S-TIL27

Code(d) **575415**
Code(e) **578412**

Refractive Index n_d	**1.575 01** 1.575 006	Abbe Number ν_d	**41.50**	Dispersion $n_F - n_C$	**0.013 854**
Refractive Index n_e	1.578 291	Abbe Number ν_e	41.22	Dispersion $n_{F'} - n_{C'}$	0.014 028

Refractive Indices		
λ (μm)		
n_{2325}	2.325 42	1.541 62
n_{1970}	1.970 09	1.547 07
n_{1530}	1.529 58	1.553 04
n_{1129}	1.128 64	1.558 55
n_t	1.013 98	1.560 47
n_s	0.852 11	1.563 92
$n_{A'}$	0.768 19	1.566 35
n_r	0.706 52	1.568 61
n_C	0.656 27	1.570 90
$n_{C'}$	0.643 85	1.571 55
$n_{He\text{-}Ne}$	0.632 8	1.572 16
n_D	0.589 29	1.574 88
n_d	0.587 56	1.575 01
n_e	0.546 07	1.578 29
n_F	0.486 13	1.584 76
$n_{F'}$	0.479 99	1.585 58
$n_{He\text{-}Cd}$	0.441 57	1.591 67
n_g	0.435 835	1.592 75
n_h	0.404 656	1.599 66
n_i	0.365 015	1.612 18

Constants of Dispersion Formula	
A_1	1.314 331 54E+00
A_2	1.123 001 68E-01
A_3	1.413 901 00E+00
B_1	9.504 044 77E-03
B_2	5.241 127 72E-02
B_3	1.484 299 72E+02

Chemical Properties	
Water Resistance(Powder) Group RW(P)	1
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)	74.9	
Rigidity Modulus G (GPa)	30.8	
Poisson's Ratio σ	0.217	
Knoop Hardness Hk[Class]	540	5
Abrasion Aa	125	

Partial Dispersions	
$n_C - n_t$	0.010 433
$n_C - n_{A'}$	0.004 553
$n_d - n_C$	0.004 104
$n_e - n_C$	0.007 389
$n_g - n_d$	0.017 739
$n_g - n_F$	0.007 989
$n_h - n_g$	0.006 918
$n_i - n_g$	0.019 440
$n_{C'} - n_t$	0.011 080
$n_e - n_{C'}$	0.006 742
$n_{F'} - n_e$	0.007 286
$n_i - n_{F'}$	0.026 608

Relative Partial Dispersions	
$\theta_{C,t}$	0.753 1
$\theta_{C,A'}$	0.328 6
$\theta_{d,C}$	0.296 2
$\theta_{e,C}$	0.533 3
$\theta_{g,d}$	1.280 4
$\theta_{g,F}$	0.576 7
$\theta_{h,g}$	0.499 4
$\theta_{i,g}$	1.403 2
$\theta'_{C,t}$	0.789 8
$\theta'_{e,C'}$	0.480 6
$\theta'_{F,e}$	0.519 4
$\theta'_{i,F'}$	1.896 8

Anomalous dispersion	
$\Delta\theta_{C,t}$	0.011 7
$\Delta\theta_{C,A'}$	0.002 4
$\Delta\theta_{g,d}$	0.001 9
$\Delta\theta_{g,F}$	0.002 4
$\Delta\theta_{i,g}$	0.025 7

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

Internal transmission			
$\lambda_{0.80}$	371	$\lambda_{0.05}$	350

CCI		
B	G	R
0.00	0.45	0.47

Internal Transmittance	
λ (nm)	τ_i (10 mm)
280	
290	
300	
310	
320	
330	
340	
350	0.05
360	0.44
370	0.78
380	0.913
390	0.961
400	0.979
420	0.990
440	0.993
460	0.994
480	0.995
500	0.996
550	0.998
600	0.998
650	0.998
700	0.998
800	0.999
900	0.999
1 000	0.998
1 200	0.998
1 400	0.994
1 600	0.993
1 800	0.978
2 000	0.955
2 200	0.89
2 400	0.87

Thermal Properties		
Strain Point StP (℃)		511
Annealing Point AP (℃)		547
Transformation Temperature Tg (℃)		566
Yield Point At (℃)		623
Softening Point SP (℃)		700
Expansion Coefficients α_l (10^{-7} K^{-1})	(-30 ℃ ~ 70 ℃)	76
	(100 ℃ ~ 300 ℃)	91
Thermal Conductivity λ (W/(m·K))		1.07

Linear coefficient of thermal expansion	
Temperature range (℃)	α_l (10^{-7} K^{-1})
-100 ~ -90	61
-90 ~ -80	62
-80 ~ -70	64
-70 ~ -60	65
-60 ~ -50	67
-50 ~ -40	68
-40 ~ -30	69
-30 ~ -20	71
-20 ~ -10	72
-10 ~ 0	73
0 ~ 10	75
10 ~ 20	76
20 ~ 30	77
30 ~ 40	78
40 ~ 50	79
50 ~ 60	80
60 ~ 70	81
70 ~ 80	82
80 ~ 90	83
90 ~ 100	84
100 ~ 110	85
110 ~ 120	86
120 ~ 130	87
130 ~ 140	87
140 ~ 150	88
150 ~ 160	89
160 ~ 170	90
170 ~ 180	90
180 ~ 190	91
190 ~ 200	92
200 ~ 210	92
210 ~ 220	93
220 ~ 230	93
230 ~ 240	94
240 ~ 250	94
250 ~ 260	95
260 ~ 270	95
270 ~ 280	95
280 ~ 290	96
290 ~ 300	96

Other Properties	
Photoelastic Constant β nm/(cm·105Pa)	2.81
Specific Gravity *d*	2.58
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	1.7	1.8	2.1	2.3	2.3	2.6	2.7	3.1	3.2	3.7	4.4	5.6
-60 ~ -40	1.6	1.8	2.1	2.2	2.2	2.4	2.7	3.1	3.2	3.7	4.3	5.8
-40 ~ -20	1.6	1.8	2.1	2.2	2.2	2.4	2.6	3.2	3.2	3.8	4.4	5.8
-20 ~ 0	1.6	1.8	2.1	2.3	2.3	2.5	2.7	3.3	3.3	3.9	4.6	6.0
0 ~ 20	1.6	1.8	2.3	2.4	2.4	2.7	2.9	3.4	3.4	4.0	4.7	6.3
20 ~ 40	1.7	1.9	2.4	2.5	2.6	2.8	3.0	3.5	3.6	4.2	4.9	6.6
40 ~ 60	1.8	2.0	2.4	2.6	2.6	2.8	3.1	3.6	3.7	4.3	5.2	6.8
60 ~ 80	1.9	2.1	2.6	2.7	2.8	3.0	3.2	3.8	3.8	4.5	5.3	7.0
80 ~ 100	1.9	2.1	2.6	2.8	2.8	3.1	3.4	3.9	4.0	4.7	5.5	7.2
100 ~ 120	2.0	2.2	2.6	2.8	2.8	3.2	3.4	4.0	4.1	4.8	5.6	7.4
120 ~ 140	2.0	2.3	2.7	2.9	2.9	3.2	3.5	4.1	4.1	4.9	5.7	7.6
140 ~ 160	2.0	2.2	2.7	2.9	2.9	3.2	3.5	4.1	4.2	5.0	5.8	7.8
160 ~ 180	1.9	2.2	2.7	2.8	2.9	3.2	3.4	4.1	4.3	5.1	5.9	7.9

OHARA Copyright© OHARA INC. All Rights Reserved.

※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.