# S-TIM 5

Code(d) **603380**
Code(e) **607378**

| | | | | | |
|---|---|---|---|---|---|
| Refractive Index $n_d$ | **1.603 42**<br>1.603 420 | Abbe Number $\nu_d$ | **38.03** | Dispersion $n_F - n_C$ | **0.015 868** |
| Refractive Index $n_e$ | 1.607 179 | Abbe Number $\nu_e$ | 37.76 | Dispersion $n_{F'} - n_{C'}$ | 0.016 082 |

| Refractive Indices | | |
|---|---|---|
| $\lambda$ (μm) | | |
| $n_{2325}$ | 2.325 42 | 1.567 53 |
| $n_{1970}$ | 1.970 09 | 1.573 06 |
| $n_{1530}$ | 1.529 58 | 1.579 18 |
| $n_{1129}$ | 1.128 64 | 1.585 00 |
| $n_t$ | 1.013 98 | 1.587 08 |
| $n_s$ | 0.852 11 | 1.590 89 |
| $n_{A'}$ | 0.768 19 | 1.593 60 |
| $n_r$ | 0.706 52 | 1.596 15 |
| $n_C$ | 0.656 27 | 1.598 75 |
| $n_{C'}$ | 0.643 85 | 1.599 48 |
| $n_{He\text{-}Ne}$ | 0.632 8 | 1.600 17 |
| $n_D$ | 0.589 29 | 1.603 28 |
| $n_d$ | 0.587 56 | 1.603 42 |
| $n_e$ | 0.546 07 | 1.607 18 |
| $n_F$ | 0.486 13 | 1.614 62 |
| $n_{F'}$ | 0.479 99 | 1.615 56 |
| $n_{He\text{-}Cd}$ | 0.441 57 | 1.622 62 |
| $n_g$ | 0.435 835 | 1.623 88 |
| $n_h$ | 0.404 656 | 1.631 96 |
| $n_i$ | 0.365 015 | 1.646 76 |

| Constants of Dispersion Formula | |
|---|---|
| $A_1$ | 1.385 313 42E+00 |
| $A_2$ | 1.223 729 45E-01 |
| $A_3$ | 1.405 083 26E+00 |
| $B_1$ | 1.040 745 67E-02 |
| $B_2$ | 5.574 400 88E-02 |
| $B_3$ | 1.448 787 33E+02 |

| Chemical Properties | |
|---|---|
| Water Resistance(Powder) Group RW(P) | 2 |
| 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 | 1.2 |

| Mechanical Properties | | |
|---|---|---|
| Young's Modulus E (GPa) | 76.3 | |
| Rigidity Modulus G (GPa) | 30.9 | |
| Poisson's Ratio σ | 0.233 | |
| Knoop Hardness Hk[Class] | 540 | 5 |
| Abrasion Aa | 131 | |

| Partial Dispersions | |
|---|---|
| $n_C - n_t$ | 0.011 667 |
| $n_C - n_{A'}$ | 0.005 143 |
| $n_d - n_C$ | 0.004 672 |
| $n_e - n_C$ | 0.008 431 |
| $n_g - n_d$ | 0.020 455 |
| $n_g - n_F$ | 0.009 259 |
| $n_h - n_g$ | 0.008 081 |
| $n_i - n_g$ | 0.022 880 |
| $n_{C'} - n_t$ | 0.012 401 |
| $n_e - n_{C'}$ | 0.007 697 |
| $n_{F'} - n_e$ | 0.008 385 |
| $n_i - n_{F'}$ | 0.031 191 |

| Relative Partial Dispersions | |
|---|---|
| $\theta_{C,t}$ | 0.735 3 |
| $\theta_{C,A'}$ | 0.324 1 |
| $\theta_{d,C}$ | 0.294 4 |
| $\theta_{e,C}$ | 0.531 3 |
| $\theta_{g,d}$ | 1.289 1 |
| $\theta_{g,F}$ | 0.583 5 |
| $\theta_{h,g}$ | 0.509 3 |
| $\theta_{i,g}$ | 1.441 9 |
| $\theta'_{C',t}$ | 0.771 1 |
| $\theta'_{e,C'}$ | 0.478 6 |
| $\theta'_{F',e}$ | 0.521 4 |
| $\theta'_{i,F'}$ | 1.939 5 |

| Anomalous dispersion | |
|---|---|
| $\Delta\theta_{C,t}$ | 0.010 2 |
| $\Delta\theta_{C,A'}$ | 0.002 2 |
| $\Delta\theta_{g,d}$ | 0.003 4 |
| $\Delta\theta_{g,F}$ | 0.003 6 |
| $\Delta\theta_{i,g}$ | 0.035 3 |

| Coloring | | | |
|---|---|---|---|
| $\lambda_{80}$ | 385 | $\lambda_5$ | 350 |
| $\lambda_{70}$ | | | |

| Internal transmission | | | |
|---|---|---|---|
| $\lambda_{0.80}$ | 378 | $\lambda_{0.05}$ | 357 |

| CCI | | |
|---|---|---|
| B | G | R |
| 0.00 | 0.79 | 0.81 |

| Internal Transmittance | |
|---|---|
| $\lambda$ (nm) | $\tau_i$ (10 mm) |
| 280 | |
| 290 | |
| 300 | |
| 310 | |
| 320 | |
| 330 | |
| 340 | |
| 350 | |
| 360 | 0.19 |
| 370 | 0.60 |
| 380 | 0.84 |
| 390 | 0.931 |
| 400 | 0.963 |
| 420 | 0.984 |
| 440 | 0.989 |
| 460 | 0.991 |
| 480 | 0.993 |
| 500 | 0.995 |
| 550 | 0.997 |
| 600 | 0.997 |
| 650 | 0.997 |
| 700 | 0.997 |
| 800 | 0.999 |
| 900 | 0.998 |
| 1 000 | 0.998 |
| 1 200 | 0.998 |
| 1 400 | 0.994 |
| 1 600 | 0.994 |
| 1 800 | 0.982 |
| 2 000 | 0.966 |
| 2 200 | 0.923 |
| 2 400 | 0.902 |

| Thermal Properties | | |
|---|---|---|
| Strain Point StP (°C) | | 535 |
| Annealing Point AP (°C) | | 565 |
| Transformation Temperature Tg (°C) | | 596 |
| Yield Point At (°C) | | 632 |
| Softening Point SP (°C) | | 700 |
| Expansion Coefficients $\alpha_l$ ($10^{-7}$ $K^{-1}$) | (-30 ℃ ~ 70 ℃) | 82 |
| | (100 °C ~ 300 °C) | 100 |
| Thermal Conductivity $\lambda$ (W/(m·K)) | | 1.04 |

| Linear coefficient of thermal expansion | |
|---|---|
| Temperature range (°C ) | $\alpha_l$ ($10^{-7}$ $K^{-1}$) |
| -100 ～ -90 | 65 |
| -90 ～ -80 | 67 |
| -80 ～ -70 | 68 |
| -70 ～ -60 | 70 |
| -60 ～ -50 | 72 |
| -50 ～ -40 | 73 |
| -40 ～ -30 | 75 |
| -30 ～ -20 | 77 |
| -20 ～ -10 | 78 |
| -10 ～ 0 | 80 |
| 0 ～ 10 | 81 |
| 10 ～ 20 | 82 |
| 20 ～ 30 | 84 |
| 30 ～ 40 | 85 |
| 40 ～ 50 | 86 |
| 50 ～ 60 | 88 |
| 60 ～ 70 | 89 |
| 70 ～ 80 | 90 |
| 80 ～ 90 | 91 |
| 90 ～ 100 | 92 |
| 100 ～ 110 | 93 |
| 110 ～ 120 | 94 |
| 120 ～ 130 | 95 |
| 130 ～ 140 | 96 |
| 140 ～ 150 | 97 |
| 150 ～ 160 | 97 |
| 160 ～ 170 | 98 |
| 170 ～ 180 | 99 |
| 180 ～ 190 | 100 |
| 190 ～ 200 | 100 |
| 200 ～ 210 | 101 |
| 210 ～ 220 | 101 |
| 220 ～ 230 | 102 |
| 230 ～ 240 | 102 |
| 240 ～ 250 | 103 |
| 250 ～ 260 | 103 |
| 260 ～ 270 | 103 |
| 270 ～ 280 | 104 |
| 280 ～ 290 | 104 |
| 290 ～ 300 | 104 |

| Other Properties | |
|---|---|
| Photoelastic Constant β nm/(cm·105Pa) | 2.84 |
| Specific Gravity $d$ | 2.63 |
| 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 | 1.0 | 1.2 | 1.5 | 1.6 | 1.7 | 1.9 | 2.1 | 2.6 | 2.7 | 3.3 | 3.9 | 5.6 |
| -60 ~ -40 | 0.8 | 1.0 | 1.4 | 1.5 | 1.6 | 1.8 | 2.0 | 2.4 | 2.5 | 3.2 | 3.9 | 5.6 |
| -40 ~ -20 | 0.8 | 0.9 | 1.4 | 1.5 | 1.5 | 1.7 | 2.0 | 2.4 | 2.5 | 3.1 | 4.0 | 5.7 |
| -20 ~ 0 | 0.8 | 0.9 | 1.3 | 1.4 | 1.5 | 1.8 | 2.0 | 2.5 | 2.6 | 3.2 | 4.0 | 5.9 |
| 0 ~ 20 | 0.8 | 1.0 | 1.4 | 1.5 | 1.6 | 1.8 | 2.0 | 2.6 | 2.6 | 3.4 | 4.2 | 6.1 |
| 20 ~ 40 | 0.9 | 1.0 | 1.5 | 1.6 | 1.6 | 1.9 | 2.1 | 2.7 | 2.7 | 3.5 | 4.4 | 6.3 |
| 40 ~ 60 | 0.9 | 1.1 | 1.5 | 1.6 | 1.7 | 1.9 | 2.2 | 2.8 | 2.8 | 3.7 | 4.6 | 6.5 |
| 60 ~ 80 | 1.0 | 1.2 | 1.6 | 1.8 | 1.8 | 2.1 | 2.3 | 2.9 | 3.0 | 3.8 | 4.7 | 6.9 |
| 80 ~ 100 | 0.9 | 1.3 | 1.7 | 1.9 | 1.9 | 2.2 | 2.5 | 3.1 | 3.1 | 4.0 | 4.9 | 7.0 |
| 100 ~ 120 | 1.0 | 1.3 | 1.8 | 1.9 | 2.0 | 2.3 | 2.5 | 3.2 | 3.3 | 4.1 | 5.0 | 7.2 |
| 120 ~ 140 | 1.1 | 1.3 | 1.8 | 2.0 | 2.0 | 2.3 | 2.6 | 3.3 | 3.4 | 4.2 | 5.2 | 7.5 |
| 140 ~ 160 | 1.1 | 1.3 | 1.8 | 2.0 | 2.1 | 2.3 | 2.6 | 3.3 | 3.4 | 4.3 | 5.3 | 7.7 |
| 160 ~ 180 | 1.1 | 1.3 | 1.8 | 2.1 | 2.2 | 2.5 | 2.8 | 3.4 | 3.5 | 4.5 | 5.5 | 7.9 |



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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.