LYTKARINO OPTICAL GLASS FACTORY, JSC

ЛЗОС LZOS

BK4

glass type

n_e 1.532367	υ_e 60.20	$n_{F'} - n_{C'}$ 0.008843
n_d 1.530279	υ_d 60.47	$n_F - n_C$ 0.008770

Class of bubbles	Viscosity temperature				
	η [Poise]	$10^{14.5}$	10^{13}	10^{10}	10^{8}
2	t [°C]	515	555	650	730

Relative partial dispersion deviations from the 'Normal Line'				
	i – F'	g – F'	F' - e	F' - r
ΔP	-0.009	-0.0003	+0.0020	-0.0028
Δ υ_e	-1.0	-0.2	+3.5	+3.9
	i – F	g – F	F - e	F – r
ΔP	-0.007	+0.0004	+0.0022	-0.0022
Δ υ_d	-0.7	+0.2	+3.7	+4.0

Stress optical coefficient B [nm·cm^{-1} / kp·cm^{-2}], λ=550nm	Thermal conductivity			
	-50°C	0°C	+20°C	+50°C
3.00	-	-	0.90	-

Optical density increment on irradiation		
Initial density D_0 [cm^{-1}]	Radiation dose [R]	Optical density increment Δ D [cm^{-1}]
0.040	$1 \cdot 10^4$	0.0055
	$1 \cdot 10^5$	0.38

Young's modulus E [kp · mm^{-2}]	Shear modulus G [kp·mm^{-2}]	Coefficient of linear thermal expansion $\alpha_{20/t} \cdot 10^7$ [°C]		Chemical resistance	
				Stain resistance	
				Group	I
7170	2924				
Poisson's ratio μ	Density ρ [g · cm^{-3}]	+20 ÷ -60°C	+20 ÷ +120°C	Weather resistance	
0.226	2.76	74	80	Group	A

Refractive indices		
λ [nm]	n	
312.6	-	-
334.1	-	-
365.0	i	1.55180
404.66	h	1.54508
435.83	g	1.541128
479.99	F'	1.536877
486.13	F	1.536378
546.07	e	1.532367
587.56	d	1.530279
589.29	D	1.530200
643.85	C'	1.528034
656.27	C	1.527608
706.52	r	1.52609
768.2	-	1.52455
852.1	-	1.52287
1013.9	-	1.52038
1128.6	-	1.51894
1395.1	-	1.51596
1529.6	-	1.51450
1813.1	-	1.51127
1970.1	-	1.50934
2249.3	-	1.50555
2325.4	-	1.50443

Dispersion coefficients	
$\nu_h = \frac{n_h - 1}{n_i - n_g}$	51.1
$\nu_e = \frac{n_e - 1}{n_{F'} - n_{C'}}$	60.20
$\nu_d = \frac{n_d - 1}{n_F - n_C}$	60.47
$\nu_D = \frac{n_D - 1}{n_F - n_C}$	60.46
$\nu_{1529.6} = \frac{n_{1529.6} - 1}{n_{1013.9} - n_{2249.3}}$	35.7

Internal transmittance		
λ [nm]	τ_i (s=10mm)	τ_i (s=25mm)
280	-	-
300	-	-
320	-	-
340	0.896	0.760
360	0.941	0.859
380	0.958	0.898
400	0.984	0.960
420	0.985	0.963
440	0.986	0.966
460	0.990	0.975
480	0.992	0.980
500	0.994	0.985
520	0.995	0.987
540	0.995	0.987
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	0.994	0.985
680	0.995	0.987
700	0.995	0.987
750	0.995	0.997
800	0.995	0.997
900	0.992	0.980
1000	0.991	0.978
1050	0.991	0.978
1100	0.991	0.978
1200	-	-
1300	-	-
1400	-	-
1500	-	-

Refractive indices at laser wavelengths	
λ [nm]	n
350.7	-
356.4	-
488.0	1.53622
514.0	1.53433
520.8	1.53389
530.0	1.53331
568.2	1.53120
632.8	1.52843
647.1	1.52792
694.3	1.52643
890.0	1.52222
1060.0	1.51978

Relative partial dispersions		
Δ n	$\frac{\Delta n}{n_{F'} - n_{C'}}$	$\frac{\Delta n}{n_F - n_C}$
312.6 – 334.1	-	-
334.1 - i	-	-
i - h	0.760	0.766
h - g	0.4469	0.4505
g – F	0.5371	0.5416
g – F'	0.4808	0.4848
F - e	0.4536	0.4574
F - D	0.6986	0.7045
F' - e	0.5100	0.5142
d - D	0.0089	0.0090
D - C	0.2931	0.2955
e – C'	0.4900	0.4941
e - C	0.5382	0.5426
C' - r	0.220	0.222
C - r	0.172	0.174
r – 852.1	0.364	0.367
852.1 – 1013.9	0.281	0.284
1013.9 – 1128.6	0.163	0.165
1128.6 – 1395.1	0.337	0.339
1395.1 – 1529.6	0.165	0.167
1529.6 – 1813.1	0.365	0.368
1813.1 – 1970.1	0.219	0.220
1970.1 – 2249.3	0.428	0.432
2249.3 – 2325.4	0.126	0.128

Radiation resistant analogue glass type-

BK104