

# S-TIH11

Code(d) **785257**

Code(e) **792255**

|                        |                            |                     |              |                            |                 |
|------------------------|----------------------------|---------------------|--------------|----------------------------|-----------------|
| Refractive Index $n_d$ | <b>1.78472</b><br>1.784723 | Abbe Number $\nu_d$ | <b>25.68</b> | Dispersion $n_F-n_C$       | <b>0.030554</b> |
| Refractive Index $n_e$ | 1.791920                   | Abbe Number $\nu_e$ | 25.47        | Dispersion $n_{F'}-n_{C'}$ | 0.031088        |

| Refractive Indices     |          |         |
|------------------------|----------|---------|
| $\lambda(\mu\text{m})$ |          |         |
| $n_{2325}$             | 2.32542  | 1.72998 |
| $n_{1970}$             | 1.97009  | 1.73639 |
| $n_{1530}$             | 1.52958  | 1.74397 |
| $n_{1129}$             | 1.12864  | 1.75222 |
| $n_t$                  | 1.01398  | 1.75549 |
| $n_s$                  | 0.85211  | 1.76186 |
| $n_{A'}$               | 0.76819  | 1.76662 |
| $n_r$                  | 0.70652  | 1.77121 |
| $n_C$                  | 0.65627  | 1.77596 |
| $n_{C'}$               | 0.64385  | 1.77733 |
| $n_{\text{He-Ne}}$     | 0.6328   | 1.77861 |
| $n_D$                  | 0.58929  | 1.78446 |
| $n_d$                  | 0.58756  | 1.78472 |
| $n_e$                  | 0.54607  | 1.79192 |
| $n_F$                  | 0.48613  | 1.80652 |
| $n_{F'}$               | 0.47999  | 1.80841 |
| $n_{\text{He-Cd}}$     | 0.44157  | 1.82275 |
| $n_g$                  | 0.435835 | 1.82534 |
| $n_h$                  | 0.404656 | 1.84239 |
| $n_i$                  | 0.365015 |         |

| Constants of Dispersion Formula |                |
|---------------------------------|----------------|
| $A_1$                           | 1.72677471E+00 |
| $A_2$                           | 3.24568628E-01 |
| $A_3$                           | 2.65816809E+00 |
| $B_1$                           | 1.29369958E-02 |
| $B_2$                           | 6.18255245E-02 |
| $B_3$                           | 2.21904637E+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         | 1.0 |
| Phosphate Resistance PR                   | 1.0 |

| Mechanical Properties                                   |         |
|---|---------|
| Young's Modulus E ( $10^9\text{N/m}^2$ )                | 912     |
| Rigidity Modulus G ( $10^9\text{N/m}^2$ )               | 363     |
| Poisson's Ratio $\sigma$                                | 0.255   |
| Knoop Hardness Hk[Class]                                | 550   6 |
| Abrasion Aa   | 180     |
| Photoelastic Constant $\beta$ nm/(cm· $10^5\text{Pa}$ ) | 2.81    |

| Partial Dispersions |          |
|---------------------|----------|
| $n_C-n_t$           | 0.020476 |
| $n_C-n_{A'}$        | 0.009346 |
| $n_d-n_C$           | 0.008758 |
| $n_e-n_C$           | 0.015955 |
| $n_g-n_d$           | 0.040621 |
| $n_g-n_F$           | 0.018825 |
| $n_h-n_g$           | 0.017044 |
| $n_i-n_g$           |          |
| $n_C-n_t$           | 0.021836 |
| $n_e-n_{C'}$        | 0.014595 |
| $n_{F'}-n_e$        | 0.016493 |
| $n_i-n_{F'}$        |          |

| Relative Partial Dispersions |        |
|------------------------------|--------|
| $\theta_{C,t}$               | 0.6702 |
| $\theta_{C,A'}$              | 0.3059 |
| $\theta_{d,C}$               | 0.2866 |
| $\theta_{e,C}$               | 0.5222 |
| $\theta_{g,d}$               | 1.3295 |
| $\theta_{g,F}$               | 0.6161 |
| $\theta_{h,g}$               | 0.5578 |
| $\theta_{i,g}$               |        |
| $\theta'_{C,t}$              | 0.7024 |
| $\theta'_{e,C'}$             | 0.4695 |
| $\theta'_{F',e}$             | 0.5305 |
| $\theta'_{i,F'}$             |        |

| Deviation of Relative Dispersions $\Delta\theta$ from "Normal" |         |
|--|---------|
| $\Delta\theta_{C,t}$   | 0.0030  |
| $\Delta\theta_{C,A'}$  | -0.0011 |
| $\Delta\theta_{g,d}$   | 0.0181  |
| $\Delta\theta_{g,F}$   | 0.0162  |
| $\Delta\theta_{i,g}$   |         |

| Thermal Properties                                  |      |
|---|------|
| Strain Point StP (°C)                               | 569  |
| Annealing Point AP (°C)                             | 588  |
| Transformation Temperature Tg (°C)                  | 602  |
| Yield Point At (°C)                                 | 633  |
| Softening Point SP (°C)                             | 686  |
| Expansion Coefficients (-30~+70°C)                  | 89   |
| $\alpha$ ( $10^{-7}/^\circ\text{C}$ ) (+100~+300°C) | 103  |
| Thermal Conductivity $\lambda$ W/(m·K)              | 1.02 |

| Coloring       |     |             |     |
|----------------|-----|-------------|-----|
| $\lambda_{80}$ | 430 | $\lambda_5$ | 365 |
| $\lambda_{70}$ |     |             |     |

| Internal transmission |     |                  |     |
|-----------------------|-----|------------------|-----|
| $\lambda_{0.80}$      | 400 | $\lambda_{0.05}$ | 369 |

| CCI  |      |      |
|------|------|------|
| B    | G    | R    |
| 0.00 | 3.80 | 3.85 |

| Internal Transmittance |             |
|------------------------|-------------|
| $\lambda(\text{nm})$   | $\tau$ 10mm |
| 280                    |             |
| 290                    |             |
| 300                    |             |
| 310                    |             |
| 320                    |             |
| 330                    |             |
| 340                    |             |
| 350                    |             |
| 360                    |             |
| 370                    | 0.08        |
| 380                    | 0.40        |
| 390                    | 0.66        |
| 400                    | 0.80        |
| 420                    | 0.915       |
| 440                    | 0.948       |
| 460                    | 0.964       |
| 480                    | 0.973       |
| 500                    | 0.980       |
| 550                    | 0.992       |
| 600                    | 0.992       |
| 650                    | 0.990       |
| 700                    | 0.992       |
| 800                    | 0.998       |
| 900                    | 0.998       |
| 1000                   | 0.999       |
| 1200                   | 0.999       |
| 1400                   | 0.997       |
| 1600                   | 0.996       |
| 1800                   | 0.989       |
| 2000                   | 0.982       |
| 2200                   | 0.964       |
| 2400                   | 0.942       |

| Temperature Coefficients of Refractive Index |   |     |       |     |     |     |     |
|--|---|-----|-------|-----|-----|-----|-----|
| Range of Temperature (°C)                    | $\Delta n/\Delta T$ relative ( $10^{-6}/^\circ\text{C}$ ) |     |       |     |     |     |     |
|  | t   | C'  | He-Ne | D   | e   | F'  | g   |
| -40~-20                                      | -0.3  | 0.5 | 0.6   | 0.9 | 1.4 | 2.6 | 4.1 |
| -20~ 0                                       | -0.2  | 0.7 | 0.7   | 1.1 | 1.6 | 2.9 | 4.5 |
| 0~20   | -0.1  | 0.8 | 0.9   | 1.3 | 1.9 | 3.2 | 4.9 |
| 20~40  | 0.0   | 1.0 | 1.1   | 1.5 | 2.1 | 3.5 | 5.3 |
| 40~60  | 0.0   | 1.1 | 1.2   | 1.7 | 2.3 | 3.8 | 5.7 |
| 60~80  | 0.1   | 1.3 | 1.4   | 1.9 | 2.5 | 4.1 | 6.1 |

| Other Properties       |      |
|------------------------|------|
| Bubble Quality Group B |      |
| Specific Gravity d     | 3.24 |
| Remarks                |      |

OHARA 17-04

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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.