S-TIL 2

Code(d) **541472**
Code(e) **543469**

Refractive Index n_d	**1.540 72** 1.540 720	Abbe Number ν_d	**47.23**	Dispersion $n_F - n_C$	**0.011 449**
Refractive Index n_e	1.543 440	Abbe Number ν_e	46.94	Dispersion $n_{F'} - n_{C'}$	0.011 577

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.511 18
n_{1970}	1.970 09	1.516 26
n_{1530}	1.529 58	1.521 76
n_{1129}	1.128 64	1.526 72
n_t	1.013 98	1.528 41
n_s	0.852 11	1.531 39
$n_{A'}$	0.768 19	1.533 46
n_r	0.706 52	1.535 37
n_C	0.656 27	1.537 30
$n_{C'}$	0.643 85	1.537 84
$n_{He\text{-}Ne}$	0.632 8	1.538 35
n_D	0.589 29	1.540 62
n_d	0.587 56	1.540 72
n_e	0.546 07	1.543 44
n_F	0.486 13	1.548 75
$n_{F'}$	0.479 99	1.549 42
$n_{He\text{-}Cd}$	0.441 57	1.554 35
n_g	0.435 835	1.555 22
n_h	0.404 656	1.560 74
n_i	0.365 015	1.570 52

Constants of Dispersion Formula	
A_1	1.234 014 99E+00
A_2	9.597 968 33E-02
A_3	1.205 039 91E+00
B_1	8.695 078 01E-03
B_2	4.656 114 29E-02
B_3	1.379 533 01E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	2
Acid Resistance(Powder) Group RA(P)	1
Weathering Resistance(Surface) Group W(S)	2
Acid Resistance(Surface) Group SR	1.0
Phosphate Resistance PR	1.0

Mechanical Properties		
Young's Modulus E (GPa)	69.9	
Rigidity Modulus G (GPa)	28.6	
Poisson's Ratio σ	0.220	
Knoop Hardness Hk[Class]	500	5
Abrasion Aa	122	

Partial Dispersions	
$n_C - n_t$	0.008 891
$n_C - n_{A'}$	0.003 839
$n_d - n_C$	0.003 423
$n_e - n_C$	0.006 143
$n_g - n_d$	0.014 496
$n_g - n_F$	0.006 470
$n_h - n_g$	0.005 521
$n_i - n_g$	0.015 308
$n_{C'} - n_t$	0.009 432
$n_e - n_{C'}$	0.005 602
$n_{F'} - n_e$	0.005 975
$n_i - n_{F'}$	0.021 109

Relative Partial Dispersions	
$\theta_{C,t}$	0.776 6
$\theta_{C,A'}$	0.335 3
$\theta_{d,C}$	0.299 0
$\theta_{e,C}$	0.536 6
$\theta_{g,d}$	1.266 1
$\theta_{g,F}$	0.565 1
$\theta_{h,g}$	0.482 2
$\theta_{i,g}$	1.337 1
$\theta'_{C',t}$	0.814 7
$\theta'_{e,C'}$	0.483 9
$\theta'_{F',e}$	0.516 1
$\theta'_{i,F'}$	1.823 4

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.008 3
$\Delta\theta_{C,A'}$	0.002 2
$\Delta\theta_{g,d}$	-0.000 5
$\Delta\theta_{g,F}$	0.000 0
$\Delta\theta_{i,g}$	0.007 6

Coloring			
λ_{80}	370	λ_5	340
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	368	$\lambda_{0.05}$	340

CCI		
B	G	R
0.00	0.40	0.38

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	0.04
350	0.32
360	0.66
370	0.84
380	0.925
390	0.962
400	0.979
420	0.990
440	0.994
460	0.995
480	0.996
500	0.997
550	0.998
600	0.998
650	0.997
700	0.998
800	0.999
900	0.998
1 000	0.997
1 200	0.997
1 400	0.997
1 600	0.995
1 800	0.987
2 000	0.970
2 200	0.942
2 400	0.917

Thermal Properties		
Strain Point StP (°C)		448
Annealing Point AP (°C)		484
Transformation Temperature Tg (°C)		498
Yield Point At (°C)		571
Softening Point SP (°C)		658
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	82
	(100 °C ~ 300 °C)	98
Thermal Conductivity λ (W/(m·K))		1.05

Linear coefficient of thermal expansion	
Temperature range (°C)	α_l (10^{-7} K^{-1})
-100 ~ -90	66
-90 ~ -80	68
-80 ~ -70	69
-70 ~ -60	71
-60 ~ -50	72
-50 ~ -40	74
-40 ~ -30	75
-30 ~ -20	77
-20 ~ -10	78
-10 ~ 0	80
0 ~ 10	81
10 ~ 20	82
20 ~ 30	83
30 ~ 40	85
40 ~ 50	86
50 ~ 60	87
60 ~ 70	88
70 ~ 80	89
80 ~ 90	90
90 ~ 100	91
100 ~ 110	92
110 ~ 120	93
120 ~ 130	94
130 ~ 140	94
140 ~ 150	95
150 ~ 160	96
160 ~ 170	97
170 ~ 180	97
180 ~ 190	98
190 ~ 200	98
200 ~ 210	99
210 ~ 220	100
220 ~ 230	100
230 ~ 240	101
240 ~ 250	101
250 ~ 260	101
260 ~ 270	102
270 ~ 280	102
280 ~ 290	102
290 ~ 300	102

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.74
Specific Gravity *d*	2.52
Remarks	

Temperature Coefficients of Refractive Index												
Range of Temperature (°C)	$\Delta n_{rel} / \Delta T$ (10^{-6} K^{-1})											
	1550	t	r	C	C'	d	e	F	F'	g	h	i
-80 ~ -60	1.1	1.2	1.5	1.6	1.7	1.8	2.0	2.3	2.3	2.8	3.2	4.2
-60 ~ -40	0.9	1.1	1.4	1.5	1.5	1.7	1.8	2.2	2.2	2.6	3.2	4.2
-40 ~ -20	0.9	1.0	1.4	1.4	1.5	1.6	1.8	2.1	2.2	2.6	3.2	4.2
-20 ~ 0	0.8	1.0	1.4	1.5	1.5	1.7	1.8	2.2	2.2	2.7	3.2	4.3
0 ~ 20	0.9	1.1	1.3	1.5	1.5	1.7	1.8	2.3	2.4	2.8	3.3	4.4
20 ~ 40	0.9	1.1	1.4	1.5	1.5	1.7	2.0	2.4	2.4	2.9	3.5	4.6
40 ~ 60	1.0	1.2	1.5	1.7	1.7	1.9	2.1	2.5	2.5	3.0	3.6	4.8
60 ~ 80	1.0	1.2	1.5	1.7	1.7	1.9	2.2	2.6	2.7	3.2	3.8	5.0
80 ~ 100	1.1	1.3	1.6	1.8	1.8	2.0	2.2	2.7	2.8	3.3	3.9	5.2
100 ~ 120	1.2	1.3	1.7	1.8	1.9	2.1	2.3	2.8	2.8	3.4	4.1	5.3
120 ~ 140	1.2	1.3	1.8	2.0	2.0	2.2	2.4	2.9	2.9	3.5	4.2	5.5
140 ~ 160	1.3	1.4	1.8	2.0	2.0	2.2	2.4	2.9	3.0	3.6	4.2	5.6
160 ~ 180	1.2	1.4	1.8	2.0	2.0	2.2	2.4	2.9	3.0	3.6	4.3	5.8

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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.