



**SPECIFICATION**

**Fused Silica Blank, Input Test Mass**

AUTHOR:	CHECKED:	DATE	APPROVALS		
			DCN NO.	REV	DATE
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**Scope**

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

**Applicable Documents**

LIGO – D050115-A Fused Silica Blank, Input Test Mass  
MIL-G-174-B Glass, Optical

**Requirements**

**Material**

High purity fused silica

**Physical Configuration**

According to  
LIGO - D050115-A Fused Silica Blank, Input Test Mass

**Clear Aperture**

Central 275 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**  $\leq 5 \times 10^{-7}$  P-V at  $\lambda = 632.8$  nm, within the central 80mm  
 $\leq 2.5 \times 10^{-6}$  P-V at  $\lambda = 632.8$  nm, within the central 200mm

**Birefringence**  
 $\leq 1$  nm/cm within the central 80 mm  
 $\leq 5$  nm/cm outside the central 200 mm

**Bubble and Inclusion Cross section**  
Total  $\leq 0.03$  mm<sup>2</sup> /100cm<sup>3</sup> of Glass within the clear aperture  
Inclusions with a diameter of 0.06 mm or less are disregarded

**Maximum inclusion diameter**  
 $\leq 0.1$  mm

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

**OH Content**  
< 250 parts per million

**Inspection**  
Certification of the above requirements must accompany any delivery.