

Syringes for Automatic Liquid Handling

PTFE-Seals, Chemically Resistant Heavy Duty Syringes – TLL-X

Manufactured by ILS



Volume Scale May Vary

- Plunger: Special Stainless Steel Plunger with PTFE-Seal
- Glass Barrel: Borosilicate 3.3
- Precision: <math>< \pm 1\%</math> of the volume

Physical and Chemical Properties of Glass

Coefficient of mean linear thermal expansion α (20°C; 300°C) acc. to ISO 7991	$3.3 \cdot 10^{-6} \text{ K}^{-1}$
Transformation temperature T_g	525°C
Glass temperature at viscosity η in dPa · s:	10 ¹³ (annealing point) 560°C
	10 ^{7.6} (softening point) 852°C
	10 ⁴ (working point) 1260°C
Maximum short-time working temperature	500°C
Density ρ at 25°C	2.23 g · cm ⁻³
Modulus of elasticity E (Young's modulus)	$64 \cdot 10^3 \text{ N} \cdot \text{mm}^{-2}$
Poisson's ratio μ	0.20
Thermal conductivity λ_w at 90°C	$1.2 \text{ W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$
Temperature for the specific electrical resistance of 10 ⁸ Ω · cm (DIN 52326) $t_{k,100}$	250°C
Logarithm of the electric volume resistivity (Ω · cm)	at 250°C 8
	at 350°C 6.5
Dielectric properties (1 MHz, 25°C)	
Dielectric constant (permittivity) ϵ	4.6
Dielectric loss factor (dissipation factor) $\tan \delta$	$37 \cdot 10^{-4}$
Refractive index ($\lambda = 587.6 \text{ nm}$) n_d	1.473
Stress-optical coefficient (DIN 52314) k	$4.0 \cdot 10^{-6} \text{ mm}^2 \cdot \text{N}^{-1}$

Reference: Schott Duran®