KAVALIER

TECHNICAL DATA SHEET

Issuer´s name/ producer: **KAVALIERGLASS, a.s.**
Issuer´s address/Producer: **Křížová 1018/6, Prague 5**
Production plant: Sklářská 359, 285 06 Sázava, Czech Republic

Glass type: **BOROSILICATE GLASS SIMAX®, acc. to ISO 3585**
glass with high thermal and chemical resistance

Country of origin: **Czech Republic**

Purpose of use: **Application in technical, pharmaceutical, laboratory or food industry**

- **Composition of SIMAX®**

CAS No.	EINECS No.	Component:	Percent:
65997-17-3	266-046-0	Glass, oxide, chemicals	100

- **Chemical characteristics of borosilicate glass** (approximate values) ASTM E438

Component	Content (percentage by weight)
SiO_2	80,3%
B_2O_3	13,0%
Al_2O_3	2,4%
$Na_2O + K_2O$	4,3%

- **<u>Chemical properties:</u>**

Hydrolytic resistance	water at 98 °C	ISO 719	**HGB1**
	water at 121 °C	ISO 720	**HGA1**
	glass grains, test B	Eur.Pharm.; chap. 3.2.1	**HGA1**
Acid resistance		ISO 1776	**1**
Alkali resistance		ISO 695	**A2**
The heavy metal content for the elements Pb, Cd, Cu and Cr^{VI}			**below 100 ppm**

- **Physical properties:**

Coefficient of mean linear thermal expansion α	(20/300 °C)	ISO 7991	**(3,3 ± 0,1) x10^{-6} K^{-1}**
Density ρ			**(2,23 ± 0,02) g.cm^{-3}**
Thermal conductivity	at 100 °C		**1,2 W.m^{-1}.K^{-1}**
Temperatures at viscosity of η [dPa.s]	10^4 working point	ISO 7884	**1260 °C**
	$10^{7,6}$ softening point		**820 °C**
	$10^{13,2}$ annealing point		**558 °C**
Transformation temperature T_g		ISO 7884-8	**525 °C**
Modulus of elasticity/ Young's modulus *(E)*			**63x10^3 MPa**
Poisson's ratio			**0,19**
Tensile strength *(R)*			**35-100 MPa**
Maximum permissible short-term operating temperature			**500 °C**
Maximum permissible long-term operating temperature			**300 °C**
Minimum permissible operating temperature			**-40 °C**

- **Mechanical stability:**

Scratch hardness of glass on Mohs scale 6	allowable tensile stress	**3,5 MPa**
	allowable bending stress	**7,0 MPa**
	allowable compressive stress	**100 MPa**
Knoop Hardness (100 g)	HK0,1/20	**446 KHN**

- **Thermal properties:**

Wall thickness *[mm]* resistance to thermal shock [Δ °C]		**[Δ °C]**
	1 mm	**303**
	3 mm	**175**
	6 mm	**124**
	10 mm	**96**

- **Optical properties:**

Simax glass refractive index nd	λ = 589.30 nm		**1,472**
Photoelastic constant			**3,6.10^{-6} MPa^{-1}**
Solar transmittance	λ = (300 – 2500) nm		**≥ 91,8 %**

- **Electrical properties:**

At current temperatures, SIMAX glass mass is non-conducting material – it is an insulant.		
Electrical resistivity in a humidity-free environment (20 °C)		**> 1013-1015 W×cm**
Permittivity ε	(20 °C, 1 MHz)	**4,6**
Loss angle *tg δ*		**$4{,}9.10^{-3}$**

Additional information:

The producer also declares that the products are safe when used in usual and proper way.

The producer has installed the Quality Assurance System according to ISO 9001 and thus guarantees that all products delivered to the market are in full conformity with the technical documentation and with all fundamental requirements to such products. Certificate No. 3258 100 23 52 0132 issued by TÜV CERT, Certification Body at TÜV NORD CERT GmbH.

Sázava, 30. 01. 2025
Place and date of issue

Ing. Kristýna Machová
Project Quality Engineer

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