BOROFLOAT® 33 – Optical 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.

Optical wheel made of BOROFLOAT® 33.

Key benefits:

Exceptionally high transparency

- High transparency in visible and near IR & UV range of wavelengths
- Outstanding visual quality and optical clarity
- Low inherent fluorescence and solarisation tendency

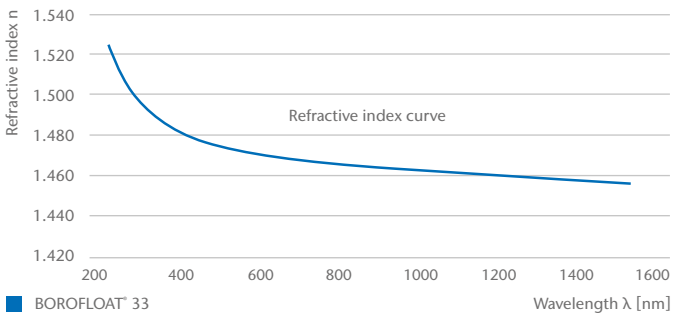
Optical data	
Abbe number ($v_e = (n_e - 1) / (n_{F'} - n_{C'})$)	65.41
Refractive index (n_d)	1.471
Dispersion ($n_F - n_C$)	71.4 x 10^{-4}
Stress-optical coefficient (K)	4.0 x 10^{-6} mm^2 N^{-1}

Reference values, not guaranteed values.

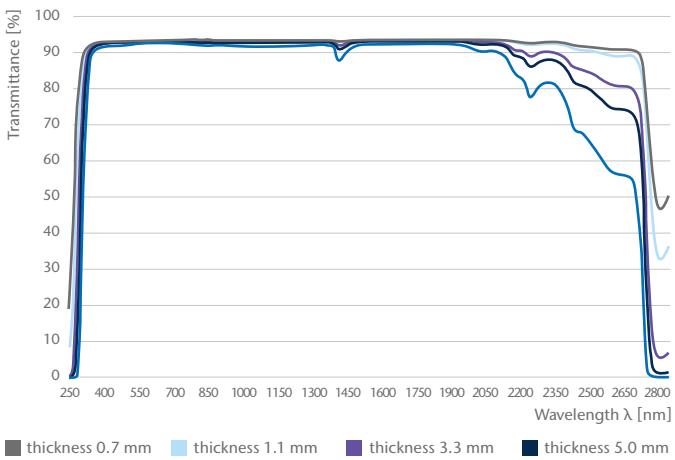
Dispersion

	$n_{248.3}$*	$n_{296.7}$	n_i	n_g	$n_{F'}$	n_e	n_d	$n_{632.8}$	$n_{C'}$	n_s	n_t	$n_{1529.6}$
λ	248.3	296.7	365.0	435.8	480.0	546.1	587.6	632.8	643.8	852.1	1014.0	1529.6
n	1.525	1.504	1.489	1.480	1.477	1.473	1.471	1.470	1.470	1.465	1.463	1.456

* calculated value done by extrapolation of the dispersion curve

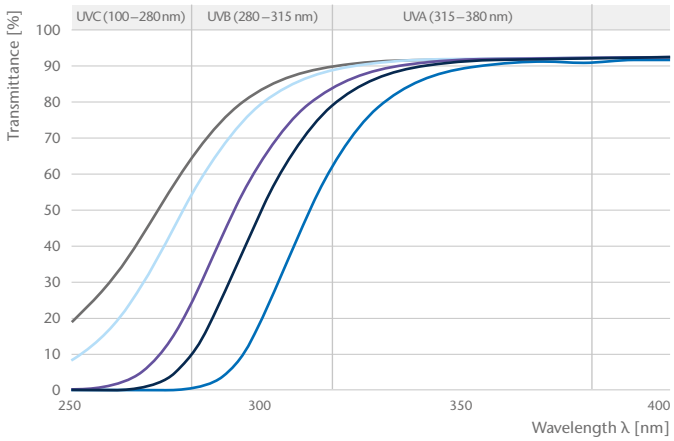


Transmittance at 250 – 2800 nm



thickness 0.7 mm | thickness 1.1 mm | thickness 3.3 mm | thickness 5.0 mm | thickness 11.0 mm

Transmittance at 250 – 400 nm



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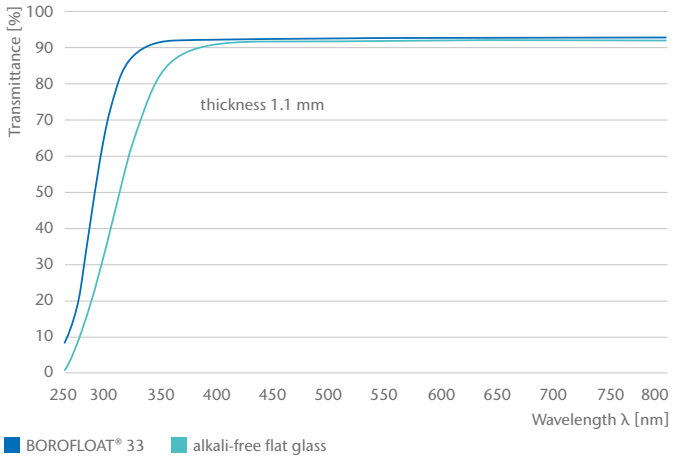
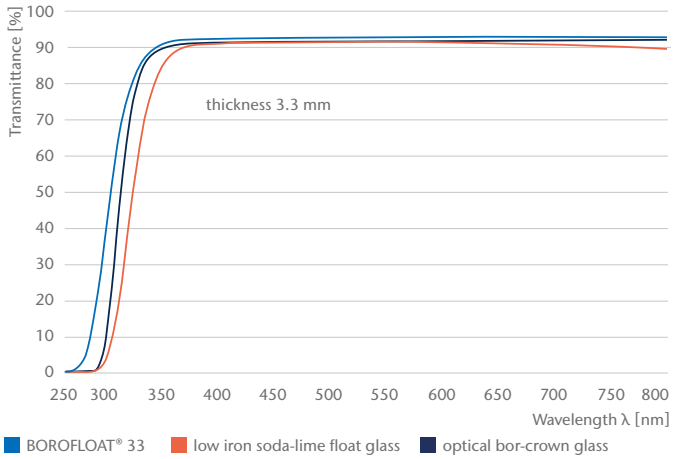
glass made of ideas

Transmittance at 250 – 800 nm – Comparison BOROFLOAT® 33 vs. different glass materials

For applications requiring thin glass substrates



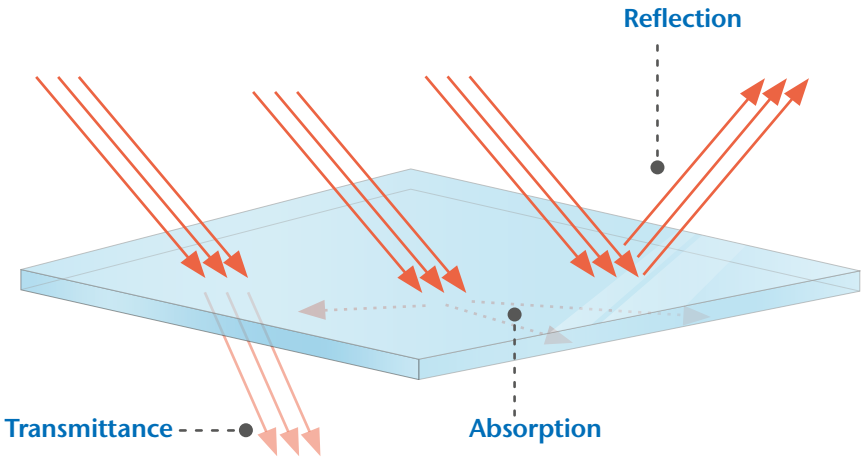
For applications requiring thicker glass substrates



Radiation of Light

Glasses transmit a certain amount of radiation energy. The incident radiation energy is reduced by absorption and reflection (up to 8 %)*.
The sum of reflection, transmittance and absorption is 100 %.
The glass composition, the network structure and the glass thickness as well as the wavelength of the radation have a direct influence on the transmitted intensity of radation energy.

* Floated glass surfaces show typically around 8 % reflection losses.



Ultraviolet transmittance τ_{UV} and light transmittance τ_V

The ultraviolet transmittance τ_{UV} and light transmittance τ_V are calculated values according to the methods described in DIN EN 410:2011-04. This European Standard describes methods of determining the luminous and solar characteristics of glazing in buildings.

		BOROFLOAT® 33							low iron soda-lime float glass		alkali- free flat glass *
Glass thickness	mm	0.7	1.1	3.3	3.8	5.0	9.0	11.0	3.3	5	1.1
$\tau_{UV\ (280–380\ nm)}$	%	91.8	91.6	90.5	89.9	89.3	85.9	84.9	83.7	80.0	84.1
$\tau_{V\ (380–780\ nm)}$	%	92.8	92.7	92.6	92.5	92.5	92.0	91.9	91.5	91.0	92.3

* drawn TFT-LCD glass

All values listed on the data sheet are not guaranteed reference values.

Home Tech SCHOTT North America, Inc.
5530 Shepherdsville Road
Louisville, KY 40228, USA
Phone +1 (502) 657-44 17
Fax +1 (502) 966-49 76

borofloat@us.schott.com
www.us.schott.com/borofloat

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