

**Commercially Polished Substrates for Coating Development**

APPROVALS	DATE	REV	DCN NO.	BY	CHECK	DCC	DATE
AUTHOR: H. Armandula	05/21/08	A					
CHECKED:							
APPROVED:							
DCC RELEASE							

Scope

The substrates defined by this specification are to be used in research to establish the effect of high performance dielectric coatings on the mechanical quality factor (Q) of fused silica, Corning 7980, Grade 0-A. These fused silica substrates have high intrinsic Q which should not be compromised significantly by material impurities, inhomogeneities, defects or processing steps.

Applicable Documents

LIGO-D-040119-A

Type B - Commercially Polished "Q" Substrate

LIGO-D-080278-A

Type A - Commercially Polished "Q" Substrate

Requirements

Physical Dimensions

Type B - per LIGO-D040119-A

Type A - per LIGO-D080278-A

Serial Number / None

Material: Fused Silica, Corning 7980, Grade 0-A

Side and Chamfer Polish

Sides and chamfers shall appear transparent with no gray, scuffs or scratches visible to the naked eye when viewed in normal room light against a black background.

Scratches and Dig DefectsSide 1 best commercial polish (low, $<5 \text{ \AA}$ RMS) – 40/20 surface quality

Side 2 60/40 surface quality

Surface Figure measured over the central 2.5" diameterSurface 1 and 2 flatness: $\lambda/2$ at 632 nm

Specification	Test Method	Data Delivered
Physical Dimensions	Visual Inspection	Diameter, Thickness, Bevel dimension, Parallelism
Side and Bevel Polish	Visual Inspection	Inspection Report included with Certification
Scratches and Point Defects	Visual Inspection	Inspection Report included with Certification
Surface Profile	Interferometry	Surface Map

Table 1 : Required Deliverable Data