Fused Silica Blank, LASTI Test Mass, R&D

AUTHOR:	CHECKED:	DATE	APPROVALS		
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Scope

The substrates defined by this specification are to be used in research as first article Test Masses. These substrates should be manufactured using all processes intended for production quantity LIGO Test Masses.

Applicable Documents

LIGO-D030265 Fused Silica Blank, LASTI Test Mass
MIL-G-174-B Glass, Optical

Requirements

Material

High purity fused silica

Physical Configuration

According to
LIGO - D030265 Fused Silica Blank, LASTI Test Mass

Clear Aperture

Central 300 mm

Final Shaping

Shaping shall be performed using a progression of grit size ending with a 320 or smaller grit tool

Defect Depth

Maximum on any surface or corner is less than 0.5 mm

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Refractive Index Homogeneity $\leq 2 \times 10^{-6}$ P-V at $\lambda = 632.8$ nm, within the clear aperture

Birefringence

≤ 1 nm/cm within the central 150 mm
≤ 5 nm/cm outside the central 150 mm

Bubble and Inclusion Cross section

Total ≤ 0.03 mm^2 /100cm^3 of Glass within the clear aperture
Inclusions with a diameter of 0.06 mm or less are disregarded

Maximum inclusion diameter

≤ 0.1 mm

Striae

Class 1, Grade A according to MIL-G-174 within the clear aperture

Inspection

Certification of the above requirements must accompany any delivery.