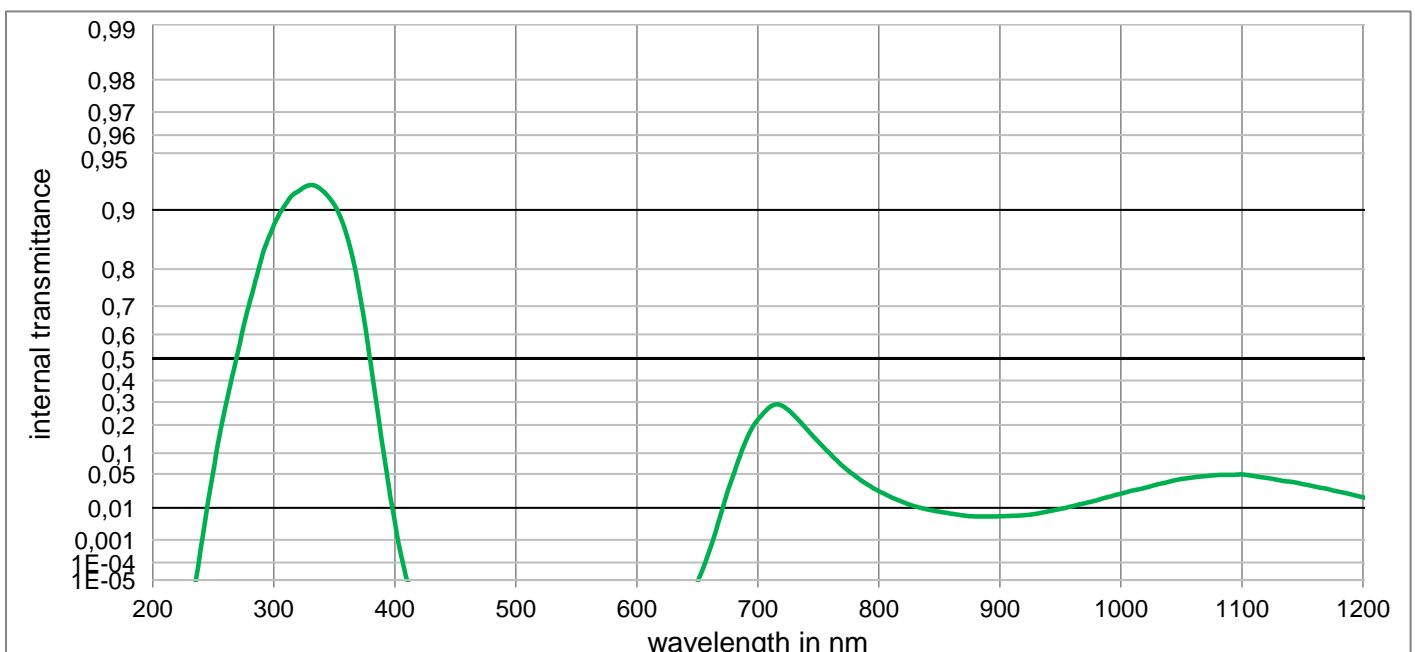
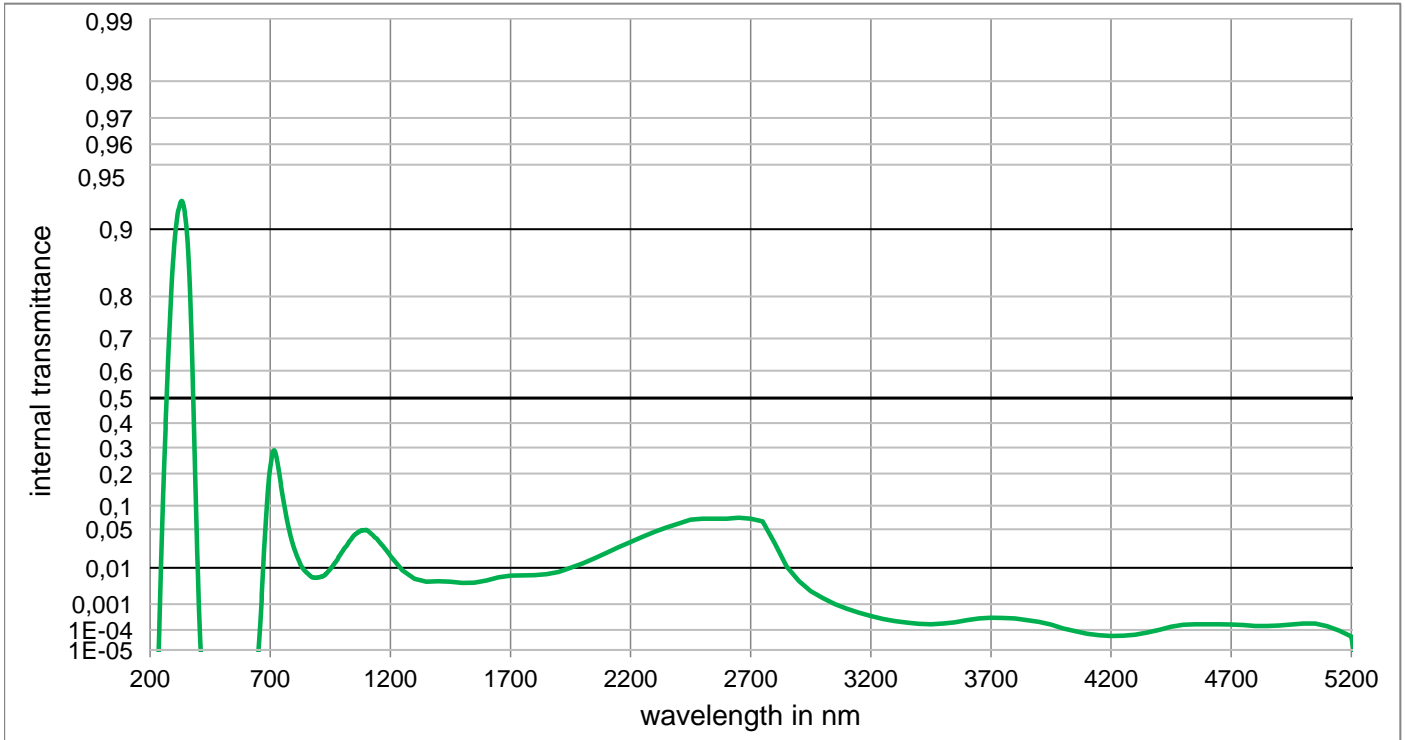


## UG11

Optical properties	Mechanical properties	Colorimetric properties	
<b>Reflection factor</b>	<b>Reference thickness</b>	1 mm    2 mm    3 mm	
$P_d = 0,908$	$d = 1,00 \text{ mm}$	Illuminant D65 x y Y $\lambda_d$ $P_e$	
<b>Spectral values guaranteed</b>	<b>Density</b>		Illuminant A x y Y $\lambda_d$ $P_e$
$\tau_i (254 \text{ nm}) \geq 0,06$	$\rho = 2,92 \text{ g/cm}^3$		
$\tau_i (334 \text{ nm}) \geq 0,9$	<b>Knoop hardness</b>		
$\tau_i (405 \text{ nm}) \leq 0,001$	$HK[0.1/20] = 440$		
$\tau_i (694 \text{ nm}) \leq 0,26$			
$\tau_i (725 \text{ nm}) \leq 0,32$			
	<b>Thermal properties</b>		
	<b>Transformation temperature</b>		
	$T_g = 545 \text{ }^\circ\text{C}$		
	<b>Thermal expansion in <math>10^{-6}/\text{K}</math></b>		
	$\alpha_{(-30^\circ\text{C}/+70^\circ\text{C})} = 7,8$		
	$\alpha_{(20^\circ\text{C}/300^\circ\text{C})} = 9,0$		
<b>Refractive indices</b>	<b>Chemical properties</b>	<b>Notes</b>	
$n_F (486 \text{ nm}) = 1,569$	<b>Chemical resistance</b>	<b>UV</b>	
$n_e (546 \text{ nm}) = 1,565$	FR class = 0	Transmission changes are possible under the action of intense ultraviolet radiation.	
$n_d (587,6 \text{ nm}) = 1,563$	SR class = 3	Ionically colored glass	
	AR class = 2.2	Bandpass filter	
<b>Sellmeier coefficients</b>	<b>Resistance against humidity</b>		
valid from 270 nm to 600 nm	Sensitive glass	ISO 23364:2021	
$B_1 = 1,3960$	see pocket catalogue "Optical Filter Glass 2024", chapter 5.5		
$B_2 = 0,0097$			
$B_3 = 0,5658$			
$C_1 = 9,230\text{E-}03 \text{ } \mu\text{m}^2$			
$C_2 = 4,4000\text{E-}02 \text{ } \mu\text{m}^2$			
$C_3 = 96,000 \text{ } \mu\text{m}^2$			
<b>Internal quality</b>		<b>Disclaimer</b>	
Bubble class 2		All data without tolerances are to be understood to be reference values.	



## UG11



**Internal transmittance  $\tau_i$  at reference thickness**  
 The internal transmittance values, tabulated and graphically represented, are reference values only

$\lambda$ /nm	$\tau_i$	$\lambda$ /nm	$\tau_i$	$\lambda$ /nm	$\tau_i$	$\lambda$ /nm	$\tau_i$	$\lambda$ /nm	$\tau_i$	$\lambda$ /nm	$\tau_i$
200	< 1,000E-05	500	< 1,000E-05	800	2,400E-02	1100	4,897E-02	2200	3,160E-02	3700	3,206E-04
210	< 1,000E-05	510	< 1,000E-05	810	1,800E-02	1110	4,608E-02	2250	3,845E-02	3750	3,177E-04
220	< 1,000E-05	520	< 1,000E-05	820	1,382E-02	1120	4,300E-02	2300	4,600E-02	3800	3,000E-04
230	< 1,000E-05	530	< 1,000E-05	830	1,088E-02	1130	3,948E-02	2350	5,309E-02	3850	2,594E-04
240	6,067E-04	540	< 1,000E-05	840	9,121E-03	1140	3,666E-02	2400	6,000E-02	3900	2,213E-04
250	5,610E-02	550	< 1,000E-05	850	7,965E-03	1150	3,325E-02	2450	6,776E-02	3950	1,710E-04
260	2,760E-01	560	< 1,000E-05	860	7,014E-03	1160	2,970E-02	2500	7,000E-02	4000	1,180E-04
270	5,210E-01	570	< 1,000E-05	870	6,255E-03	1170	2,691E-02	2550	7,000E-02	4050	8,954E-05
280	7,120E-01	580	< 1,000E-05	880	5,892E-03	1180	2,354E-02	2600	7,000E-02	4100	6,653E-05
290	8,250E-01	590	< 1,000E-05	890	5,834E-03	1190	2,064E-02	2650	7,161E-02	4150	5,741E-05
300	8,800E-01	600	< 1,000E-05	900	5,948E-03	1200	1,775E-02	2700	7,000E-02	4200	5,236E-05
310	9,070E-01	610	< 1,000E-05	910	6,114E-03	1250	8,800E-03	2750	6,427E-02	4250	5,383E-05
320	9,200E-01	620	< 1,000E-05	920	6,368E-03	1300	5,470E-03	2800	3,000E-02	4300	6,067E-05
330	9,260E-01	630	< 1,000E-05	930	7,000E-03	1350	4,590E-03	2850	1,057E-02	4350	7,621E-05
340	9,210E-01	640	< 1,000E-05	940	8,090E-03	1400	4,770E-03	2900	4,819E-03	4400	1,000E-04
350	9,060E-01	650	< 1,000E-05	950	9,390E-03	1450	4,650E-03	2950	2,547E-03	4450	1,384E-04
360	8,660E-01	660	3,631E-04	960	1,100E-02	1500	4,270E-03	3000	1,589E-03	4500	1,663E-04
370	7,560E-01	670	8,128E-03	970	1,300E-02	1550	4,340E-03	3050	1,000E-03	4550	1,742E-04
380	4,820E-01	680	5,000E-02	980	1,520E-02	1600	5,000E-03	3100	6,966E-04	4600	1,766E-04
390	1,200E-01	690	1,380E-01	990	1,825E-02	1650	5,970E-03	3150	5,000E-04	4650	1,750E-04
400	3,999E-03	700	2,220E-01	1000	2,132E-02	1700	6,600E-03	3200	3,750E-04	4700	1,710E-04
410	1,047E-05	710	2,780E-01	1010	2,498E-02	1750	6,660E-03	3250	2,897E-04	4750	1,633E-04
420	< 1,000E-05	720	2,830E-01	1020	2,809E-02	1800	6,790E-03	3300	2,360E-04	4800	1,503E-04
430	< 1,000E-05	730	2,400E-01	1030	3,263E-02	1850	7,160E-03	3350	2,075E-04	4850	1,496E-04
440	< 1,000E-05	740	1,850E-01	1040	3,673E-02	1900	8,040E-03	3400	1,824E-04	4900	1,560E-04
450	< 1,000E-05	750	1,360E-01	1050	4,100E-02	1950	1,000E-02	3450	1,758E-04	4950	1,726E-04
460	< 1,000E-05	760	9,700E-02	1060	4,375E-02	2000	1,238E-02	3500	1,875E-04	5000	1,866E-04
470	< 1,000E-05	770	6,700E-02	1070	4,599E-02	2050	1,577E-02	3550	2,133E-04	5050	1,875E-04
480	< 1,000E-05	780	4,700E-02	1080	4,800E-02	2100	2,029E-02	3600	2,594E-04	5100	1,435E-04
490	< 1,000E-05	790	3,300E-02	1090	4,828E-02	2150	2,582E-02	3650	3,000E-04	5150	9,376E-05