

Glass Disks for Flying Height Testers (GD-FHT)

GD-FHT

Ohara's GD-FHT is a finely polished glass disk used in the testing of magnetic recording heads designed for Hard Disk Drives. We supply three types of disks including Conventional, Low Waviness, and Super Low Waviness. These can be supplied with surface features such as anti-reflective coating and lube. Conventional disks are well suited for fly height testing above 0.02 microns while Low and Super WA disks are used in lower fly heights around 0.01 microns. Ohara's GD-FHT disks have better electrical properties and ESD protection when compared to competing materials. Combined with excellent mechanical strength, production yields can be significantly improved..

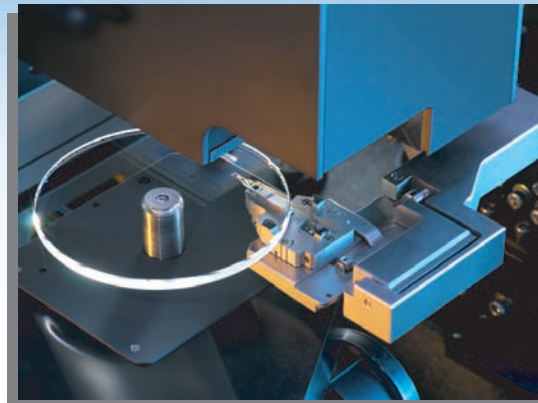


Photo courtesy of KLA-Tencor



ADVANTAGES

- Conventional GD-FHT disks for fly heights > 10nm
- Lower Microwaviness (WA) GD-FHT disks for < 10nm
- Super Low Microwaviness GD-FHT disks for < 5nm
- More scratch resistant and better ESD than BK7
- Anti Reflective and Lubed coatings available
- Extremely smooth super polished surfaces
- Enables ultra low fly height testing
- Sizes include 48mm, 65mm, and 99mm
- Re-polishing service available

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GD-FHT Properties

Properties		GD-FHT	Conventional Products	
			S-BSL7	Fused Silica
Electrical Properties	Volume Resistivity* ($\Omega \cdot m$)	1.1×10^9	1.0×10^{13}	1.0×10^{17}
	Surface Resistivity*** ($\Omega \cdot \square$)	4.4×10^{12}	1.0×10^{15}	8.6×10^{14}
	Half Decay Period*** (s)	8.9	>30min	>30min
Mechanical Properties	Abrasion**	53	94	59
	Young's Modulus (GPa)	82	80	71
	Bending Strength (MPa)	107	64	69
	Poisson's Ratio	0.22	0.21	0.17
Thermal Property	CTE ($10^{-7}/K$)	33	72	5.5

* Measured at 20degC and humidity 60% according to JIS K 6911.

** Measured according to Japanese Optical Glass Industrial Standards (JOGIS).

*** Measured referring to JIS L 1094 (OHARA's original method).

Half decay period shows the time that relative charging voltage is halved. S-BSL7 and synthetic fused silica require more than 30. Properties subject to change without notice.

Wavelength nm		400	500	600	700
Transmittance (%)	2.45mmt	89.8	91.4	91.6	92
	2.76mmt	89.8	91.3	91.6	92
	4.35mmt	88.5	90.9	91.3	91.6
	6.44mmt	87.4	90.7	91.3	91.6
Refractive Indices	436nm	1.539			
	486nm	1.534			
	546nm	1.530*			
	588nm	1.528			
	633nm	1.526*			
	656nm	1.525			

* Calculated Value $n=0.00482/\lambda^2+1.51362$
n: Refractive index λ : Wavelength μm

GD-FHT Surface Specifications			
Type	Conventional	Lower Wave	Super Low Waviness
$R_z^{(1)}$	N/A	$\leq 6.5 \text{ nm}$	$\leq 5.5 \text{ nm}$
Wa (Ref. only) ⁽²⁾	$\sim 5\text{Å}$	$\sim 2\text{Å}$	
Target $R_{max}^{(3)}$	$\leq 2.5 - 4\mu m$		
Target $R_{rms}^{(3)}$	$\leq 0.5 \text{ nm}$		
Outer Diameter mm	48.0 - 133.0		
Inner Diameter mm	5.0 - 10.0		
Concentricity μm	5.0 - 10.0		
Roundness of inner Diameter μm	$\leq 5 - 10$		
Parallelism μm	$\leq 5 - 10$		
Flatness μm	≤ 0.5		

(1) Measured via Zygo New View, no filter, scan field 2.8 x 2.1 mm, average of data at R30 and R40 for both sides.
(2) Measured via Zygo New View 5020, 0.2-1.5 mm band pass filter, scan field 5.68 x 4.27mm. Mag. x2.5, image zoom x0.5, data is average of both sides of disk
(3) Measured via AFM 5X5 μm with OD 91 mm.

Special Disk Surface Applications		
Item	Description	Specification
Lubricant	Fomblin® Z DOL 4000 ⁽¹⁾	Thickness of $10 \pm 2 \text{ Å}$
Anti Reflective Coating	V-Coat 275	$R < 0.05\%$ at 650-665nm
		$R < 0.05\%$ at 658 nm
		(nominally centered) Angle of Incidence = 0°

⁽¹⁾ Fomblin® is a registered trademark of Ausimont.

Please contact us to discuss your specific requirements.