
40M RSE Core Optics

LIGO Lab

October 18, 2001

Specifications

Material

BS and ITM are Heraeus Low absorption fused silica (aka. SV)

All others are Corning 7980 fused silica

Polishing

Radii of curvature range 57m - flat.

ROC tolerance ± 20 nm sag over 30 mm diameter

Arm cavity surfaces < 2 nm rms residual, < 0.1 nm microroughness

Recycling cavity surfaces < 5 nm rms residual, < 0.2 nm microroughness

Coating

Same as Ad LIGO plan (E000487) except PRM HR=7% nominal

Polishing Spec Summary

#	Name	Spec	Drawing	Size	Wedge degrees	ROC S1	ROC S2	Residual error S1	Residual error S2	Micro-roughness S1
2	PRM	E010099	D010101	75mm ± 0.5 x 25mm+0, -0.5	2.5 asymmetric	348 ± 23m	Flat >5625m	< 5 nm	< 5 nm	< 2 Å
2	SRM	E010100	D010102	75mm ± 0.5 x 25mm+0, -0.5	2.5 asymmetric	365 ± 25m	Flat >5625m	< 5 nm	< 5 nm	< 2 Å
2	BS	E010101	D010103	75mm ± 0.5 x 25mm+0, -0.5	1 symmetric	Flat >5625m	Flat >5625m	< 5 nm	< 5 nm	< 2 Å
3	ITM	E010102	D010104	125mm +0, -1 x 50mm+0, -0.5	1 asymmetric	Flat >5625m	Flat >5625m	< 2 nm	< 5 nm	< 1 Å
3	ETM	E010103	D010105	125mm +0, -1 x 50mm+0, -0.5	2.5 asymmetric	57.37 ± 0.6m	Flat >5625m	< 2 nm	No Spec	< 1 Å

Polishing Specs continued...

Wedge: All wedge tolerances are $\pm 5'$

Defects: Same for all substrates; none in the central 10mm diameter, total in the central 30mm not to exceed 500 square micrometers, total in central 30mm not to exceed 5000 square micrometers. Defects smaller than 5 micrometers are disregarded.

Coating Spec Summary

	Side 1 Transmission (%)	Side 2 Reflection (ppm)
PRM	7.0 ± 0.7	1000
SRM	7.0 ± 0.7	< 100
BS	50 ± 1.0	< 100
ITM	0.5 ± 0.05	600 ± 100
ETM	< 20 ppm	< 300
Coating absorption <1ppm	Uniformity .1%	Scatter < 15ppm

Status

IO blanks being polished at Wave Precision

MC flats are due now

MC Curves are due by Mid Nov.

Have not been able to get an update on delivery dates.

COC blanks at Caltech

Bid received from CSIRO

Probable no-bid from Wave Precision

Additional blanks on order

Schedule: slip ~ 80 days

If Vendors are responsive we should be able to start IO delivery in Feb '02 and COC delivery in June '02