S-TIL25

Code(d) **581407**
Code(e) **585405**

Refractive Index n_d	**1.581 44** 1.581 439	Abbe Number ν_d	**40.75**	Dispersion $n_F - n_C$	**0.014 270**
Refractive Index n_e	1.584 822	Abbe Number ν_e	40.47	Dispersion $n_{F'} - n_{C'}$	0.014 451

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.547 41
n_{1970}	1.970 09	1.552 92
n_{1530}	1.529 58	1.558 95
n_{1129}	1.128 64	1.564 56
n_t	1.013 98	1.566 51
n_s	0.852 11	1.570 05
$n_{A'}$	0.768 19	1.572 54
n_r	0.706 52	1.574 86
n_C	0.656 27	1.577 22
$n_{C'}$	0.643 85	1.577 88
$n_{He\text{-}Ne}$	0.632 8	1.578 50
n_D	0.589 29	1.581 31
n_d	0.587 56	1.581 44
n_e	0.546 07	1.584 82
n_F	0.486 13	1.591 49
$n_{F'}$	0.479 99	1.592 33
$n_{He\text{-}Cd}$	0.441 57	1.598 61
n_g	0.435 835	1.599 73
n_h	0.404 656	1.606 87
n_i	0.365 015	1.619 79

Constants of Dispersion Formula	
A_1	1.321 225 34E+00
A_2	1.238 249 76E-01
A_3	1.436 852 54E+00
B_1	9.520 914 36E-03
B_2	5.160 626 65E-02
B_3	1.490 648 83E+02

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

Mechanical Properties		
Young's Modulus E (GPa)	75.3	
Rigidity Modulus G (GPa)	30.9	
Poisson's Ratio σ	0.220	
Knoop Hardness Hk[Class]	540	5
Abrasion Aa	117	

Partial Dispersions	
$n_C - n_t$	0.010 703
$n_C - n_{A'}$	0.004 679
$n_d - n_C$	0.004 223
$n_e - n_C$	0.007 606
$n_g - n_d$	0.018 287
$n_g - n_F$	0.008 240
$n_h - n_g$	0.007 140
$n_i - n_g$	0.020 066
$n_{C'} - n_t$	0.011 368
$n_e - n_{C'}$	0.006 941
$n_{F'} - n_e$	0.007 510
$n_i - n_{F'}$	0.027 460

Relative Partial Dispersions	
$\theta_{C,t}$	0.750 0
$\theta_{C,A'}$	0.327 9
$\theta_{d,C}$	0.295 9
$\theta_{e,C}$	0.533 0
$\theta_{g,d}$	1.281 5
$\theta_{g,F}$	0.577 4
$\theta_{h,g}$	0.500 4
$\theta_{i,g}$	1.406 2
$\theta'_{C',t}$	0.786 7
$\theta'_{e,C'}$	0.480 3
$\theta'_{F',e}$	0.519 7
$\theta'_{i,F'}$	1.900 2

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.012 1
$\Delta\theta_{C,A'}$	0.002 7
$\Delta\theta_{g,d}$	0.001 4
$\Delta\theta_{g,F}$	0.001 9
$\Delta\theta_{i,g}$	0.022 4

Coloring			
λ_{80}	380	λ_5	350
λ_{70}			

Internal transmission			
$\lambda_{0.80}$	378	$\lambda_{0.05}$	351

CCI		
B	G	R
0.00	0.73	0.73

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	0.01
360	0.28
370	0.65
380	0.85
390	0.929
400	0.964
420	0.986
440	0.991
460	0.993
480	0.994
500	0.995
550	0.998
600	0.998
650	0.997
700	0.998
800	0.999
900	0.999
1 000	0.998
1 200	0.998
1 400	0.994
1 600	0.994
1 800	0.981
2 000	0.963
2 200	0.911
2 400	0.89

Thermal Properties		
Strain Point StP (°C)		536
Annealing Point AP (°C)		564
Transformation Temperature Tg (°C)		590
Yield Point At (°C)		631
Softening Point SP (°C)		715
Expansion Coefficients	(-30 ℃ ~ 70 ℃)	75
α_l (10^{-7} K^{-1})	(100 °C ~ 300 °C)	90
Thermal Conductivity λ (W/(m·K))		1.05

Linear coefficient of thermal expansion	
Temperature range (°C)	α_l (10^{-7} K^{-1})
-100 ～ -90	61
-90 ～ -80	62
-80 ～ -70	63
-70 ～ -60	65
-60 ～ -50	66
-50 ～ -40	68
-40 ～ -30	69
-30 ～ -20	70
-20 ～ -10	71
-10 ～ 0	73
0 ～ 10	74
10 ～ 20	75
20 ～ 30	76
30 ～ 40	77
40 ～ 50	78
50 ～ 60	79
60 ～ 70	80
70 ～ 80	81
80 ～ 90	82
90 ～ 100	83
100 ～ 110	84
110 ～ 120	85
120 ～ 130	85
130 ～ 140	86
140 ～ 150	87
150 ～ 160	88
160 ～ 170	88
170 ～ 180	89
180 ～ 190	89
190 ～ 200	90
200 ～ 210	91
210 ～ 220	91
220 ～ 230	91
230 ～ 240	92
240 ～ 250	92
250 ～ 260	93
260 ～ 270	93
270 ～ 280	93
280 ～ 290	94
290 ～ 300	94

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	2.2	2.3	2.6	2.8	2.8	3.0	3.2	3.6	3.6	4.2	4.8	6.0
-60 ~ -40	2.0	2.1	2.4	2.6	2.6	2.8	3.1	3.5	3.5	4.0	4.6	6.0
-40 ~ -20	1.9	2.0	2.4	2.5	2.5	2.8	3.0	3.4	3.5	4.1	4.7	6.1
-20 ~ 0	1.9	2.0	2.4	2.5	2.5	2.7	2.9	3.5	3.6	4.1	4.8	6.2
0 ~ 20	1.8	2.1	2.5	2.6	2.6	2.9	3.1	3.5	3.6	4.2	4.9	6.5
20 ~ 40	1.9	2.1	2.5	2.7	2.7	2.9	3.2	3.6	3.7	4.3	5.0	6.7
40 ~ 60	2.0	2.2	2.6	2.7	2.8	3.0	3.2	3.7	3.8	4.5	5.3	6.9
60 ~ 80	2.0	2.3	2.7	2.9	2.9	3.1	3.4	3.9	4.0	4.7	5.4	7.1
80 ~ 100	2.1	2.3	2.8	3.0	3.0	3.2	3.5	4.0	4.1	4.8	5.6	7.3
100 ~ 120	2.1	2.3	2.8	3.0	3.1	3.3	3.6	4.2	4.3	5.0	5.8	7.6
120 ~ 140	2.3	2.5	2.9	3.1	3.1	3.4	3.7	4.3	4.4	5.1	6.0	7.8
140 ~ 160	2.3	2.5	3.0	3.1	3.2	3.5	3.7	4.4	4.4	5.2	6.1	8.0
160 ~ 180	2.2	2.5	3.0	3.2	3.2	3.5	3.8	4.5	4.6	5.4	6.3	8.2

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.84
Specific Gravity *d*	2.59
Remarks	

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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.