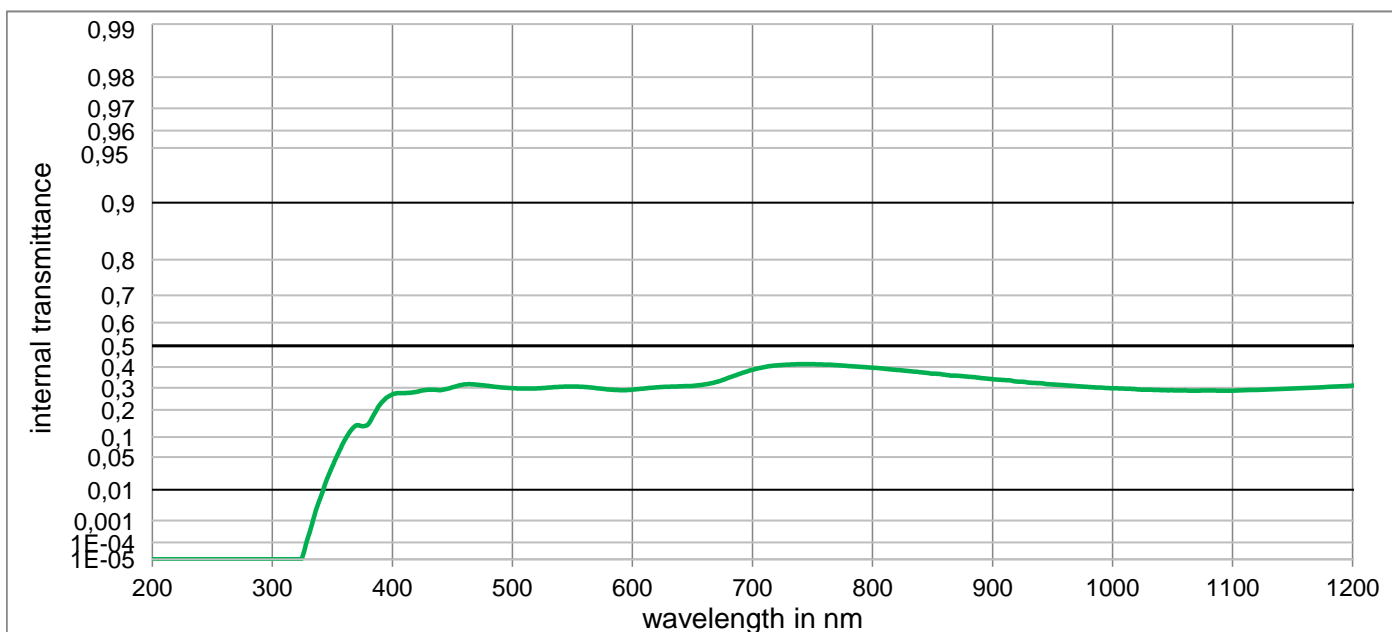
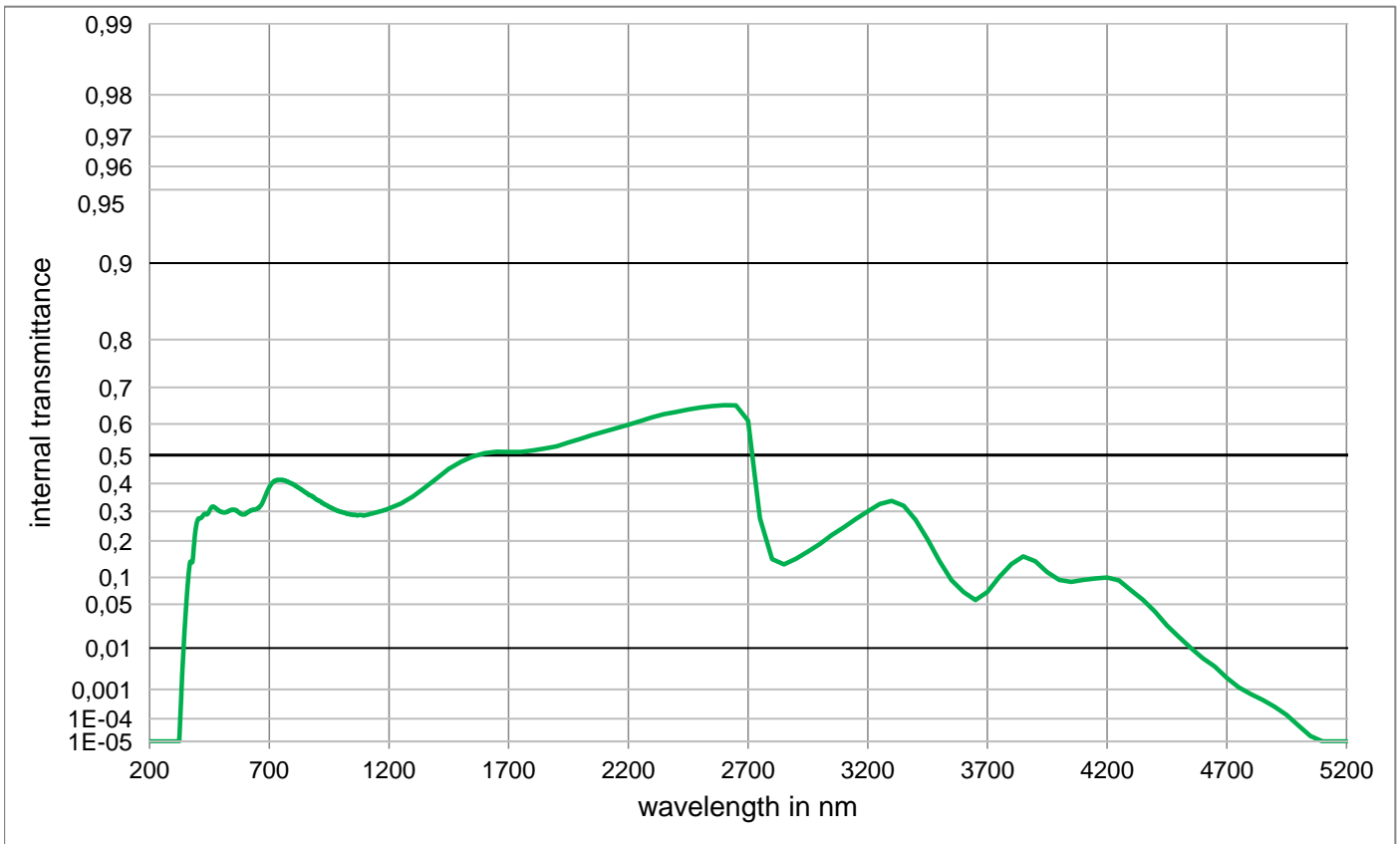


## NG4

Optical properties	Mechanical properties	Colorimetric properties	
<b>Reflection factor</b>	<b>Reference thickness</b>	1 mm    2 mm    3 mm	
$P_d = 0,922$	$d = 1,00 \text{ mm}$	Illuminant D65 x y Y $\lambda_d$ $P_e$	
<b>Spectral values guaranteed</b>	<b>Density</b>		Illuminant A x y Y $\lambda_d$ $P_e$
$\tau_i (405 \text{ nm}) = 0,27 \pm 0,03$	$\rho = 2,42 \text{ g/cm}^3$		
$\tau_i (546 \text{ nm}) = 0,31 \pm 0,03$	<b>Knoop hardness</b>		
$\tau_i (694 \text{ nm}) = 0,39 \pm 0,04$	$HK[0.1/20] = 423$		
	<b>Thermal properties</b>		
	<b>Transformation temperature</b>		
	$T_g = 470 \text{ }^\circ\text{C}$		
	<b>Thermal expansion in <math>10^{-6}/\text{K}</math></b>		
	$\alpha_{(-30^\circ\text{C}/+70^\circ\text{C})} = 6,5$		
	$\alpha_{(20^\circ\text{C}/300^\circ\text{C})} = 7,1$		
<b>Refractive indices</b>	<b>Chemical properties</b>	<b>Notes</b>	
$n_h (404,7 \text{ nm}) = 1,517$	<b>Chemical resistance</b>		
$n_e (546 \text{ nm}) = 1,505$	FR class = 1	Ionically colored glass	
$n_d (587,6 \text{ nm}) = 1,503$	SR class = 2.2	Neutral density filter	
	AR class = 1		
	<b>Resistance against humidity</b>		
<b>Sellmeier coefficients</b>	Resistant glass	ISO 23364:2021	
valid from 440 nm to 1550 nm	see pocket catalogue "Optical Filter Glass 2024", chapter 5.5		
$B_1 = 0,6033$		<b>Disclaimer</b>	
$B_2 = 0,6255$		All data without tolerances are to be understood to be reference values.	
$B_3 = 54,9099$			
$C_1 = 4,261\text{E-}03 \text{ } \mu\text{m}^2$			
$C_2 = 1,4068\text{E-}02 \text{ } \mu\text{m}^2$			
$C_3 = 5448,332 \text{ } \mu\text{m}^2$			
<b>Internal quality</b>			
Bubble class 2			



## NG4



**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	< 1,0E-05	500	2,980E-01	800	3,970E-01	1100	2,860E-01	2200	5,974E-01	3700	7,000E-02
210	< 1,0E-05	510	2,962E-01	810	3,920E-01	1110	2,882E-01	2250	6,084E-01	3750	1,012E-01
220	< 1,0E-05	520	2,971E-01	820	3,860E-01	1120	2,902E-01	2300	6,200E-01	3800	1,327E-01
230	< 1,0E-05	530	3,007E-01	830	3,807E-01	1130	2,924E-01	2350	6,289E-01	3850	1,539E-01
240	< 1,0E-05	540	3,046E-01	840	3,750E-01	1140	2,945E-01	2400	6,355E-01	3900	1,400E-01
250	< 1,0E-05	550	3,060E-01	850	3,680E-01	1150	2,968E-01	2450	6,421E-01	3950	1,121E-01
260	< 1,0E-05	560	3,040E-01	860	3,630E-01	1160	2,991E-01	2500	6,472E-01	4000	9,441E-02
270	< 1,0E-05	570	2,983E-01	870	3,580E-01	1170	3,016E-01	2550	6,516E-01	4050	9,000E-02
280	< 1,0E-05	580	2,920E-01	880	3,530E-01	1180	3,042E-01	2600	6,538E-01	4100	9,441E-02
290	< 1,0E-05	590	2,890E-01	890	3,470E-01	1190	3,069E-01	2650	6,531E-01	4150	9,772E-02
300	< 1,0E-05	600	2,910E-01	900	3,410E-01	1200	3,100E-01	2700	6,100E-01	4200	1,000E-01
310	< 1,0E-05	610	2,966E-01	910	3,370E-01	1250	3,276E-01	2750	2,750E-01	4250	9,333E-02
320	< 1,000E-05	620	3,018E-01	920	3,300E-01	1300	3,533E-01	2800	1,459E-01	4300	7,330E-02
330	1,991E-04	630	3,050E-01	930	3,250E-01	1350	3,855E-01	2850	1,319E-01	4350	5,675E-02
340	6,039E-03	640	3,070E-01	940	3,220E-01	1400	4,185E-01	2900	1,466E-01	4400	4,000E-02
350	3,390E-02	650	3,090E-01	950	3,160E-01	1450	4,523E-01	2950	1,679E-01	4450	2,500E-02
360	8,880E-02	660	3,159E-01	960	3,120E-01	1500	4,764E-01	3000	1,900E-01	4500	1,611E-02
370	1,391E-01	670	3,279E-01	970	3,080E-01	1550	4,948E-01	3050	2,184E-01	4550	1,000E-02
380	1,439E-01	680	3,480E-01	980	3,040E-01	1600	5,065E-01	3100	2,448E-01	4600	6,166E-03
390	2,250E-01	690	3,685E-01	990	3,010E-01	1650	5,116E-01	3150	2,727E-01	4650	4,000E-03
400	2,689E-01	700	3,870E-01	1000	2,980E-01	1700	5,109E-01	3200	3,000E-01	4700	2,104E-03
410	2,750E-01	710	4,000E-01	1010	2,960E-01	1750	5,109E-01	3250	3,262E-01	4750	1,153E-03
420	2,809E-01	720	4,080E-01	1020	2,930E-01	1800	5,153E-01	3300	3,372E-01	4800	7,261E-04
430	2,910E-01	730	4,117E-01	1030	2,910E-01	1850	5,219E-01	3350	3,200E-01	4850	4,688E-04
440	2,890E-01	740	4,134E-01	1040	2,890E-01	1900	5,292E-01	3400	2,700E-01	4900	2,786E-04
450	3,020E-01	750	4,135E-01	1050	2,880E-01	1950	5,417E-01	3450	2,052E-01	4950	1,393E-04
460	3,160E-01	760	4,115E-01	1060	2,880E-01	2000	5,534E-01	3500	1,400E-01	5000	5,212E-05
470	3,150E-01	770	4,090E-01	1070	2,860E-01	2050	5,659E-01	3550	9,380E-02	5050	1,820E-05
480	3,089E-01	780	4,050E-01	1080	2,870E-01	2100	5,769E-01	3600	7,000E-02	5100	< 1,000E-05
490	3,020E-01	790	4,010E-01	1090	2,860E-01	2150	5,871E-01	3650	5,640E-02	5150	< 1,000E-05