

# Glass-Ceramic Substrates for Hard Disk Media (TS-10®)

## TS-10

TS-10 glass-ceramic substrates are used in magnetic media disks for Hard Disk Drives. TS-10 substrates offer the key properties necessary for today's higher areal density, smaller, thinner drive designs. TS-10 provides low surface roughness & flatness values, ultra-low glide heights and excellent shock resistance. TS-10's high operating temperature makes it ideally suited for future perpendicular recording media.



## ADVANTAGES

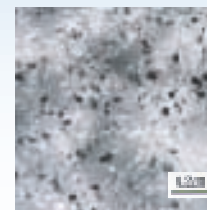
- High Mechanical Strength
- Excellent Shock Resistance
- Low Surface Roughness Values
- Low Microwaviness Values
- Low Glide Avalanche
- Low Flatness Values
- Thin Substrates
- High Operating Temperature (~ 650 Deg. C)
- Coefficient of Thermal Expansion Close to Magnetic Films
- 1", 1.8" and 2.5" Substrates Available

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## TS-10® SX Properties

		TS-10 SX
Specific Gravity S		2.47
Young's Modulus E	GPa	96
Specific Modulus E/S	GPa	39
Vickers Hardness		740
CTE	$10^{-7}/K$ -50 ~ +70°C	74
Surface Roughness	AFM Ra nm	<1.0
Available Size		1" to 2.5"

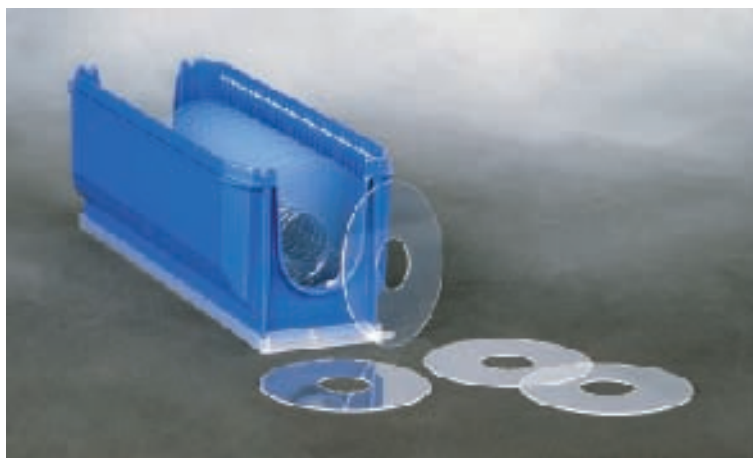
TS-10 SX



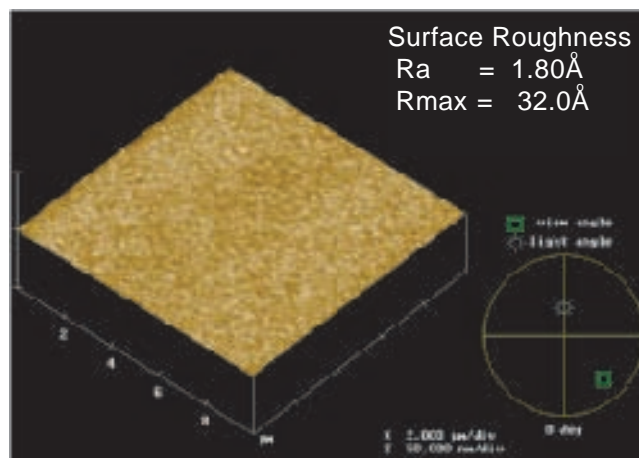
Crystal Phases  
 $Li_2Si_2O_5$  (0.01 to 0.15  $\mu m$ )  
Alpha Quartz (0.01 to 0.10  $\mu m$ )

Microstructures (X 20000 TEM)

TS-10 2.5" Substrates



AFM Image



Please contact us to discuss your specific requirements.