

# BOROFLOAT® 33 – Mechanical 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 properties 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.



Sightglass made of BOROFLOAT® 33.

## Mechanical properties

Density $\rho$ (25 °C)	2.23 g/cm <sup>3</sup>
Young's Modulus E (according to DIN 13316)	64 kN/mm <sup>2</sup>
Poisson's Ratio $\mu$ (according to DIN 13316)	0.2
Knoop Hardness $H_{0,1/20}$ (according to ISO 9385)	480
Bending Strength $\sigma$ (according to DIN 52292 T 1)	25 MPa

## Impact resistance

The impact resistance of BOROFLOAT® 33 depends on the way it is fitted, the size and thickness of the panel, the type of impact involved, presence of drill holes and their arrangement as well as other parameters.

Reference values, not guaranteed values.

## Critical forces

Material	Mean value $F_c$ [mN]	Stadev.* [mN]
BOROFLOAT® 33	363.8	4.3
Other borosilicate glass	271.2	1.9
Soda-lime flat glass	214.4	4.6

Summary of critical forces in Scanning-Scratch-Test.

\*Standard deviation

Further data and information available on request.

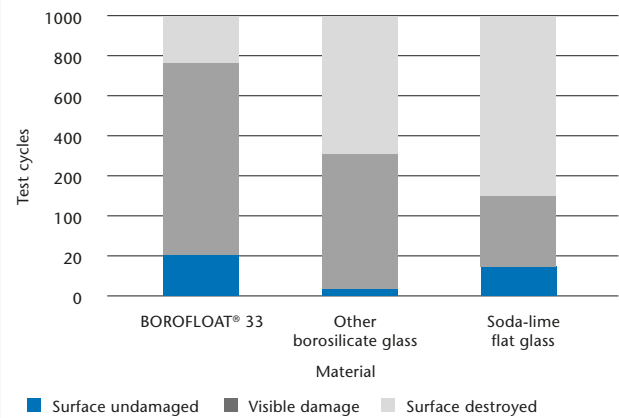
## Key benefits:

### Excellent mechanical strength

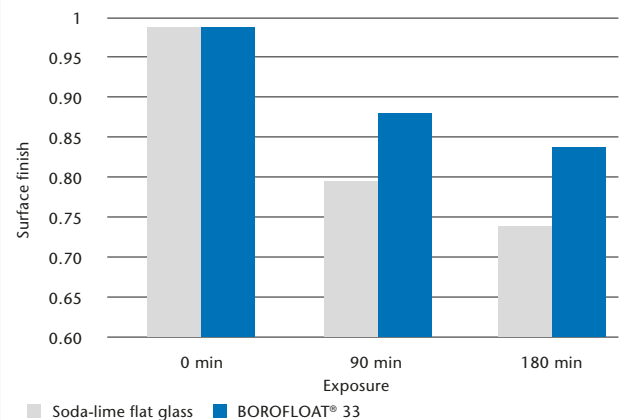
- Low weight
- Strong resistance to abrasion and scratches
- High elasticity

### Resistance to abrasion and scratches

#### Resistance to abrasion



#### Comparison of sand abrasion BOROFLOAT® 33 & soda-lime flat glass



According to a study conducted by the Fraunhofer Institute for Applied Optics and Precision Engineering, BOROFLOAT® 33 displayed the highest resistance to mechanical forces in comparison to other Materials.

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