

|                  |       |                            |             |         |              |            |                |                 |
|------------------|-------|----------------------------|-------------|---------|--------------|------------|----------------|-----------------|
| Refractive Index | $n_d$ | <b>1,85896</b><br>1,858956 | Abbe Number | $\nu_d$ | <b>22,73</b> | Dispersion | $n_F - n_C$    | <b>0,037792</b> |
| Refractive Index | $n_e$ | 1,867836                   | Abbe Number | $\nu_e$ | 22,54        | Dispersion | $n_F - n_{C'}$ | 0,038499        |

| Refractive Indices |          |         |
|--------------------|----------|---------|
| $\lambda(\mu m)$   |          |         |
| $n_{2325}$         | 2.32542  | 1,79247 |
| $n_{1970}$         | 1.97009  | 1,80027 |
| $n_{1530}$         | 1.52958  | 1,80944 |
| $n_{1129}$         | 1.12864  | 1,81938 |
| $n_t$              | 1.01398  | 1,82333 |
| $n_s$              | 0.85211  | 1,83103 |
| $n_{A'}$           | 0.76819  | 1,83681 |
| $n_r$              | 0.70652  | 1,84240 |
| $n_C$              | 0.65627  | 1,84821 |
| $n_{C'}$           | 0.64385  | 1,84987 |
| $n_{He-Ne}$        | 0.6328   | 1,85145 |
| $n_D$              | 0.58929  | 1,85863 |
| $n_d$              | 0.58756  | 1,85896 |
| $n_e$              | 0.54607  | 1,86784 |
| $n_F$              | 0.48613  | 1,88600 |
| $n_{F'}$           | 0.47999  | 1,88837 |
| $n_{He-Cd}$        | 0.44157  | 1,90645 |
| $n_g$              | 0.435835 | 1,90975 |
| $n_h$              | 0.404656 | 1,93160 |
| $n_i$              | 0.365015 |         |

| Constants of Dispersion Formula |                |
|---------------------------------|----------------|
| A <sub>1</sub>                  | 1,89108996E+00 |
| A <sub>2</sub>                  | 3,95220126E-01 |
| A <sub>3</sub>                  | 2,20492127E+00 |
| B <sub>1</sub>                  | 1,41164499E-02 |
| B <sub>2</sub>                  | 6,62834445E-02 |
| B <sub>3</sub>                  | 1,48680700E+02 |

| Chemical Properties                   |     |
|---------------------------------------|-----|
| Water Resistance (Powder) Group RW(P) | 1   |
| Acid Resistance (Powder) Group RA(P)  | 1   |
| Weathering Resistance (Surface) Group | 1   |
| Acid Resistance (Surface) Group SR    | 1.0 |
| Phosphate Resistance PR               | 1.0 |

| Mechanical Properties                                    |         |
|----------------------------------------------------------|---------|
| Young's Modulus E (10 <sup>9</sup> N/m <sup>2</sup> )    | 92,9    |
| Rigidity Modulus G (10 <sup>9</sup> N/m <sup>2</sup> )   | 37,0    |
| Poisson's Ratio $\sigma$                                 | 0,256   |
| Knoop Hardness Hk [Class]                                | 460   5 |
| Abrasion Aa                                              | 277     |
| Photoelastic Constant $\beta$ (nm/cm/10 <sup>5</sup> Pa) | 3,18    |

| Partial Dispersions |          |
|---------------------|----------|
| $n_C - n_t$         | 0,024883 |
| $n_C - n_{A'}$      | 0,011397 |
| $n_d - n_C$         | 0,010747 |
| $n_e - n_C$         | 0,019627 |
| $n_g - n_d$         | 0,050792 |
| $n_g - n_F$         | 0,023747 |
| $n_h - n_g$         | 0,021851 |
| $n_i - n_g$         |          |
| $n_{C'} - n_t$      | 0,026548 |
| $n_e - n_{C'}$      | 0,017962 |
| $n_F - n_e$         | 0,020537 |
| $n_i - n_F$         |          |

| Relative Partial Dispersion |        |
|-----------------------------|--------|
| $\theta_{C,t}$              | 0,6584 |
| $\theta_{C,A'}$             | 0,3016 |
| $\theta_{d,C}$              | 0,2844 |
| $\theta_{e,C}$              | 0,5193 |
| $\theta_{g,d}$              | 1,3440 |
| $\theta_{g,F}$              | 0,6284 |
| $\theta_{h,g}$              | 0,5782 |
| $\theta_{i,g}$              |        |
| $\theta'_{C,t}$             | 0,6896 |
| $\theta'_{e,C'}$            | 0,4666 |
| $\theta'_{F,e}$             | 0,5334 |
| $\theta'_{i,F'}$            |        |

| Deviation of Relative Dispersions |         |
|-----------------------------------|---------|
| $\Delta \theta_{C,t}$             | 0,0051  |
| $\Delta \theta_{C,A'}$            | -0,0018 |
| $\Delta \theta_{g,d}$             | 0,0265  |
| $\Delta \theta_{g,F}$             | 0,0237  |
| $\Delta \theta_{i,g}$             |         |

| Thermal Properties                            |       |
|-----------------------------------------------|-------|
| Strain Point STP (°C)                         | 573   |
| Annealing Point AP (°C)                       | 599   |
| Transformation Temperature Tg (°C)            | 609   |
| Yield Point At (°C)                           | 651   |
| Softening Point SP (°C)                       | 704   |
| Expansion Coefficients (-30~+70°C)            | 76    |
| $\alpha$ (10 <sup>-7</sup> /°C) (+100~+300°C) | 84    |
| Thermal Conductivity k (W/m·K)                | 0,877 |

| Temperature Coefficients of Refractive Index |                                       |     |       |     |     |     |     |
|----------------------------------------------|---------------------------------------|-----|-------|-----|-----|-----|-----|
| Range of Temperature (°C)                    | dn/dT relative (10 <sup>-6</sup> /°C) |     |       |     |     |     |     |
|                                              | t                                     | C'  | He-Ne | D   | e   | F'  | g   |
| -40~-20                                      | 0,0                                   | 1,0 | 1,1   | 1,5 | 2,0 | 3,5 | 5,3 |
| -20~0                                        | 0,0                                   | 1,1 | 1,2   | 1,6 | 2,2 | 3,8 | 5,8 |
| 0~20                                         | 0,0                                   | 1,2 | 1,3   | 1,7 | 2,4 | 4,1 | 6,2 |
| 20~40                                        | 0,1                                   | 1,3 | 1,4   | 1,9 | 2,6 | 4,4 | 6,6 |
| 40~60                                        | 0,2                                   | 1,5 | 1,6   | 2,1 | 2,8 | 4,7 | 7,0 |
| 60~80                                        | 0,3                                   | 1,7 | 1,8   | 2,3 | 3,1 | 5,1 | 7,6 |

| Coloring       |     |             |     |
|----------------|-----|-------------|-----|
| $\lambda_{80}$ |     | $\lambda_5$ | 370 |
| $\lambda_{70}$ | 400 |             |     |

| Internal Transmittance |     |                  |     |
|------------------------|-----|------------------|-----|
| $\lambda_{0.80}$       | 397 | $\lambda_{0.05}$ | 364 |

| CCI  |      |      |
|------|------|------|
| B    | G    | R    |
| 0,00 | 3,38 | 3,62 |

| Internal Transmittance |             |
|------------------------|-------------|
| $\lambda(nm)$          | $\tau$ 10mm |
| 280                    |             |
| 290                    |             |
| 300                    |             |
| 310                    |             |
| 320                    |             |
| 330                    |             |
| 340                    |             |
| 350                    |             |
| 360                    | 0,03        |
| 370                    | 0,08        |
| 380                    | 0,41        |
| 390                    | 0,72        |
| 400                    | 0,84        |
| 420                    | 0,924       |
| 440                    | 0,949       |
| 460                    | 0,962       |
| 480                    | 0,971       |
| 500                    | 0,979       |
| 550                    | 0,991       |
| 600                    | 0,994       |
| 650                    | 0,995       |
| 700                    | 0,996       |
| 800                    | 0,998       |
| 900                    | 0,998       |
| 1000                   | 0,998       |
| 1200                   | 0,999       |
| 1400                   | 0,996       |
| 1600                   | 0,993       |
| 1800                   | 0,984       |
| 2000                   | 0,972       |
| 2200                   | 0,944       |
| 2400                   | 0,915       |

| Other Properties |      |
|------------------|------|
| Density d        | 3,71 |