

# S-BSM71

Code(d) **649530**

Code(e) **651527**

|                        |                            |                   |                      |                       |                            |
|------------------------|----------------------------|-------------------|----------------------|-----------------------|----------------------------|
| Refractive Index $n_d$ | <b>1.64850</b><br>1.648498 | Abbe Number $v_d$ | <b>53.0</b><br>53.02 | Dispersion $n_F-n_C$  | <b>0.01223</b><br>0.012231 |
| Refractive Index $n_e$ | 1.651410                   | Abbe Number $v_e$ | 52.73                | Dispersion $n_F-n_C'$ | 0.012353                   |

| Refractive Indices     |          |         |
|------------------------|----------|---------|
| $\lambda(\mu\text{m})$ |          |         |
| $n_{2325}$             | 2.32542  | 1.61657 |
| $n_{1970}$             | 1.97009  | 1.62205 |
| $n_{1530}$             | 1.52958  | 1.62799 |
| $n_{1129}$             | 1.12864  | 1.63336 |
| $n_t$                  | 1.01398  | 1.63518 |
| $n_s$                  | 0.85211  | 1.63842 |
| $n_{A'}$               | 0.76819  | 1.64067 |
| $n_r$                  | 0.70652  | 1.64274 |
| $n_C$                  | 0.65627  | 1.64482 |
| $n_{C'}$               | 0.64385  | 1.64540 |
| $n_{\text{He-Ne}}$     | 0.6328   | 1.64595 |
| $n_D$                  | 0.58929  | 1.64839 |
| $n_d$                  | 0.58756  | 1.64850 |
| $n_e$                  | 0.54607  | 1.65141 |
| $n_F$                  | 0.48613  | 1.65705 |
| $n_{F'}$               | 0.47999  | 1.65775 |
| $n_{\text{He-Cd}}$     | 0.44157  | 1.66293 |
| $n_g$                  | 0.435835 | 1.66383 |
| $n_h$                  | 0.404656 | 1.66954 |
| $n_i$                  | 0.365015 | 1.67943 |

| Partial Dispersions |          |
|---------------------|----------|
| $n_C-n_t$           | 0.009631 |
| $n_C-n_{A'}$        | 0.004150 |
| $n_d-n_C$           | 0.003683 |
| $n_e-n_C$           | 0.006595 |
| $n_g-n_d$           | 0.015333 |
| $n_g-n_F$           | 0.006785 |
| $n_h-n_g$           | 0.005706 |
| $n_i-n_g$           | 0.015599 |
| $n_C-n_t$           | 0.010215 |
| $n_e-n_{C'}$        | 0.006011 |
| $n_{F'-n_e}$        | 0.006342 |
| $n_i-n_{F'}$        | 0.021678 |

| Relative Partial Dispersions |        |
|------------------------------|--------|
| $\theta_{C,t}$               | 0.7874 |
| $\theta_{C,A'}$              | 0.3393 |
| $\theta_{d,C}$               | 0.3011 |
| $\theta_{e,C}$               | 0.5392 |
| $\theta_{g,d}$               | 1.2536 |
| $\theta_{g,F}$               | 0.5547 |
| $\theta_{h,g}$               | 0.4665 |
| $\theta_{i,g}$               | 1.2754 |
| $\theta'_{C,t}$              | 0.8269 |
| $\theta'_{e,C'}$             | 0.4866 |
| $\theta'_{F',e}$             | 0.5134 |
| $\theta'_{i,F}$              | 1.7549 |

| Thermal Properties                                  |       |
|---|-------|
| Strain Point StP (°C)                               | 607   |
| Annealing Point AP (°C)                             | 635   |
| Transformation Temperature Tg (°C)                  | 651   |
| Yield Point At (°C)                                 | 687   |
| Softening Point SP (°C)                             | 737   |
| Expansion Coefficients (-30~+70°C)                  | 71    |
| $\alpha$ ( $10^{-7}/^\circ\text{C}$ ) (+100~+300°C) | 83    |
| Thermal Conductivity k (W/m-K)                      | 0.773 |

| Coloring       |    |             |    |
|----------------|----|-------------|----|
| $\lambda_{80}$ | 38 | $\lambda_5$ | 34 |
| $\lambda_{70}$ |    |             |    |

| Internal Transmittance |                      |
|------------------------|----------------------|
| $\lambda(\text{nm})$   | $\tau_{10\text{mm}}$ |
| 280                    |                      |
| 290                    |                      |
| 300                    |                      |
| 310                    |                      |
| 320                    |                      |
| 330                    |                      |
| 340                    | 0.15                 |
| 350                    | 0.47                 |
| 360                    | 0.72                 |
| 370                    | 0.86                 |
| 380                    | 0.926                |
| 390                    | 0.958                |
| 400                    | 0.973                |
| 420                    | 0.985                |
| 440                    | 0.988                |
| 460                    | 0.990                |
| 480                    | 0.993                |
| 500                    | 0.995                |
| 550                    | 0.998                |
| 600                    | 0.997                |
| 650                    | 0.996                |
| 700                    | 0.997                |
| 800                    | 0.998                |
| 900                    | 0.998                |
| 1000                   | 0.997                |
| 1200                   | 0.997                |
| 1400                   | 0.993                |
| 1600                   | 0.993                |
| 1800                   | 0.985                |
| 2000                   | 0.972                |
| 2200                   | 0.925                |
| 2400                   | 0.82                 |

| Deviation of Relative Dispersions $\Delta\theta$ from "Normal" |         |
|--|---------|
| $\Delta\theta_{C,t}$   | -0.0080 |
| $\Delta\theta_{C,A'}$  | -0.0008 |
| $\Delta\theta_{g,d}$   | -0.0010 |
| $\Delta\theta_{g,F}$   | -0.0010 |
| $\Delta\theta_{i,g}$   | -0.0057 |

| Mechanical Properties                                   |         |
|---|---------|
| Young's Modulus E ( $10^8\text{N/m}^2$ )                | 862     |
| Rigidity Modulus G ( $10^8\text{N/m}^2$ )               | 339     |
| Poisson's Ratio $\sigma$                                | 0.273   |
| Knoop Hardness Hk[Class]                                | 560   6 |
| Abrasion Aa   | 173     |
| Photoelastic Constant $\beta$ (nm/cm/ $10^5\text{Pa}$ ) | 1.81    |

| Constants of Dispersion Formula |                |
|---------------------------------|----------------|
| A <sub>1</sub>                  | 1.50847885E+00 |
| A <sub>2</sub>                  | 1.58099826E-01 |
| A <sub>3</sub>                  | 1.36815368E+00 |
| B <sub>1</sub>                  | 8.12769076E-03 |
| B <sub>2</sub>                  | 3.54200898E-02 |
| B <sub>3</sub>                  | 1.36110038E+02 |

| Chemical Properties                       |       |
|---|-------|
| Water Resistance(Powder) Group RW(P)      | 1     |
| Acid Resistance(Powder) Group RA(P)       | 5     |
| Weathering Resistance(Surface) Group W(S) | 2 ~ 3 |
| Acid Resistance(Surface) Group SR         | 53.2  |
| Phosphate Resistance PR                   | 4.0   |

| Other Properties       |      |
|------------------------|------|
| Bubble Quality Group B |      |
| Specific Gravity d     | 3.74 |
| Remarks                |      |

| Temperature Coefficients of Refractive Index |   |     |       |     |     |     |     |
|--|---|-----|-------|-----|-----|-----|-----|
| Range of Temperature (°C)                    | $dn/dt$ relative ( $10^{-6}/^\circ\text{C}$ ) |     |       |     |     |     |     |
|  | t   | C'  | He-Ne | D   | e   | F'  | g   |
| -40~-20                                      | 1.3   | 1.5 | 1.6   | 1.7 | 1.8 | 2.1 | 2.6 |
| -20~0  | 1.2   | 1.6 | 1.6   | 1.8 | 1.9 | 2.3 | 2.7 |
| 0~20   | 1.3   | 1.8 | 1.8   | 1.9 | 2.1 | 2.5 | 3.0 |
| 20~40  | 1.4   | 2.0 | 2.0   | 2.1 | 2.3 | 2.8 | 3.2 |
| 40~60  | 1.5   | 2.2 | 2.2   | 2.4 | 2.6 | 3.1 | 3.5 |
| 60~80  | 1.6   | 2.5 | 2.5   | 2.7 | 2.9 | 3.5 | 3.9 |