

S-LAL20

Code(d) **699511**

Code(e) **703508**

| | | | | | |
|------------------------|----------------------------|---------------------|--------------|-------------------------|-----------------|
| Refractive Index n_d | 1.69930 1.699300 | Abbe Number ν_d | 51.11 | Dispersion n_F-n_C | 0.013682 |
| Refractive Index n_e | 1.702559 | Abbe Number ν_e | 50.82 | Dispersion $n_F-n_{C'}$ | 0.013825 |

| Refractive Indices | | |
|------------------------|----------|---------|
| $\lambda(\mu\text{m})$ | | |
| n_{2325} | 2.32542 | 1.66804 |
| n_{1970} | 1.97009 | 1.67270 |
| n_{1530} | 1.52958 | 1.67791 |
| n_{1129} | 1.12864 | 1.68297 |
| n_t | 1.01398 | 1.68481 |
| n_s | 0.85211 | 1.68820 |
| $n_{A'}$ | 0.76819 | 1.69063 |
| n_r | 0.70652 | 1.69290 |
| n_C | 0.65627 | 1.69520 |
| $n_{C'}$ | 0.64385 | 1.69584 |
| $n_{\text{He-Ne}}$ | 0.6328 | 1.69645 |
| n_D | 0.58929 | 1.69918 |
| n_d | 0.58756 | 1.69930 |
| n_e | 0.54607 | 1.70256 |
| n_F | 0.48613 | 1.70888 |
| $n_{F'}$ | 0.47999 | 1.70967 |
| $n_{\text{He-Cd}}$ | 0.44157 | 1.71546 |
| n_g | 0.435835 | 1.71647 |
| n_h | 0.404656 | 1.72283 |
| n_i | 0.365015 | 1.73376 |

| Constants of Dispersion Formula | |
|---------------------------------|----------------|
| A_1 | 1.06788467E+00 |
| A_2 | 7.58735350E-01 |
| A_3 | 1.02804682E+00 |
| B_1 | 5.18896058E-03 |
| B_2 | 2.04004357E-02 |
| B_3 | 1.20826320E+02 |

| Chemical Properties | |
|---|------|
| Water Resistance(Powder) Group RW(P) | 2 |
| Acid Resistance(Powder) Group RA(P) | 4 |
| Weathering Resistance(Surface) Group W(S) | 1 |
| Acid Resistance(Surface) Group SR | 53.1 |
| Phosphate Resistance PR | 4.2 |

| Mechanical Properties | |
|---|---------|
| Young's Modulus E (10^9N/m^2) | 787 |
| Rigidity Modulus G (10^9N/m^2) | 302 |
| Poisson's Ratio σ | 0.302 |
| Knoop Hardness Hk[Class] | 490 5 |
| Abrasion Aa | 254 |
| Photoelastic Constant β nm/(cm· 10^5Pa) | 1.23 |

| Partial Dispersions | |
|---------------------|----------|
| n_C-n_t | 0.010389 |
| $n_C-n_{A'}$ | 0.004570 |
| n_d-n_C | 0.004104 |
| n_e-n_C | 0.007363 |
| n_g-n_d | 0.017174 |
| n_g-n_F | 0.007596 |
| n_h-n_g | 0.006359 |
| n_i-n_g | 0.017290 |
| n_C-n_t | 0.011038 |
| $n_e-n_{C'}$ | 0.006714 |
| n_F-n_e | 0.007111 |
| $n_i-n_{F'}$ | 0.024094 |

| Relative Partial Dispersions | |
|------------------------------|--------|
| $\theta_{C,t}$ | 0.7593 |
| $\theta_{C,A'}$ | 0.3340 |
| $\theta_{d,C}$ | 0.3000 |
| $\theta_{e,C}$ | 0.5382 |
| $\theta_{g,d}$ | 1.2552 |
| $\theta_{g,F}$ | 0.5552 |
| $\theta_{h,g}$ | 0.4648 |
| $\theta_{i,g}$ | 1.2637 |
| $\theta'_{C,t}$ | 0.7984 |
| $\theta'_{e,C'}$ | 0.4856 |
| $\theta'_{F',e}$ | 0.5144 |
| $\theta'_{i,F'}$ | 1.7428 |

| Deviation of Relative Dispersions $\Delta\theta$ from "Normal" | |
|--|---------|
| $\Delta\theta_{C,t}$ | -0.0272 |
| $\Delta\theta_{C,A'}$ | -0.0038 |
| $\Delta\theta_{g,d}$ | -0.0034 |
| $\Delta\theta_{g,F}$ | -0.0036 |
| $\Delta\theta_{i,g}$ | -0.0333 |

| Thermal Properties | |
|---|-------|
| Strain Point StP (°C) | 593 |
| Annealing Point AP (°C) | 621 |
| Transformation Temperature Tg (°C) | 628 |
| Yield Point At (°C) | 676 |
| Softening Point SP (°C) | 717 |
| Expansion Coefficients (-30~+70°C) | 90 |
| α ($10^{-7}/^\circ\text{C}$) (+100~+300°C) | 105 |
| Thermal Conductivity $\sim\lambda$ W/(m·K) | 0.602 |

| Coloring | | | |
|----------------|-----|-------------|-----|
| λ_{80} | 370 | λ_5 | 310 |
| λ_{70} | | | |

| Internal transmission | | | |
|-----------------------|-----|------------------|-----|
| $\lambda_{0.80}$ | 350 | $\lambda_{0.05}$ | 305 |

| CCI | | |
|------|------|------|
| B | G | R |
| 0.00 | 0.40 | 0.36 |

| Internal Transmittance | |
|------------------------|-------------|
| $\lambda(\text{nm})$ | τ 10mm |
| 280 | |
| 290 | |
| 300 | 0.01 |
| 310 | 0.09 |
| 320 | 0.27 |
| 330 | 0.49 |
| 340 | 0.67 |
| 350 | 0.80 |
| 360 | 0.88 |
| 370 | 0.934 |
| 380 | 0.960 |
| 390 | 0.974 |
| 400 | 0.982 |
| 420 | 0.987 |
| 440 | 0.987 |
| 460 | 0.989 |
| 480 | 0.992 |
| 500 | 0.994 |
| 550 | 0.996 |
| 600 | 0.995 |
| 650 | 0.994 |
| 700 | 0.996 |
| 800 | 0.998 |
| 900 | 0.997 |
| 1000 | 0.997 |
| 1200 | 0.998 |
| 1400 | 0.997 |
| 1600 | 0.995 |
| 1800 | 0.985 |
| 2000 | 0.969 |
| 2200 | 0.935 |
| 2400 | 0.84 |

| 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 | -1.8 | -1.3 | -1.3 | -1.1 | -1.0 | -0.5 | -0.1 |
| -20~ 0 | -1.9 | -1.4 | -1.4 | -1.2 | -1.0 | -0.6 | -0.1 |
| 0~20 | -1.9 | -1.4 | -1.4 | -1.2 | -1.0 | -0.5 | -0.1 |
| 20~40 | -2.0 | -1.5 | -1.4 | -1.3 | -1.0 | -0.6 | -0.1 |
| 40~60 | -2.0 | -1.4 | -1.4 | -1.2 | -1.0 | -0.5 | 0.0 |
| 60~80 | -1.9 | -1.3 | -1.3 | -1.1 | -0.9 | -0.4 | 0.2 |

| Other Properties | |
|------------------------|------|
| Bubble Quality Group B | |
| Specific Gravity d | 4.38 |
| Remarks | |

OHARA 17-05

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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.