S-TIH57

Code(d) **963241**
Code(e) **972239**

Refractive Index n_d	**1.963 00** 1.963 000	Abbe Number ν_d	**24.11**	Dispersion $n_F - n_C$	**0.039 935**
Refractive Index n_e	1.972 398	Abbe Number ν_e	23.92	Dispersion $n_{F'} - n_{C'}$	0.040 656

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.893 94
n_{1970}	1.970 09	1.901 63
n_{1530}	1.529 58	1.910 82
n_{1129}	1.128 64	1.921 06
n_t	1.013 98	1.925 20
n_s	0.852 11	1.933 35
$n_{A'}$	0.768 19	1.939 49
n_r	0.706 52	1.945 42
n_C	0.656 27	1.951 60
$n_{C'}$	0.643 85	1.953 37
$n_{He\text{-}Ne}$	0.632 8	1.955 04
n_D	0.589 29	1.962 66
n_d	0.587 56	1.963 00
n_e	0.546 07	1.972 40
n_F	0.486 13	1.991 53
$n_{F'}$	0.479 99	1.994 02
$n_{He\text{-}Cd}$	0.441 57	2.012 91
n_g	0.435 835	2.016 34
n_h	0.404 656	2.038 93
n_i	0.365 015	

Constants of Dispersion Formula	
A_1	2.211 032 56E+00
A_2	4.503 469 86E-01
A_3	2.477 466 63E+00
B_1	1.423 302 68E-02
B_2	6.385 733 92E-02
B_3	1.619 376 00E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
Acid Resistance(Powder) Group RA(P)	1
Weathering Resistance(Surface) Group W(S)	1
Acid Resistance(Surface) Group SR	3.0
Phosphate Resistance PR	1.0

Mechanical Properties		
Young's Modulus E (GPa)	117.0	
Rigidity Modulus G (GPa)	45.3	
Poisson's Ratio σ	0.292	
Knoop Hardness Hk[Class]	640	6
Abrasion Aa	102	

Partial Dispersions	
$n_C - n_t$	0.026 394
$n_C - n_{A'}$	0.012 111
$n_d - n_C$	0.011 402
$n_e - n_C$	0.020 800
$n_g - n_d$	0.053 340
$n_g - n_F$	0.024 807
$n_h - n_g$	0.022 594
$n_i - n_g$	
$n_{C'} - n_t$	0.028 162
$n_e - n_{C'}$	0.019 032
$n_{F'} - n_e$	0.021 624
$n_i - n_{F'}$	

Relative Partial Dispersions	
$\theta_{C,t}$	0.660 9
$\theta_{C,A'}$	0.303 3
$\theta_{d,C}$	0.285 5
$\theta_{e,C}$	0.520 8
$\theta_{g,d}$	1.335 7
$\theta_{g,F}$	0.621 2
$\theta_{h,g}$	0.565 8
$\theta_{i,g}$	
$\theta'_{C,t}$	0.692 7
$\theta'_{e,C'}$	0.468 1
$\theta'_{F',e}$	0.531 9
$\theta'_{i,F'}$	

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.001 1
$\Delta\theta_{C,A'}$	-0.001 8
$\Delta\theta_{g,d}$	0.021 1
$\Delta\theta_{g,F}$	0.018 7
$\Delta\theta_{i,g}$	

Coloring			
λ_{80}		λ_5	375
λ_{70}	450		

Internal transmission			
$\lambda_{0.80}$	433	$\lambda_{0.05}$	373

CCI		
B	G	R
0.00	10.27	10.95

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	
360	
370	0.02
380	0.13
390	0.33
400	0.51
420	0.73
440	0.84
460	0.90
480	0.929
500	0.950
550	0.979
600	0.988
650	0.991
700	0.994
800	0.997
900	0.997
1 000	0.997
1 200	0.997
1 400	0.997
1 600	0.995
1 800	0.989
2 000	0.977
2 200	0.947
2 400	0.85

Thermal Properties		
Strain Point StP (℃)		634
Annealing Point AP (℃)		661
Transformation Temperature Tg (℃)		677
Yield Point At (℃)		713
Softening Point SP (℃)		732
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	78
	(100 ℃ ~ 300 ℃)	93
Thermal Conductivity λ (W/(m·K))		0.970

Linear coefficient of thermal expansion	
Temperature range (℃)	α_l (10^{-7} K^{-1})
-100 ~ -90	63
-90 ~ -80	64
-80 ~ -70	66
-70 ~ -60	67
-60 ~ -50	68
-50 ~ -40	70
-40 ~ -30	71
-30 ~ -20	72
-20 ~ -10	74
-10 ~ 0	75
0 ~ 10	76
10 ~ 20	77
20 ~ 30	78
30 ~ 40	79
40 ~ 50	81
50 ~ 60	82
60 ~ 70	83
70 ~ 80	84
80 ~ 90	85
90 ~ 100	86
100 ~ 110	86
110 ~ 120	87
120 ~ 130	88
130 ~ 140	89
140 ~ 150	90
150 ~ 160	91
160 ~ 170	91
170 ~ 180	92
180 ~ 190	93
190 ~ 200	93
200 ~ 210	94
210 ~ 220	95
220 ~ 230	95
230 ~ 240	96
240 ~ 250	96
250 ~ 260	97
260 ~ 270	97
270 ~ 280	98
280 ~ 290	98
290 ~ 300	98

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	1.73
Specific Gravity *d*	4.20
Remarks	

Temperature Coefficients of Refractive Index												
Range of Temperature (℃)	$\Delta n_{rel}/\Delta T$ (10^{-6} K^{-1})											
	1550	t	r	C	C'	d	e	F	F'	g	h	i
-80 ~ -60	-1.0	-0.7	0.1	0.3	0.4	0.9	1.5	2.7	2.9	4.7	7.1	-
-60 ~ -40	-1.1	-0.7	0.1	0.4	0.4	1.0	1.6	2.8	3.0	5.0	7.4	-
-40 ~ -20	-0.9	-0.6	0.2	0.5	0.6	1.2	1.8	3.1	3.3	5.4	7.9	-
-20 ~ 0	-0.8	-0.4	0.4	0.8	0.9	1.5	2.1	3.5	3.7	5.8	8.5	-
0 ~ 20	-0.6	-0.2	0.7	1.0	1.1	1.8	2.4	3.9	4.1	6.3	9.1	-
20 ~ 40	-0.5	0.0	1.0	1.3	1.4	2.0	2.7	4.3	4.5	6.8	9.6	-
40 ~ 60	-0.2	0.2	1.2	1.6	1.7	2.3	3.0	4.6	4.8	7.3	10.3	-
60 ~ 80	-0.1	0.4	1.4	1.8	1.9	2.6	3.4	5.0	5.3	7.7	10.8	-
80 ~ 100	0.0	0.6	1.7	2.1	2.2	2.9	3.6	5.3	5.6	8.2	11.4	-
100 ~ 120	0.2	0.6	1.9	2.3	2.4	3.1	3.9	5.6	5.9	8.5	11.9	-
120 ~ 140	0.2	0.8	2.0	2.4	2.6	3.3	4.1	5.9	6.2	8.9	12.4	-
140 ~ 160	0.3	0.8	2.1	2.6	2.7	3.4	4.3	6.2	6.5	9.3	12.8	-
160 ~ 180	0.4	0.9	2.2	2.6	2.8	3.6	4.4	6.4	6.7	9.5	13.3	-

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※The name of the glass type is the model number assigned based on the main components of the composition: large, medium, small refractive index and serial number.