COMPONENT SPECIFICATION

TITLE

MIRROR BLANK MATERIAL, INPUT TEST MASS, 40M

APPROVALS:	DATE	REV	DCN NO	BY	CHK	DCC	DATE
DRAWN: G. Billingsley	09-09-00	A	D000312-00-D	n/a	n/a	n/a	n/a
CHECKED:							
APPROVED:							
DCC RELEASE:							

Applicable Documents

LIGO-D000266-A	Test Mass Blank
MIL-G-174-B	Glass, Optical

Requirements

Physical Dimensions	per LIGO-D000266-A Test Mass Blank
Clear Aperture	Central 50 mm
Serial Number	Blanks shall be serialized as IMBXX, where XX increments starting at 01
Material	Fused Silica
Final shaping	Shaping shall be performed using a progression of grit size ending with a 320 or smaller grit wheel.
Defect depth	Maximum on any surface or corner is less than 0.5 mm
Homogeneity	$\leq 5 \times 10^{-7}$ peak to valley at $\lambda = 632.8$ nm, within the clear aperture
Birefringence	$\leq$ 1 nm/cm within the clear aperture
Bubble and Inclusion Cross section	Total within the clear aperture < 0.03 $mm^2/100cm^3$ of Glass Inclusions with a diameter of .06 mm or less are disregarded Maximum inclusion diameter - < 0.1 mm
Striae	Grade A according to MIL-G-174
Absorption Requirement	< 2 parts per million per centimeter at λ=1.06μm within the clear aperture
AbsorptionGoal	< 1 part per million per centimeter at λ=1.06μm within the clear aperture

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Specification	Method	Frequency of Inspection	Data Delivered
Physical Dimensions	Visual Inspection	100%	Inspection Report included with Certification
Registration Mark - Location	Visual Inspection	100%	Inspection Report included with Certification
Serial number	Visual Inspection	100%	Inspection Report included with Certification
Material	Process Control Material Certification	100%	Inspection Report included with Certification
Defect depth	Visual Inspection	100%	Hand sketch indicating location and dimensions
Homogeneity	Interferometric Measurement	100%	Color print of the phase map with Peak to Valley and rms displayed. Terms removed: Tilt and Piston
Birefringence	MIL-G-174 Section 4.4.5	100%	Inspection Report included with Certification
Inclusions	Visual Inspection	100%	Inspection Report included with Certification
Striae	MIL-G-174 Section 4.4.6, method 1 or 2 (in optical axis only)	100%	Inspection Report included with Certification
Absorption at 1.06μm	Measurement	100%	Certification

Table 1: MEASUREMENT MATRIX: FREQUENCY AND METHOD