

## Dosage of Liquids: Series N

### Fixed Needles

Manufactured by ILS



Volume Scale May Vary

- Plunger: Stainless steel
- Glass Barrel: Borosilicate 3.3
- Precision:  $< \pm 1\%$  of the volume
- Main Uses:
  - Sample dosage for gas chromatography
  - HPLC-valves
  - Autosamplers

#### Physical and Chemical Properties of Glass

Coefficient of mean linear thermal expansion $\alpha$ (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 $\eta$ in dPa · s:	10 <sup>13</sup> (annealing point)	560°C
	10 <sup>7.6</sup> (softening point)	852°C
	10 <sup>4</sup> (working point)	1260°C
Maximum short-time working temperature		500°C
Density $\rho$ at 25°C		2.23 g · cm <sup>-3</sup>
Modulus of elasticity E (Young's modulus)		$64 \cdot 10^3 \text{N} \cdot \text{mm}^{-2}$
Poisson's ratio $\mu$		0.20
Thermal conductivity $\lambda_w$ at 90°C		$1.2 \text{W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$
Temperature for the specific electrical resistance of $10^8 \Omega \cdot \text{cm}$ (DIN 52326) $t_{k100}$		250°C
Logarithm of the electric volume resistivity ( $\Omega \cdot \text{cm}$ )	at 250°C	8
	at 350°C	6.5
Dielectric properties (1 MHz, 25°C)		
Dielectric constant (permittivity) $\epsilon$		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®