

|                |               |                 |               |                        |
|----------------|---------------|-----------------|---------------|------------------------|
| <b>H-LaK8A</b> | <b>720503</b> | $n_d = 1.72000$ | $v_d = 50.34$ | $n_F - n_C = 0.014302$ |
|                |               | $n_e = 1.72341$ | $v_e = 50.10$ | $n_F - n_C = 0.014439$ |

| Refractive Indices |                |             |
|--------------------|----------------|-------------|
|                    | $\lambda$ (nm) | $n_\lambda$ |
| $n_{2325}$         | 2325.42        | 1.68225     |
| $n_{1970}$         | 1970.09        | 1.68879     |
| $n_{1530}$         | 1529.58        | 1.69593     |
| $n_{1129}$         | 1128.64        | 1.70232     |
| $n_{1064}$         | 1064.00        | 1.70349     |
| $n_t$              | 1013.98        | 1.70446     |
| $n_s$              | 852.11         | 1.70823     |
| $n_{A'}$           | 768.19         | 1.71084     |
| $n_f$              | 706.52         | 1.71325     |
| $n_C$              | 656.27         | 1.71568     |
| $n_{C'}$           | 643.85         | 1.71636     |
| $n_{He-Ne}$        | 632.80         | 1.71700     |
| $n_D$              | 589.29         | 1.71987     |
| $n_d$              | 587.56         | 1.72000     |
| $n_e$              | 546.07         | 1.72341     |
| $n_F$              | 486.13         | 1.72998     |
| $n_{F'}$           | 479.99         | 1.73080     |
| $n_g$              | 435.84         | 1.73785     |
| $n_h$              | 404.66         | 1.74443     |
| $n_i$              | 365.01         | 1.75588     |
|                    |                |             |
|                    |                |             |

| Relative Partial Dispersion |        |
|-----------------------------|--------|
| $P_{d,C}$                   | 0.3021 |
| $P_{e,d}$                   | 0.2384 |
| $P_{g,F}$                   | 0.5503 |
| $P'_{d,c'}$                 | 0.2521 |
| $P'_{e,d}$                  | 0.2362 |
| $P'_{g,F'}$                 | 0.4883 |
|                             |        |

| Chemical Properties (grade) |   |
|-----------------------------|---|
| RC (S)                      | 1 |
| RA (S)                      | 3 |
| D <sub>w</sub>              | 1 |
| D <sub>A</sub>              | 3 |
| R <sub>OH</sub> (S)         | 1 |
| RP (S)                      | 2 |
| CR                          | 1 |

| Internal Transmittance |              |               |
|------------------------|--------------|---------------|
| $\lambda$ (nm)         | $\tau_{5mm}$ | $\tau_{10mm}$ |
| 2400                   | 0.828        | 0.686         |
| 2200                   | 0.946        | 0.895         |
| 2000                   | 0.991        | 0.982         |
| 1800                   | 0.999        | 0.998         |
| 1600                   | 0.999        | 0.998         |
| 1400                   | 0.999        | 0.998         |
| 1200                   | 0.999        | 0.998         |
| 1060                   | 0.999        | 0.998         |
| 1000                   | 0.999        | 0.998         |
| 950                    | 0.999        | 0.998         |
| 900                    | 0.999        | 0.998         |
| 850                    | 0.999        | 0.998         |
| 800                    | 0.999        | 0.998         |
| 750                    | 0.999        | 0.998         |
| 700                    | 0.999        | 0.998         |
| 650                    | 0.999        | 0.998         |
| 600                    | 0.999        | 0.998         |
| 550                    | 0.999        | 0.998         |
| 500                    | 0.999        | 0.998         |
| 480                    | 0.999        | 0.998         |
| 460                    | 0.998        | 0.996         |
| 440                    | 0.997        | 0.994         |
| 420                    | 0.995        | 0.990         |
| 400                    | 0.992        | 0.983         |
| 390                    | 0.987        | 0.974         |
| 380                    | 0.979        | 0.959         |
| 370                    | 0.965        | 0.931         |
| 360                    | 0.945        | 0.880         |
| 350                    | 0.900        | 0.804         |
| 340                    | 0.812        | 0.689         |
| 330                    | 0.717        | 0.530         |
| 320                    | 0.581        | 0.330         |
| 310                    | 0.326        | 0.110         |
| 300                    | 0.088        | 0.008         |
| 290                    |              |               |
| 280                    |              |               |

| Deviation of Relative Partial Dispersions |         |
|---|---------|
| $\Delta P_{F,e}$                          | -0.0030 |
| $\Delta P_{g,F}$                          | -0.0097 |
| $\Delta P_{C,t}$                          | 0.0005  |
| $\Delta P_{C,s}$                          | -0.0003 |

| Expansion Coefficient $\alpha$ ( $\times 10^{-7}/K$ ) |          |
|---|----------|
| $^{\circ}C$   | $\alpha$ |
| -50/-40   | 63       |
| -40/-30   | 66       |
| -30/-20   | 68       |
| -20/-10   | 68       |
| -10/0   | 69       |
| 0/10  | 70       |
| 10/20   | 71       |
| 20/30   | 71       |
| 30/40   | 72       |
| 40/50   | 72       |
| 50/60   | 73       |
| 60/70   | 73       |
| 70/80   | 74       |
| 80/90   | 74       |
| 90/100  | 75       |
| 100/110   | 75       |
| 110/120   | 76       |
| 120/130   | 77       |
| 130/140   | 79       |
| 140/150   | 80       |
| 150/160   | 81       |

| Thermal Properties                              |      |
|---|------|
| T <sub>g</sub> ( $^{\circ}C$ )                  | 650  |
| T <sub>s</sub> ( $^{\circ}C$ )                  | 679  |
| T <sub>10</sub> <sup>14.5</sup> ( $^{\circ}C$ ) | 588  |
| T <sub>10</sub> <sup>13</sup> ( $^{\circ}C$ )   | 616  |
| $\alpha_{-50/80^{\circ}C}$ ( $10^{-7}/K$ )      | 71   |
| $\alpha_{100/300^{\circ}C}$ ( $10^{-7}/K$ )     | 88   |
| $\lambda$ (W/(m K))                             | 0.96 |

| Constants of Dispersion Formula |                 |
|---------------------------------|-----------------|
| A <sub>0</sub>                  | 2.89933470E+00  |
| A <sub>1</sub>                  | -1.34878716E-02 |
| A <sub>2</sub>                  | 1.90766692E-02  |
| A <sub>3</sub>                  | 1.36400166E-03  |
| A <sub>4</sub>                  | -1.50217455E-04 |
| A <sub>5</sub>                  | 9.16048470E-06  |

| Mechanical Properties |       |
|-----------------------|-------|
| HK ( $10^7$ Pa)       | 606   |
| F <sub>A</sub>        | 108   |
| E (GPa)               | 107.5 |
| G (GPa)               | 40.9  |
| $\mu$                 | 0.313 |
| $\sigma_b$ (MPa)      | 76    |
| B ( $10^{-12}$ /Pa)   | 1.73  |

| Density                     | Solarization        |
|-----------------------------|---------------------|
| $\rho$ (g/cm <sup>3</sup> ) | $\Delta\lambda$ (%) |
| 3.87                        | -0.5                |

| Range of Temperature ( $^{\circ}C$ ) | Temperature Coefficients of Refractive Index    |     |     |     |       |     |     |     |     |     |
|--------------------------------------|---|-----|-----|-----|-------|-----|-----|-----|-----|-----|
|                                      | dn/dt relative ( $\times 10^{-6} / ^{\circ}C$ ) |     |     |     |       |     |     |     |     |     |
|                                      | t   | s   | C   | C'  | He-Ne | d   | e   | F   | F'  | g   |
| -60 ~ -40                            | 2.0   | 2.2 | 2.4 | 2.5 | 2.5   | 2.6 | 2.9 | 3.3 | 3.3 | 3.6 |
| -40 ~ -20                            | 1.9   | 2.2 | 2.4 | 2.4 | 2.5   | 2.6 | 2.9 | 3.3 | 3.4 | 3.7 |
| -20 ~ 0                              | 1.9   | 2.2 | 2.4 | 2.4 | 2.5   | 2.6 | 3.0 | 3.3 | 3.4 | 3.8 |
| 0 ~ 20                               | 2.0   | 2.2 | 2.5 | 2.5 | 2.6   | 2.7 | 3.0 | 3.3 | 3.4 | 3.8 |
| 20 ~ 40                              | 2.0   | 2.3 | 2.5 | 2.5 | 2.6   | 2.7 | 3.0 | 3.4 | 3.4 | 3.9 |
| 40 ~ 60                              | 2.1   | 2.4 | 2.5 | 2.5 | 2.6   | 2.8 | 3.1 | 3.5 | 3.5 | 4.0 |
| 60 ~ 80                              | 2.2   | 2.5 | 2.6 | 2.7 | 2.7   | 2.9 | 3.3 | 3.7 | 3.7 | 4.2 |
| 80 ~ 100                             | 2.2   | 2.5 | 2.7 | 2.7 | 2.8   | 3.0 | 3.4 | 3.8 | 3.8 | 4.3 |
| 100 ~ 120                            | 2.3   | 2.7 | 2.9 | 2.9 | 3.0   | 3.2 | 3.6 | 3.9 | 4.0 | 4.6 |
| 120 ~ 140                            | 2.5   | 2.8 | 3.0 | 3.1 | 3.1   | 3.4 | 3.8 | 4.0 | 4.1 | 4.7 |
| 140 ~ 160                            | 2.6   | 2.9 | 3.2 | 3.3 | 3.3   | 3.6 | 4.0 | 4.2 | 4.3 | 5.0 |

| Coloration Code                        |         |
|--|---------|
| $\lambda_{80}(\lambda_{70})/\lambda_5$ | 370/305 |
| Coloration of Internal Transmittance   |         |
| $\lambda\tau_{80}/\lambda\tau_5$       | 345/305 |

| Constants of dn/dt |                |                |
|--------------------|----------------|----------------|
| D <sub>0</sub>     | D <sub>1</sub> | D <sub>2</sub> |
| 1.67E-07           | 1.21E-08       | -1.18E-11      |
| E <sub>0</sub>     | E <sub>1</sub> | $\lambda_{TK}$ |
| 5.40E-07           | 3.41E-10       | 2.06E-01       |