LYTKARINO OPTICAL GLASS FACTORY, JSC

ЛЗОС © LZOS — BF11 glass type

n_e 1.625092	υ_e 52.85	$n_{F'} - n_{C'}$ 0.011828
n_d 1.622305	υ_d 53.14	$n_F - n_C$ 0.011710

Class of bubbles	Viscosity temperature				
	η [Poise]	$10^{14.5}$	10^{13}	10^{10}	10^8
2	t [°C]	570	605	685	745

Relative partial dispersion deviations from the 'Normal Line'

	i – F'	g – F'	F' - e	F' - r
ΔP	-0.020	-0.0002	+0.0008	-0.0027
$\Delta \upsilon_e$	-2.1	-0.1	+1.5	+3.7
	i – F	g – F	F - e	F – r
ΔP	-0.0018	+0.0004	+0.0011	-0.0021
$\Delta \upsilon_d$	-1.8	+0.2	+1.8	+3.8

Stress optical coefficient B [nm·cm⁻¹ / kp·cm⁻²], λ=550nm	Thermal conductivity			
	-50°C	0°C	+20°C	+50°C
2.30	0.56	0.59	0.61	0.63

Optical density increment on irradiation

Initial density D_0 [cm⁻¹]	Radiation dose [R]	Optical density increment Δ D [cm⁻¹]
0.051	$1 \cdot 10^4$	0.065
	$1 \cdot 10^5$	0.38

Young's modulus E [kp · mm⁻²]	Shear modulus G [kp·mm⁻²]	Coefficient of linear thermal expansion $\alpha_{20/t}$ · 10^7 [°C]	Chemical resistance / Stain resistance	
			Group	III
7870	3096			

Poisson's ratio μ	Density ρ [g · cm⁻³]	+20 ÷ -60°C	+20 ÷ +120°C	Weather resistance	
0.271	3.66	63	70	Group	A

Refractive indices

λ [nm]		n
312.6	-	-
334.1	-	-
365.0	i	1.65181
404.66	h	1.64242
435.83	g	1.636984
479.99	F'	1.631167
486.13	F	1.630491
546.07	e	1.625092
587.56	d	1.622305
589.29	D	1.622200
643.85	C'	1.619339
656.27	C	1.618781
706.52	r	1.61680
768.2	-	1.61483
852.1	-	1.61270
1013.9	-	1.60967
1128.6	-	1.60797
1395.1	-	1.60466
1529.6	-	1.60310
1813.1	-	1.59977
1970.1	-	1.59783
2249.3	-	1.59411
2325.4	-	1.59302

Dispersion coefficients

$$\nu_h = \frac{n_h - 1}{n_i - n_g} \qquad 43.3$$

$$\nu_e = \frac{n_e - 1}{n_{F'} - n_{C'}} \qquad 52.85$$

$$\nu_d = \frac{n_d - 1}{n_F - n_C} \qquad 53.14$$

$$\nu_D = \frac{n_D - 1}{n_F - n_C} \qquad 53.13$$

$$\nu_{1529.6} = \frac{n_{1529.6} - 1}{n_{1013.9} - n_{2249.3}} \qquad 38.8$$

Relative partial dispersions

Δ n	$\dfrac{\Delta n}{n_{F'} - n_{C'}}$	$\dfrac{\Delta n}{n_F - n_C}$
312.6 – 334.1	-	-
334.1 - i	-	-
i - h	0.794	0.802
h - g	0.4596	0.4644
g – F	0.5489	0.5545
g – F'	0.4918	0.4967
F - e	0.4564	0.4610
F - D	0.7009	0.7080
F' - e	0.5136	0.5188
d - D	0.0089	0.0090
D - C	0.2891	0.2920
e – C'	0.4864	0.4913
e - C	0.5335	0.5389
C' - r	0.215	0.217
C - r	0.168	0.169
r – 852.1	0.346	0.350
852.1 – 1013.9	0.257	0.259
1013.9 – 1128.6	0.143	0.144
1128.6 – 1395.1	0.280	0.283
1395.1 – 1529.6	0.132	0.133
1529.6 – 1813.1	0.281	0.284
1813.1 – 1970.1	0.164	0.166
1970.1 – 2249.3	0.315	0.318
2249.3 – 2325.4	0.092	0.093

Internal transmittance

λ [nm]	τ_i (s=10mm)	τ_i (s=25mm)
280	-	-
300	-	-
320	-	-
340	0.284	0.043
360	0.708	0.422
380	0.910	0.790
400	0.962	0.908
420	0.981	0.953
440	0.986	0.966
460	0.990	0.975
480	0.993	0.983
500	0.995	0.987
520	0.996	0.990
540	0.996	0.990
560	0.996	0.990
580	0.995	0.987
600	0.995	0.987
620	0.994	0.985
640	0.994	0.985
660	0.993	0.983
680	0.993	0.983
700	0.993	0.983
750	0.992	0.980
800	0.991	0.978
900	0.988	0.971
1000	0.986	0.966
1050	0.988	0.971
1100	0.988	0.971
1200	-	-
1300	-	-
1400	-	-
1500	-	-

Refractive indices at laser wavelengths

λ [nm]	n
350.7	-
356.4	-
488.0	1.63029
514.0	1.62774
520.8	1.62713
530.0	1.62635
568.2	1.62353
632.8	1.61986
647.1	1.61919
694.3	1.61724
890.0	1.61189
1060.0	1.60896

Radiation resistant analogue glass type-

BF111