

|                    |         |                |                                                   |                |                             |  |                                              |       |       |
|--------------------|---------|----------------|---------------------------------------------------|----------------|-----------------------------|--|----------------------------------------------|-------|-------|
| H-ZK3A             |         | 589613         | n <sub>d</sub> = 1.58913                          |                | v <sub>d</sub> = 61.25      |  | n <sub>F</sub> − n <sub>C</sub> = 0.009618   |       |       |
|                    |         |                | n <sub>e</sub> = 1.59142                          |                | v <sub>e</sub> = 61.01      |  | n <sub>F'</sub> − n <sub>C'</sub> = 0.009694 |       |       |
| Refractive Indices |         |                | Relative Partial Dispersion                       |                | Chemical Properties (grade) |  | Internal Transmittance                       |       |       |
|                    | λ (nm)  | n <sub>λ</sub> |                                                   |                |                             |  | λ (nm)                                       | τ5mm  | τ10mm |
| n <sub>2325</sub>  | 2325.42 | 1.55975        |                                                   |                |                             |  | 2400                                         | 0.917 | 0.842 |
| n <sub>1970</sub>  | 1970.09 | 1.56532        |                                                   |                |                             |  | 2200                                         | 0.973 | 0.947 |
| n <sub>1530</sub>  | 1529.58 | 1.57133        |                                                   |                |                             |  | 2000                                         | 0.991 | 0.982 |
| n <sub>1129</sub>  | 1128.64 | 1.57650        |                                                   |                |                             |  | 1800                                         | 0.999 | 0.998 |
| n <sub>1064</sub>  | 1064.00 | 1.57741        | 1600                                              | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>t</sub>     | 1013.98 | 1.57815        | 1400                                              | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>s</sub>     | 852.11  | 1.58095        | 1200                                              | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>A'</sub>    | 768.19  | 1.58282        | 1060                                              | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>r</sub>     | 706.52  | 1.58451        | 1000                                              | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>C</sub>     | 656.27  | 1.58619        | 950                                               | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>C'</sub>    | 643.85  | 1.58666        | 900                                               | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>He-Ne</sub> | 632.80  | 1.58709        | 850                                               | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>D</sub>     | 589.29  | 1.58903        | 800                                               | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>d</sub>     | 587.56  | 1.58913        | 750                                               | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>e</sub>     | 546.07  | 1.59142        | 700                                               | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>F</sub>     | 486.13  | 1.59581        | 650                                               | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>F'</sub>    | 479.99  | 1.59635        | 600                                               | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>g</sub>     | 435.84  | 1.60102        | 550                                               | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>h</sub>     | 404.66  | 1.60533        | 500                                               | 0.999          | 0.998                       |  |                                              |       |       |
| n <sub>i</sub>     | 365.01  | 1.61266        | 480                                               | 0.999          | 0.998                       |  |                                              |       |       |
|                    |         |                | 460                                               | 0.999          | 0.998                       |  |                                              |       |       |
|                    |         |                | 440                                               | 0.999          | 0.998                       |  |                                              |       |       |
|                    |         |                | 420                                               | 0.999          | 0.998                       |  |                                              |       |       |
|                    |         |                | 400                                               | 0.998          | 0.996                       |  |                                              |       |       |
|                    |         |                | 390                                               | 0.997          | 0.994                       |  |                                              |       |       |
|                    |         |                | 380                                               | 0.995          | 0.990                       |  |                                              |       |       |
|                    |         |                | 370                                               | 0.989          | 0.978                       |  |                                              |       |       |
|                    |         |                | 360                                               | 0.977          | 0.954                       |  |                                              |       |       |
|                    |         |                | 350                                               | 0.957          | 0.915                       |  |                                              |       |       |
|                    |         |                | 340                                               | 0.924          | 0.853                       |  |                                              |       |       |
|                    |         |                | 330                                               | 0.866          | 0.749                       |  |                                              |       |       |
|                    |         |                | 320                                               | 0.773          | 0.598                       |  |                                              |       |       |
|                    |         |                | 310                                               | 0.637          | 0.406                       |  |                                              |       |       |
|                    |         |                | 300                                               | 0.463          | 0.214                       |  |                                              |       |       |
|                    |         |                | 290                                               | 0.290          | 0.084                       |  |                                              |       |       |
|                    |         |                | 280                                               | 0.168          | 0.028                       |  |                                              |       |       |
|                    |         |                | Coloration Code                                   |                |                             |  |                                              |       |       |
|                    |         |                | λ <sub>80</sub> (λ <sub>70</sub> )/λ <sub>5</sub> |                | 345/295                     |  |                                              |       |       |
|                    |         |                | Coloration of Internal Transmittance              |                |                             |  |                                              |       |       |
|                    |         |                | λτ <sub>80</sub> /λτ <sub>5</sub>                 |                | 336/285                     |  |                                              |       |       |
|                    |         |                | Constants of dn/dt                                |                |                             |  |                                              |       |       |
|                    |         |                | D <sub>0</sub>                                    | D <sub>1</sub> | D <sub>2</sub>              |  |                                              |       |       |
|                    |         |                | 3.00E-06                                          | 1.29E-08       | -9.66E-12                   |  |                                              |       |       |
|                    |         |                | E <sub>0</sub>                                    | E <sub>1</sub> | λ <sub>TK</sub>             |  |                                              |       |       |
|                    |         |                | 3.80E-07                                          | 7.20E-10       | 2.31E-01                    |  |                                              |       |       |

|                           |                                              |     |     |     |       |     |     |     |     |     |     |
|---------------------------|----------------------------------------------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|
| Range of Temperature (°C) | Temperature Coefficients of Refractive Index |     |     |     |       |     |     |     |     |     |     |
|                           | dn/dt relative (×10 <sup>-6</sup> / °C)      |     |     |     |       |     |     |     |     |     |     |
|                           | t                                            | s   | C   | C'  | He-Ne | d   | e   | F   | F'  | g   |     |
|                           | -60~-40                                      | 3.0 | 3.1 | 3.3 | 3.3   | 3.4 | 3.5 | 3.5 | 3.8 | 3.9 | 4.2 |
|                           | -40~-20                                      | 3.0 | 3.2 | 3.3 | 3.3   | 3.3 | 3.5 | 3.7 | 3.8 | 3.9 | 4.2 |
| -20~0                     | 3.1                                          | 3.3 | 3.4 | 3.4 | 3.4   | 3.5 | 3.7 | 3.9 | 3.9 | 4.2 |     |
| 0~20                      | 3.1                                          | 3.3 | 3.4 | 3.4 | 3.5   | 3.5 | 3.6 | 3.9 | 3.9 | 4.3 |     |
| 20~40                     | 3.1                                          | 3.3 | 3.4 | 3.4 | 3.5   | 3.6 | 3.7 | 4.0 | 4.0 | 4.4 |     |
| 40~60                     | 3.2                                          | 3.3 | 3.5 | 3.5 | 3.6   | 3.7 | 3.8 | 4.1 | 4.2 | 4.5 |     |
| 60~80                     | 3.3                                          | 3.5 | 3.6 | 3.7 | 3.8   | 3.9 | 4.0 | 4.3 | 4.4 | 4.7 |     |
| 80~100                    | 3.4                                          | 3.6 | 3.7 | 3.8 | 3.9   | 4.1 | 4.2 | 4.4 | 4.5 | 4.9 |     |
| 100~120                   | 3.5                                          | 3.6 | 3.8 | 3.9 | 4.0   | 4.3 | 4.5 | 4.6 | 4.7 | 5.2 |     |
| 120~140                   | 3.6                                          | 3.8 | 4.0 | 4.1 | 4.2   | 4.4 | 4.6 | 4.8 | 4.9 | 5.4 |     |
| 140~160                   | 3.7                                          | 3.9 | 4.1 | 4.2 | 4.3   | 4.6 | 4.9 | 5.1 | 5.2 | 5.7 |     |