LYTKARINO OPTICAL GLASS FACTORY, JSC

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TK2 glass type

n_e 1.574860	υ_e 57.20	$n_{F'} - n_{C'}$ 0.010050
n_d 1.572489	υ_d 57.48	$n_F - n_C$ 0.009960

Class of bubbles	Viscosity temperature				
	η [Poise]	$10^{14.5}$	10^{13}	10^{10}	10^8
3	t [°C]	570	615	700	760

Relative partial dispersion deviations from the 'Normal Line'

	i – F'	g – F'	F' - e	F' - r
ΔP	-0.017	-0.0003	+0.0010	-0.0028
$\Delta \upsilon_e$	-1.8	-0.2	+1.7	+3.9
	i – F	g – F	F - e	F – r
ΔP	-0.015	+0.0003	+0.0011	-0.0022
$\Delta \upsilon_d$	-1.5	+0.2	+2.0	+3.9

Stress optical coefficient B [nm·cm⁻¹ / kp·cm⁻²], λ=550nm	Thermal conductivity			
	-50°C	0°C	+20°C	+50°C
2.70	0.58	0.62	0.64	0.66

Optical density increment on irradiation

Initial density D_0 [cm⁻¹]	Radiation dose [R]	Optical density increment ΔD [cm⁻¹]
0.046	$1 \cdot 10^4$	0.035
	$1 \cdot 10^5$	0.18

Young's modulus E [kp · mm⁻²]	Shear modulus G [kp·mm⁻²]	Coefficient of linear thermal expansion $\alpha_{20/t}$ · 10⁷ [°C]	Chemical resistance / Stain resistance	
			Group	II
7350	2947			
Poisson's ratio μ	Density ρ [g · cm⁻³]	+20 ÷ -60°C	+20 ÷ +120°C	Weather resistance
0.247	3.20	64	70	Group A

Refractive indices

λ [nm]		n
312.6	-	-
334.1	-	-
365.0	i	1.59716
404.66	h	1.58941
435.83	g	1.584874
479.99	F'	1.579998
486.13	F	1.579428
546.07	e	1.574860
587.56	d	1.572489
589.29	D	1.572400
643.85	C'	1.569948
656.27	C	1.569468
706.52	r	1.56776
768.2	-	1.56604
852.1	-	1.56418
1013.9	-	1.56146
1128.6	-	1.55991
1395.1	-	1.55678
1529.6	-	1.55527
1813.1	-	1.55198
1970.1	-	1.55003
2249.3	-	1.54623
2325.4	-	1.54512

Refractive indices at laser wavelengths

λ [nm]	n
350.7	-
356.4	-
488.0	1.57926
514.0	1.57710
520.8	1.57659
530.0	1.57593
568.2	1.57353
632.8	1.57040
647.1	1.56982
694.3	1.56814
890.0	1.56346
1060.0	1.56081

Dispersion coefficients

$$\nu_h = \frac{n_h - 1}{n_i - n_g} \qquad 48.0$$

$$\nu_e = \frac{n_e - 1}{n_{F'} - n_{C'}} \qquad 57.20$$

$$\nu_d = \frac{n_d - 1}{n_F - n_C} \qquad 57.48$$

$$\nu_D = \frac{n_D - 1}{n_F - n_C} \qquad 57.47$$

$$\nu_{1529.6} = \frac{n_{1529.6} - 1}{n_{1013.9} - n_{2249.3}} \qquad 36.5$$

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	0.771	0.778
h - g	0.4514	0.4554
g – F	0.5419	0.5468
g – F'	0.4852	0.4896
F - e	0.4545	0.4586
F - D	0.6993	0.7056
F' - e	0.5112	0.5158
d - D	0.0089	0.0089
D - C	0.2917	0.2944
e – C'	0.4888	0.4932
e - C	0.5365	0.5414
C' - r	0.218	0.220
C - r	0.170	0.172
r – 852.1	0.356	0.359
852.1 – 1013.9	0.270	0.273
1013.9 – 1128.6	0.154	0.156
1128.6 – 1395.1	0.311	0.314
1395.1 – 1529.6	0.150	0.152
1529.6 – 1813.1	0.327	0.330
1813.1 – 1970.1	0.194	0.196
1970.1 – 2249.3	0.378	0.381
2249.3 – 2325.4	0.111	0.112

Internal transmittance

λ [nm]	τ_i (s=10mm)	τ_i (s=25mm)
280	-	-
300	-	-
320	-	-
340	0.827	0.622
360	0.910	0.790
380	0.958	0.898
400	0.985	0.963
420	0.989	0.972
440	0.989	0.972
460	0.992	0.980
480	0.993	0.983
500	0.994	0.985
520	0.995	0.987
540	0.995	0.987
560	0.995	0.987
580	0.996	0.990
600	0.994	0.985
620	0.994	0.985
640	0.993	0.983
660	0.993	0.983
680	0.993	0.983
700	0.993	0.983
750	0.993	0.983
800	0.992	0.980
900	0.990	0.975
1000	0.989	0.972
1050	0.989	0.972
1100	0.989	0.972
1200	-	-
1300	-	-
1400	-	-
1500	-	-

Radiation resistant analogue glass type-

TK102