



**COMPONENT SPECIFICATION**

**MIRROR BLANK MATERIAL, MODE CLEANER FLAT MIRROR**

APPROVALS:	DATE	REV	DCN NO	BY	CHK	DCC	DATE
DRAWN:							
CHECKED:							
APPROVED:							
DCC RELEASE:							

**Applicable Documents (PENDING)**

LIGO-D970537-00-D Mode Cleaner Flat Mirror Blank

MIL-G-174-B Glass, Optical

**Requirements**

Physical Dimensions	per LIGO-D970537-00-D Mode Cleaner Flat Mirror Blank
Diameter:	78 mm + 1 mm, -0 mm
Thickness:	28 mm + 1 mm, -0 mm
Clear Aperture	Central 70 mm
Serial Number	Blanks shall be serialized as MCFMXX, 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 central 25 mm $\leq 2.5 \times 10^{-6}$ peak to valley at $\lambda = 632.8$ nm, within the central 70 mm
Birefringence	$\leq 2$ nm/cm within the central 25 mm $\leq 5$ nm/cm within the central 70 mm
Bubble and Inclusion Cross section within the clear aperture	Total $\leq 0.03$ mm <sup>2</sup> /100cm <sup>3</sup> of Glass Inclusions with a diameter of .06 mm or less are disregarded Maximum inclusion diameter - $\leq 0.1$ mm <b>No inclusion within clear aperture of center 25 mm</b>
Striae within the clear aperture	Grade A according to MIL-G-174
Absorption	$< 20$ parts per million per centimeter at $\lambda=1.06\mu\text{m}$



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Specification	Method	Frequency of Inspection	Data Delivered
Physical Dimensions	Visual Inspection	100%	Diameter Thickness
Serial number	Visual Inspection	100%	Inspection Report included with Certification
Material	Process Control Material Certification	100%	Certification
Defect depth	Visual Inspection	100%	Certification
Homogeneity	Interferometric Measurement	100%	Phase Map
Birefringence	MIL-G-174 Section 4.4.5	100%	Inspection Report included with Certification
Inclusions	Visual Inspection	100%	Hand sketch indicating location and dimensions
Striae	MIL-G-174 Section 4.4.6, method 1 or 2 (in optical axis only)	100%	Inspection Report included with Certification
Absorption at 1.06 $\mu$ m	Material Certification	100%	Certification

**Table 1: MEASUREMENT MATRIX: FREQUENCY AND METHOD**