: 10-5

4 Surface Figure

Side 1
Flat < λ/10 at 632.8 over central 80%
Side 2
Flat < λ/10 at 632.8 over central 80%

5 Coating

Side 1 and Side 2
AR coating/0º (IBS)
R< 0.1% @ 1064nm
R<0.2% @ 532nm

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6 ROC and focal length

E1000845-v1–01 PCX

25mm +0.0/-0.1mm Ø X 6.35mm ± 0.1mm tk. (edge), ROC=+75mm ± 1%
Focal length (@1064nm) = +166.8mm ± 2%
Focal length (@532nm) = +162.8mm ± 2%

E1000845-v1–02 PCX

25mm +0.0/-0.1mm Ø X 6.35mm ± 0.1mm tk. (edge), ROC=+100mm ± 1%
Focal length (@1064nm) = +222.4mm ± 2%
Focal length (@532nm) = +217.1mm ± 2%

E1000845-v1–03 PCX

25mm +0.0/-0.1mm Ø X 6.35mm ± 0.1mm tk. (edge), ROC=+150mm ± 1%
Focal length (@1064nm) = +333.6mm ± 2%
Focal length (@532nm) = +325.6mm ± 2

E1000845-v1–04 PCX

25mm +0.0/-0.1mm Ø X 6.35mm ± 0.1mm tk. (edge), ROC=+200mm ± 1%
Focal length (@1064nm) = 444.8mm ± 2%
Focal length (@532nm) = +434.1mm ± 2%

E1000845-v1–05 PCX

25mm +0.0/-0.1mm Ø X 6.35mm ± 0.1mm tk. (edge), ROC=-25mm ± 1%
Focal length (@1064nm) = -55.6mm ± 2%
Focal length (@532nm) = -54.3mm ± 2%

E1000845-v1–06 PCX

25mm +0.0/-0.1mm Ø X 6.35mm ± 0.1mm tk. (edge), ROC=-38mm ± 1%
Focal length (@1064nm) = -84.5mm ± 2%
Focal length (@532nm) = -82.5mm ± 2%

E1000845-v1–07 PCX

25mm +0.0/-0.1mm Ø X 6.35mm ± 0.1mm tk. (edge), ROC=-50mm ± 1%
Focal length (@1064nm) = -111.2mm ± 2%
Focal length (@532nm) = -108.5mm ± 2%

aLIGO ISC Optics: Super-polished Lenses

E1000845-v1–08 Plano / Concave

25mm +0.0/-0.1mm Ø X 6.35mm ± 0.1mm tk. (edge), ROC=-75mm ± 1%
Focal length (@1064nm) = -166.8mm ± 2%
Focal length (@532nm) = -162.8mm ± 2%

E1000845-v1–09 Plano / Concave

25mm +0.0/-0.1mm Ø X 6.35mm ± 0.1mm tk. (edge), ROC=-150mm ± 1%
Focal length (@1064nm) = -333.6mm ± 2%
Focal length (@532nm) = -325.6mm ± 2%

E1000845-v1–10 Plano / Convex

50.8mm +0.0/-0.1mm Ø X 9.5mm ± 0.1mm tk. (edge), ROC=+150mm ± 1%
Focal length (@1064nm) = +333.6mm ± 2%
Focal length (@532nm) = +325.6mm ± 2%

E1000845-v1–11 Plano / Convex

50.8mm +0.0/-0.1mm Ø X 6.4mm ± 0.1mm tk. (edge), ROC=+154.5mm ± 1%
Focal length (@1064nm) = +343.6mm ± 2%
Focal length (@532nm) = +335.4mm ± 2%

Coating vendor to provide:

1. Three spectrophotometer graphs of the reflectance of the AR coatings; one covering the spectrum from 300nm to 1200nm; the other two, with increased sensitivity, showing wavelengths from 450nm to 650nm and 900nm to 1100nm
2. Spectrophotometer graphs of the reflectance of the AR coating taken as cited above.