

# J-LASF013

$n_d = 1.804400$

$n_e = 1.809220$

$v_d = 39.61$

$v_e = 39.36$

|                |
|----------------|
| Glass code (d) |
| 804396         |
| Glass code (e) |
| 809394         |

| Spectral l. | Refractive idx |
|-------------|----------------|
| 2.058       | 1.76221        |
| 1.970       | 1.76404        |
| 1.530       | 1.77251        |
| 1.129       | 1.78037        |
| 1.064       | 1.78186        |
| t           | 1.78312        |
| s           | 1.78814        |
| A'          | 1.791690       |
| r           | 1.795010       |
| C           | 1.798372       |
| C'          | 1.799322       |
| He-Ne       | 1.800212       |
| D           | 1.804221       |
| d           | 1.804400       |
| e           | 1.809220       |
| F           | 1.818682       |
| F'          | 1.819880       |
| g           | 1.830298       |
| h           | 1.840270       |
| 0.389       | 1.846513       |
| i           | 1.858063       |

| Partial dispersion |          |
|--------------------|----------|
| F-C                | 0.020310 |
| F'-C'              | 0.020558 |
| C-t                | 0.015248 |
| C-A'               | 0.006682 |
| d-C                | 0.006028 |
| e-C                | 0.010848 |
| g-d                | 0.025898 |
| g-F                | 0.011616 |
| h-g                | 0.009972 |
| i-g                | 0.027765 |
| C'-t               | 0.016198 |
| e-C'               | 0.009898 |
| F'-e               | 0.010660 |
| i-F'               | 0.038183 |

| Internal CC (80%/5%) |      |
|----------------------|------|
| 372/332              |      |
| Color Code (80%/5%)  |      |
| 410/335              |      |
| CCI                  |      |
| B                    | 0.00 |
| G                    | 1.22 |
| R                    | 1.28 |

| Internal trans. (10mm) |        |
|------------------------|--------|
| $\lambda$ [nm]         | $\tau$ |
| 280                    | -      |
| 290                    | -      |
| 300                    | -      |
| 310                    | -      |
| 320                    | -      |
| 330                    | 0.03   |
| 340                    | 0.17   |
| 350                    | 0.42   |
| 360                    | 0.64   |
| 370                    | 0.78   |
| 380                    | 0.86   |
| 390                    | 0.910  |
| 400                    | 0.939  |
| 420                    | 0.966  |
| 440                    | 0.978  |
| 460                    | 0.985  |
| 480                    | 0.990  |
| 500                    | 0.993  |
| 550                    | 0.997  |
| 600                    | 0.998  |
| 650                    | 0.998  |
| 700                    | 0.999  |
| 800                    | 0.999  |
| 900                    | 0.999  |
| 1000                   | 0.999  |
| 1200                   | 0.999  |
| 1400                   | 0.995  |
| 1600                   | 0.990  |
| 1800                   | 0.979  |
| 2000                   | 0.951  |
| 2200                   | 0.86   |
| 2400                   | 0.63   |

| Thermal properties       |       |
|--------------------------|-------|
| CTE(-30,70) [1E-7/°C]    | 51    |
| CTE(100,300) [1E-7/°C]   | 67    |
| Tg [°C]                  | 618   |
| At [°C]                  | 649   |
| StP [°C]                 | 573   |
| AP [°C]                  | 601   |
| SP [°C]                  | 705   |
| Ht condct. [W/m·K]       | 0.884 |
| Sp. heat [kJ/kg·K]       | 0.530 |
| Ht diffus. [1E-6 m2/sec] | 0.395 |

| Relative partial dispersion |        |
|-----------------------------|--------|
| C-t/F-C                     | 0.7508 |
| C-A'/F-C                    | 0.3290 |
| d-C/F-C                     | 0.2968 |
| e-C/F-C                     | 0.5341 |
| g-d/F-C                     | 1.2751 |
| g-F/F-C                     | 0.5719 |
| h-g/F-C                     | 0.4910 |
| i-g/F-C                     | 1.3671 |
| C'-t/F'-C'                  | 0.7879 |
| e-C'/F'-C'                  | 0.4815 |
| F'-e/F'-C'                  | 0.5185 |
| i-F'/F'-C'                  | 1.8573 |

| Chemical properties [class] |   |
|-----------------------------|---|
| Acid res. (surface)         | 4 |
| Alkaline detergent res.     | 2 |
| Climate resistance          | 1 |
| Water res. (powder)         | 1 |
| Acid res. (powder)          | 4 |

| Coef. disp. form. (pwr ser.) |                 |
|------------------------------|-----------------|
| A0                           | 3.16350950E+00  |
| A1                           | -1.45894059E-02 |
| A2                           | -2.12587159E-04 |
| A3                           | 3.15033746E-02  |
| A4                           | 5.85519102E-04  |
| A5                           | 5.85508847E-05  |
| A6                           | -3.44096993E-06 |
| A7                           | 3.17840715E-07  |
| A8                           | 0.00000000E+00  |

| Mechanical properties                |         |
|--------------------------------------|---------|
| Knoop hardness                       | 626 (6) |
| Abrasion hardness                    | 76      |
| Young's mod. [GPa]                   | 112.6   |
| Shear mod. [GPa]                     | 43.4    |
| Poisson's ratio                      | 0.297   |
| Stress optical coef. [1E-5 nm/cm/Pa] | 2.31    |

| Deviation of relative partial disp. |         |
|-------------------------------------|---------|
| $\Delta PdC$                        | 0.0017  |
| $\Delta PgF$                        | -0.0060 |

| Specific gravity |  |
|------------------|--|
| 4.2              |  |

| Relative $\Delta n / \Delta T$ [1E-6/°C] |       |     |     |     |     |     |     |       |     |     |     |     |     |      |       |  |  |
|--|-------|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|------|-------|--|--|
| Temp. [°C]                               | 1.083 | t   | s   | A'  | r   | C   | C'  | He-Ne | d   | e   | F   | F'  | g   | h    | 0.389 |  |  |
| 80 to 90 (ref.)                          | 6.2   | 6.3 | 6.5 | 6.8 | 7.0 | 7.2 | 7.3 | 7.4   | 7.7 | 8.0 | 8.9 | 9.0 | 9.9 | 11.0 | 11.7  |  |  |
| 60 to 80 (ref.)                          | 6.0   | 6.1 | 6.4 | 6.6 | 6.8 | 7.0 | 7.1 | 7.1   | 7.4 | 7.8 | 8.6 | 8.7 | 9.7 | 10.7 | 11.3  |  |  |
| 40 to 60                                 | 5.8   | 5.9 | 6.1 | 6.3 | 6.5 | 6.8 | 6.8 | 6.9   | 7.2 | 7.5 | 8.3 | 8.4 | 9.3 | 10.3 | 10.9  |  |  |
| 20 to 40                                 | 5.6   | 5.7 | 5.9 | 6.1 | 6.3 | 6.5 | 6.6 | 6.6   | 6.9 | 7.3 | 8.0 | 8.1 | 9.0 | 9.9  | 10.5  |  |  |
| 0 to 20                                  | 5.5   | 5.5 | 5.8 | 5.9 | 6.1 | 6.3 | 6.4 | 6.5   | 6.7 | 7.1 | 7.7 | 7.8 | 8.7 | 9.6  | 10.2  |  |  |
| -20 to 0                                 | 5.4   | 5.5 | 5.7 | 5.8 | 6.0 | 6.2 | 6.3 | 6.3   | 6.6 | 6.9 | 7.6 | 7.6 | 8.4 | 9.3  | 9.9   |  |  |
| -40 to -20                               | 5.4   | 5.4 | 5.6 | 5.8 | 6.0 | 6.2 | 6.2 | 6.3   | 6.5 | 6.8 | 7.4 | 7.5 | 8.3 | 9.1  | 9.6   |  |  |
| -60 to -40 (ref.)                        | 5.5   | 5.5 | 5.7 | 5.9 | 6.0 | 6.2 | 6.3 | 6.3   | 6.6 | 6.8 | 7.4 | 7.5 | 8.2 | 9.0  | 9.5   |  |  |
| -70 to -60 (ref.)                        | 5.6   | 5.7 | 5.8 | 6.0 | 6.2 | 6.3 | 6.4 | 6.4   | 6.7 | 6.9 | 7.5 | 7.6 | 8.3 | 9.0  | 9.5   |  |  |

| Absolute $\Delta n / \Delta T$ [1E-6/°C] |       |     |     |     |     |     |     |       |     |     |     |     |     |     |       |  |  |
|--|-------|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-------|--|--|
| Temp. [°C]                               | 1.083 | t   | s   | A'  | r   | C   | C'  | He-Ne | d   | e   | F   | F'  | g   | h   | 0.389 |  |  |
| 80 to 90                                 | 5.1   | 5.2 | 5.4 | 5.6 | 5.9 | 6.1 | 6.2 | 6.2   | 6.5 | 6.9 | 7.7 | 7.8 | 8.8 | 9.8 | 10.5  |  |  |
| 60 to 80                                 | 4.8   | 4.9 | 5.1 | 5.3 | 5.6 | 5.8 | 5.9 | 5.9   | 6.2 | 6.6 | 7.3 | 7.4 | 8.4 | 9.4 | 10.1  |  |  |
| 40 to 60                                 | 4.5   | 4.5 | 4.8 | 5.0 | 5.2 | 5.4 | 5.4 | 5.5   | 5.8 | 6.1 | 6.9 | 7.0 | 7.9 | 8.8 | 9.5   |  |  |
| 20 to 40                                 | 4.1   | 4.2 | 4.4 | 4.6 | 4.8 | 5.0 | 5.0 | 5.1   | 5.4 | 5.7 | 6.4 | 6.5 | 7.3 | 8.2 | 8.9   |  |  |
| 0 to 20                                  | 3.7   | 3.8 | 4.0 | 4.2 | 4.4 | 4.6 | 4.6 | 4.7   | 4.9 | 5.2 | 5.9 | 6.0 | 6.8 | 7.7 | 8.3   |  |  |
| -20 to 0                                 | 3.4   | 3.4 | 3.6 | 3.8 | 4.0 | 4.1 | 4.2 | 4.2   | 4.5 | 4.8 | 5.4 | 5.5 | 6.3 | 7.1 | 7.7   |  |  |
| -40 to -20                               | 3.0   | 3.0 | 3.2 | 3.4 | 3.6 | 3.7 | 3.8 | 3.8   | 4.1 | 4.4 | 5.0 | 5.0 | 5.8 | 6.5 | 7.1   |  |  |
| -60 to -40                               | 2.6   | 2.7 | 2.8 | 3.0 | 3.1 | 3.3 | 3.4 | 3.4   | 3.6 | 3.9 | 4.5 | 4.5 | 5.2 | 6.0 | 6.5   |  |  |
| -70 to -60                               | 2.3   | 2.4 | 2.5 | 2.7 | 2.8 | 3.0 | 3.1 | 3.1   | 3.3 | 3.6 | 4.1 | 4.2 | 4.9 | 5.6 | 6.0   |  |  |

| Coef. disp. form. (frac. eq.) (ref.) |                |
|--------------------------------------|----------------|
| P1                                   | 1.07014916E-01 |
| Q1                                   | 6.46906731E+01 |
| P2                                   | 2.05151386E-02 |
| Q2                                   | 4.51374212E-02 |
| P3                                   | 3.98531952E-01 |
| Q3                                   | 6.50186587E-03 |

| Fitting error of disp. form. $\sigma$ [1E-6] |         |          |
|--|---------|----------|
|  | Visible | Infrared |
| Power ser. eq.                               | 0.7     | 9.7      |
| Frac. eq. (ref.)                             | 0.8     | 9.5      |

|                      |   |
|----------------------|---|
| Prod. Freq. (A to D) | A |
|----------------------|---|

| Similar glass type |          |        |       |
|--------------------|----------|--------|-------|
| OHARA              | S-LAH63  | HOYA   | NBFD3 |
| CDGM               | H-ZLAF51 | SCHOTT | -     |

|          |                        |
|----------|------------------------|
| 2022-7-1 | StP, AP, SP            |
| 2019-4-1 | Transmittance          |
| 2015-4-1 | Color Code, Prod. Freq |