

TECHNICAL DATASHEET
GLASS 0620

GENERAL FEATURES/SHORT DESCRIPTION

This, melted in arc, natural quartz glass is, owing to its features, suitable for highly different applications. By the means of its high softening point, thermal stress capacity and temperature resistance, the glass is recommended at e. g. high-temperature processes. Further the resistance against acids and alkaline solutions is high.

Material No.	0620
Glass type	Fused silica/quartz glass
Available as	(Profiled) tubes and capillaries, Rods and fibres
Certificate for biocompatibility	not available

TEMPERATURE FEATURES

Transformation temperature	-
Strain point	1054 °C at $10^{14.5}$ dPa · s
Annealing point	1204 °C at 10^{13} dPa · s
Softening point	ca. 1730 °C at $10^{7.6}$ dPa · s
Working point	1700 – 2100 °C at 10^{5-8} dPa · s
Expansion limit (°C)	-
Coefficient of expansion	$\alpha_{(20-300\text{ °C})} = 5.5 \cdot 10^{-7} \cdot \text{K}^{-1}$
Max. operating temperatures	-
Thermal conductivity	-
Thermal capacity	-
Specific heat (20 °C)	-
Max. continuous working temp.	1100 °C
Max. short-term working temp.	1300 °C

MECHANICAL FEATURES

Density	2.20 g/cm ³ (at 20 °C)
Mohs hardness	5.5 – 6.5
Modulus of elasticity	$7.5 \cdot 10^4 \text{ N} \cdot \text{mm}^{-2}$
Bending strength	$68 \text{ N} \cdot \text{mm}^{-2}$
Knoop-hardness	-
Abrasive hardness	-
Vickers hardness	-
Torsion modulus	-
Torsion strength	-
Micro hardness	-
Compressive strength	-
Poisson's ratio	-
Tensile strength	$50 \text{ N} \cdot \text{mm}^{-2}$
Abrasion after 9 h grinding	-
Shear modulus	-

OPTICAL FEATURES

Refractive index	$n_d = \sim 1.46$ at 20 °C
Abbe number	-
Bubbles, Inclusions (> 0,3 mm)	-
Stress-optical coefficient	-

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ELECTRICAL FEATURES

t_{k100}	-
log of the electrical volume resistivity	-
Electrical Resistivity (350 °C)	-
Specific Electrical Resistivity	$10^{18} \Omega \cdot m$ (at 20 °C) $10^{10} \Omega \cdot m$ (at 400 °C) $6.3 \cdot 10^6 \Omega \cdot m$ (at 800 °C) $1.3 \cdot 10^5 \Omega \cdot m$ (at 1200 °C)
Contact resistance	-
Dielectric properties for 1 MHz at 25 °C	-
Dielectric properties for 1 MHz at 20 °C	-
Dielectric constant at 7,5 GHz	$\epsilon = 3.7$ (at 20 °C)
Dielectric strength	25 – 40 kV/mm (at 20 °C) 4 – 5 kV/mm (at 500 °C)
Electrical loss factor	$\tan \delta = 5.0 \cdot 10^{-4}$
Loss tangent	-

CHEMICAL FEATURES

Hydrolytic resistance, class	1 (DIN 12111)
Acid resistance, class	1 (DIN 12116)
Alkali resistance, class	1 (DN 52322)
Chemical components	SiO ₂ 99.99 %
Content of OH	30 ppm * (typical) Tolerance: max. 45 ppm * Stability: While tempering the quartz glass under vacuum at 1000 °C over a period of 30 hours, the decrease of content of OH is max. 3 ppm*

Typical Trace Elements	Element	ppm (typical)	ppm (max)
	Al	15	20
Ca	0.8	1.5	
Cr	<0.05	0.05	
Cu	<0.03	0.05	
Fe	0.3	1.0	
K	0.7	1.5	
Li	0.5	1.5	
Mn	0.05	0.1	
Na	1.0	1.5	
Ni	<0.02	0.02	
Ti	1.5	2.0	
Zr	1.5	2.7	

Heavy metal content	-
Coefficient of absorption for MoK _α radiation	-
Coefficient of absorption for CuK _α radiation	-
Purity	-

* not valid for products, which are produced by manual glass processing ppm: parts per Million

Transmission curve

