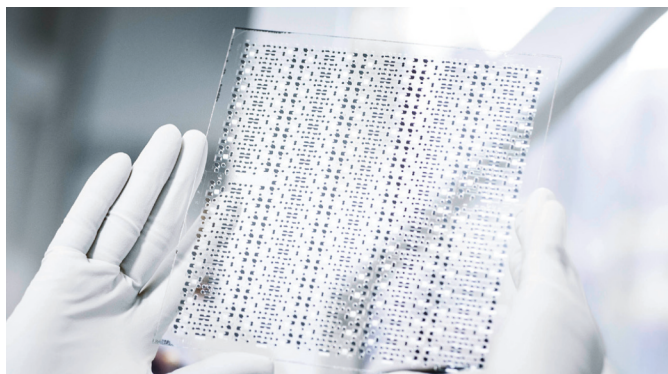


BOROFLOAT® 33 – Chemical Properties

The sum of its properties is what makes it unique.

BOROFLOAT® 33 from Germany is the world's first floated borosilicate flat glass. It combines superior quality and excellent flatness with outstanding thermal, optical, chemical and mechanical features. The chemical composition and physical values of BOROFLOAT® 33 are in accordance with ASTM E 438-92 (2001), Type 1, class A. Rediscover BOROFLOAT® 33 and experience the infinite potential of our most versatile material platform. BOROFLOAT® – Inspiration through Quality.



Microreaction systems made of BOROFLOAT® 33 are characterized by high chemical resistance.

Chemical durability

Hydrolytic resistance	(according to ISO 719 / DIN 12 111) (according to ISO 720)	HGB 1 HGA 1
Acid resistance	(according to DIN 12 116) (according to ISO 1776) $\leq 100 \mu\text{g Na}_2\text{O per } 100 \text{ cm}^2$	1
Alkali resistance	(according to ISO 695 / DIN 52 322)	A 2

Resistance to selected chemicals

Reagent	Abrasion [mg/cm^2]	Visual observations
24 h at 95 °C		
H ₂ O	< 0,01	Unchanged
5 Vol.% HCl	< 0,01	Unchanged
0,02 n H ₂ SO ₄	< 0,01	Unchanged
6 h at 95 °C		
5 % NaOH	1,1	White stains
0,02 n NaOH	0,16	White haze
0,02 n Na ₂ CO ₃	0,16	Unchanged
20 min. at 23 °C		
10 % HF	1,1	Stained white haze
10 % NH ₄ F x HF	0,14	Unchanged

Chemical resistance of BOROFLOAT® 33 to selected reagents as a function of time and temperature.

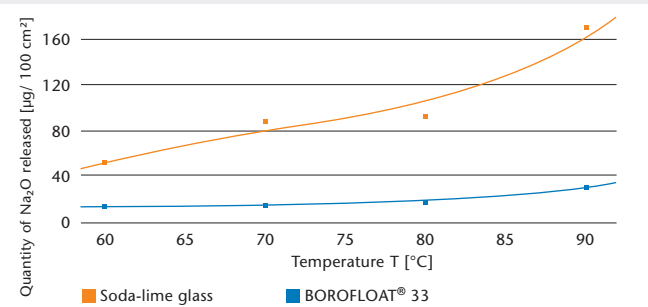
Further data and information available on request.
All values listed on the data sheet are not guaranteed reference values.

Key benefits

High chemical durability

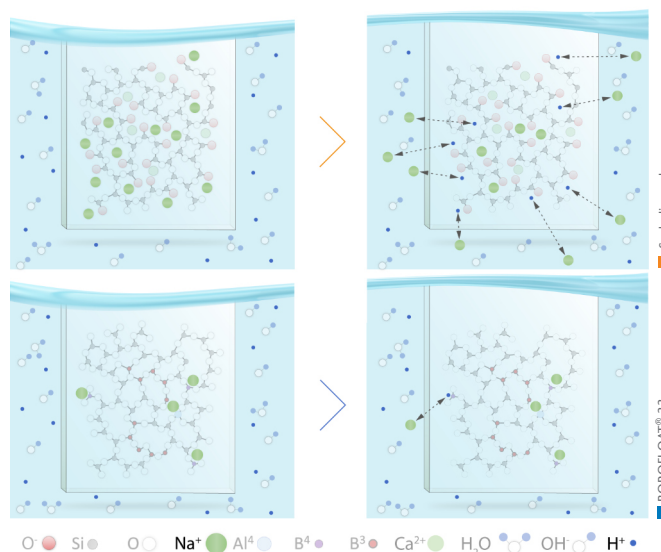
- High hydrolytic resistance
- Excellent resistance to acids
- High resistance to alkalis
- Low alkali diffusion

Hydrolytic resistance



Quantity of Na₂O released from BOROFLOAT® 33 compared to soda-lime glass depending on the temperature after 16 hours.

Ion exchange during a hydrolytic attack



Compared to soda-lime glass, BOROFLOAT® 33 has a significantly higher hydrolytic resistance, because the number of sodium ions in the glass network is significantly lower with BOROFLOAT® 33. The few sodium ions are also more strongly bound.

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