LYTKARINO OPTICAL GLASS FACTORY, JSC

ЛЗОС LZOS

TK9

glass type

n_e 1.619926	υ_e 53.76	$n_{F'} - n_{C'}$ 0.011531
n_d 1.617202	υ_d 54.05	$n_F - n_C$ 0.011420

Class of bubbles	Viscosity temperature				
	η [Poise]	$10^{14.5}$	10^{13}	10^{10}	10^{8}
1	t [°C]	-	600	630	-

Relative partial dispersion deviations from the 'Normal Line'				
	i – F'	**g – F'**	**F' - e**	**F' - r**
ΔP	-0.023	-0.0011	+0.0005	-0.0023
Δ υ_e	-2.4	-0.7	+0.8	+3.2
	i – F	**g – F**	**F - e**	**F – r**
ΔP	-0.022	-0.0007	+0.0007	-0.0018
Δ υ_d	-2.2	-0.4	+1.2	+3.2

Stress optical coefficient B [nm·cm^{-1} / kp·cm^{-2}], λ=550nm	Thermal conductivity			
	-50°C	0°C	+20°C	+50°C
2.30	0.64	0.67	0.68	0.70

Optical density increment on irradiation		
Initial density D_0 [cm^{-1}]	Radiation dose [R]	Optical density increment Δ D [cm^{-1}]
0.051	$1 \cdot 10^4$	0.025
	$1 \cdot 10^5$	0.15

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	III
8060	3183				
Poisson's ratio μ	**Density ρ [g · cm^{-3}]**	+20 ÷ -60°C	+20 ÷ +120°C	**Weather resistance**	
0.266	3.62	68	76	**Group**	A

Refractive indices		
λ [nm]	n	
312.6	-	-
334.1	-	-
365.0	i	1.64583
404.66	h	1.63675
435.83	g	1.631483
479.99	F'	1.625838
486.13	F	1.625181
546.07	e	1.619926
587.56	d	1.617202
589.29	D	1.617100
643.85	C'	1.614307
656.27	C	1.613761
706.52	r	1.61182
768.2	-	1.60989
852.1	-	1.60720
1013.9	-	1.60482
1128.6	-	1.60316
1395.1	-	1.59990
1529.6	-	1.59836
1813.1	-	1.59505
1970.1	-	1.59310
2249.3	-	1.58932
2325.4	-	1.58821

Dispersion coefficients	
$\nu_h = \frac{n_h - 1}{n_i - n_g}$	44.4
$\nu_e = \frac{n_e - 1}{n_{F'} - n_{C'}}$	53.76
$\nu_d = \frac{n_d - 1}{n_F - n_C}$	54.05
$\nu_D = \frac{n_D - 1}{n_F - n_C}$	54.03
$\nu_{1529.6} = \frac{n_{1529.6} - 1}{n_{1013.9} - n_{2249.3}}$	38.6

Internal transmittance		
λ [nm]	**τ_i (s=10mm)**	**τ_i (s=25mm)**
280	-	-
300	-	-
320	-	-
340	-	-
360	-	-
380	0.908	0.786
400	0.958	0.898
420	0.976	0.941
440	0.981	0.953
460	0.986	0.966
480	0.990	0.975
500	0.993	0.983
520	0.995	0.987
540	0.996	0.990
560	0.996	0.990
580	0.995	0.987
600	0.995	0.987
620	0.993	0.983
640	0.993	0.983
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	0.987	0.968
1050	0.987	0.968
1100	0.987	0.968
1200	-	-
1300	-	-
1400	-	-
1500	-	-

Refractive indices at laser wavelengths	
λ [nm]	**n**
350.7	-
356.4	-
488.0	1.62499
514.0	1.62250
520.8	1.62191
530.0	1.62116
568.2	1.61840
632.8	1.61482
647.1	1.68416
694.3	1.61226
890.0	1.60701
1060.0	1.60412

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	0.787	0.795
h - g	0.4568	0.4612
g – F	0.5465	0.5518
g – F'	0.4895	0.4943
F - e	0.4557	0.4602
F - D	0.7008	0.7076
F' - e	0.5127	0.5177
d - D	0.0088	0.0089
D - C	0.2896	0.2924
e – C'	0.4873	0.4920
e - C	0.5346	0.5398
C' - r	0.216	0.218
C - r	0.168	0.170
r – 852.1	0.348	0.352
852.1 – 1013.9	0.259	0.261
1013.9 – 1128.6	0.144	0.146
1128.6 – 1395.1	0.283	0.286
1395.1 – 1529.6	0.134	0.135
1529.6 – 1813.1	0.287	0.290
1813.1 – 1970.1	0.169	0.171
1970.1 – 2249.3	0.328	0.331
2249.3 – 2325.4	0.096	0.097

Radiation resistant analogue glass type-

TK109