

ガラスモールドレンズ用プリフォーム硝種 (冷間P F)  
Preform for precision molding (Polishing surface)

推奨硝種  
Recommended Glass Type

MC-NBFD130L 806-407  $n_d = 1.80610$   $\nu_d = 40.73$  ( 40.727 )  $n_F - n_C = 0.019793$   
 $n_e = 1.81080$   $\nu_e = 40.48$  ( 40.475 )  $n_{F'} - n_{C'} = 0.020032$

| 屈折率 Refractive Index |                |         |
|----------------------|----------------|---------|
|                      | $\lambda$ (nm) |         |
| $n_{1529.6}$         | 1529.60        | 1.77565 |
| $n_{1128.64}$        | 1128.64        | 1.78288 |
| $n_t$                | 1013.98        | 1.78549 |
| $n_s$                | 852.11         | 1.79029 |
| $n_{A'}$             | 768.195        | 1.79372 |
| $n_r$                | 706.519        | 1.79695 |
| $n_C$                | 656.273        | 1.80022 |
| $n_{C'}$             | 643.847        | 1.80115 |
| $n_{633}$            | 632.8          | 1.80201 |
| $n_D$                | 589.294        | 1.80592 |
| $n_d$                | 587.562        | 1.80610 |
| $n_e$                | 546.074        | 1.81080 |
| $n_F$                | 486.133        | 1.82001 |
| $n_{F'}$             | 479.991        | 1.82118 |
| $n_g$                | 435.834        | 1.83129 |
| $n_h$                | 404.656        | 1.84092 |
| $n_i$                | 365.015        | 1.85798 |

| 分散式の定数 Constants of dispersion formula |                             |
|----------------------------------------|-----------------------------|
| $A_0$                                  | 3.1717400                   |
| $A_1$                                  | $-1.3626629 \times 10^{-2}$ |
| $A_2$                                  | $3.0211370 \times 10^{-2}$  |
| $A_3$                                  | $9.0767853 \times 10^{-4}$  |
| $A_4$                                  | $-1.7987143 \times 10^{-5}$ |
| $A_5$                                  | $3.7447427 \times 10^{-6}$  |

| 部分分散 Partial dispersions |          |
|--------------------------|----------|
| $n_C - n_t$              | 0.014734 |
| $n_d - n_C$              | 0.005878 |
| $n_F - n_d$              | 0.013915 |
| $n_g - n_F$              | 0.011273 |
| $n_{C'} - n_t$           | 0.015660 |
| $n_e - n_{C'}$           | 0.009653 |
| $n_{F'} - n_e$           | 0.010379 |
| $n_g - n_{F'}$           | 0.010108 |

| 部分分散比 Partial dispersion rates |        |             |        |
|--------------------------------|--------|-------------|--------|
| $P_{C,t}$                      | 0.7444 | $P'_{C',t}$ | 0.7817 |
| $P_{d,C}$                      | 0.2970 | $P'_{d,C'}$ | 0.2472 |
| $P_{e,d}$                      | 0.2375 | $P'_{e,d}$  | 0.2347 |
| $P_{F,e}$                      | 0.4655 | $P'_{F',e}$ | 0.5181 |
| $P_{g,F}$                      | 0.5695 | $P'_{g,F'}$ | 0.5046 |
| $P_{h,g}$                      | 0.4866 | $P'_{h,g}$  | 0.4808 |
| $P_{i,h}$                      | 0.8620 | $P'_{i,h}$  | 0.8517 |

| 異常分散性 Anomalous dispersions |         |
|-----------------------------|---------|
| $\Delta P_{C,t}$            | 0.0082  |
| $\Delta P_{C,A'}$           | 0.0020  |
| $\Delta P_{g,d}$            | -0.0065 |
| $\Delta P_{g,F}$            | -0.0055 |
| $\Delta P_{i,g}$            | -0.0319 |

| 光弾性定数 Photoelastic Constant |      |
|-----------------------------|------|
| $B$ ( $10^{-12}$ /Pa)       | 1.98 |

| 比重 Specific Gravity |      |
|---------------------|------|
| $d$                 | 4.46 |

| 化学的性質 Chemical Properties |   |
|---------------------------|---|
| $D_W$                     | 1 |
| $D_A$                     | 3 |
| $T_{Blue}$                | 3 |
| $D_{NaOH}$                | 1 |
| $D_{STPP}$                | 2 |
| $D_0$                     | 3 |
| $D_H$                     | 1 |

| 熱的性質 Thermal Properties                           |       |
|---------------------------------------------------|-------|
| $T_g$ (°C)                                        | 545   |
| $T_s$ (°C)                                        | 590   |
| $T_{10^{14.5}}$ (°C)                              | 522   |
| $T_{10^{13}}$ (°C)                                | 543   |
| $T_{10^{7.6}}$ (°C)                               | 619   |
| $\alpha$ -30/+70°C ( $10^{-7}/^{\circ}\text{C}$ ) | 60    |
| $\alpha$ 100/300°C ( $10^{-7}/^{\circ}\text{C}$ ) | 80    |
| $\lambda$ [W/(m·K)]                               | 0.800 |
| $C_p$ [kJ/(kg·K)]                                 | 0.518 |

| 機械的性質 Mechanical Properties |         |
|-----------------------------|---------|
| $H_K$                       | 600 (6) |
| $F_A$                       | 80      |
| $E$ (GPa)                   | 111     |
| $G$ (GPa)                   | 42.8    |
| $\mu$                       | 0.300   |
| $\sigma_b$ (MPa)            |         |

| 内部透過率 Internal Transmittance |            |            |             |
|------------------------------|------------|------------|-------------|
| $\lambda$ (nm)               | $\tau$ 2mm | $\tau$ 5mm | $\tau$ 10mm |
| 2500                         | 0.903      | 0.774      | 0.599       |
| 2400                         | 0.939      | 0.854      | 0.729       |
| 2200                         | 0.982      | 0.956      | 0.913       |
| 2000                         | 0.993      | 0.983      | 0.967       |
| 1800                         | 0.998      | 0.994      | 0.988       |
| 1600                         | 0.999      | 0.998      | 0.995       |
| 1550                         | 0.999      | 0.998      | 0.996       |
| 1500                         | 0.999      | 0.998      | 0.996       |
| 1400                         | 0.999      | 0.999      | 0.997       |
| 1300                         | 0.999      | 0.999      | 0.999       |
| 1200                         | 0.999      | 0.999      | 0.999       |
| 1100                         | 0.999      | 0.999      | 0.999       |
| 1060                         | 0.999      | 0.999      | 0.999       |
| 1050                         | 0.999      | 0.999      | 0.999       |
| 1000                         | 0.999      | 0.999      | 0.999       |
| 950                          | 0.999      | 0.999      | 0.999       |
| 900                          | 0.999      | 0.999      | 0.999       |
| 850                          | 0.999      | 0.999      | 0.999       |
| 830                          | 0.999      | 0.999      | 0.999       |
| 800                          | 0.999      | 0.999      | 0.999       |
| 780                          | 0.999      | 0.999      | 0.999       |
| 750                          | 0.999      | 0.999      | 0.999       |
| 700                          | 0.999      | 0.999      | 0.999       |
| 650                          | 0.999      | 0.999      | 0.998       |
| 600                          | 0.999      | 0.996      | 0.992       |
| 550                          | 0.997      | 0.992      | 0.984       |
| 500                          | 0.999      | 0.998      | 0.995       |
| 480                          | 0.999      | 0.996      | 0.992       |
| 460                          | 0.998      | 0.994      | 0.988       |
| 440                          | 0.997      | 0.992      | 0.984       |
| 420                          | 0.995      | 0.988      | 0.976       |
| 400                          | 0.992      | 0.980      | 0.960       |
| 390                          | 0.988      | 0.970      | 0.941       |
| 380                          | 0.981      | 0.952      | 0.907       |
| 370                          | 0.966      | 0.917      | 0.841       |
| 360                          | 0.932      | 0.838      | 0.702       |
| 350                          | 0.852      | 0.669      | 0.448       |
| 340                          | 0.665      | 0.361      | 0.130       |
| 330                          | 0.303      | 0.051      |             |
| 320                          | 0.031      |            |             |
| 310                          |            |            |             |
| 300                          |            |            |             |
| 290                          |            |            |             |
| 280                          |            |            |             |

| 屈折率の温度係数 $dn/dT$ ( $\times 10^{-6}/^{\circ}\text{C}$ )<br>Temperature Coefficient of Refractive Index |           |         |        |          |        |        |        |           |          |        |        | アッペ数の温度係数 $d\nu/dT$ ( $\times 10^{-3}/^{\circ}\text{C}$ )<br>Temperature Coefficient of Abbe-number |         |  |  |
|-------------------------------------------------------------------------------------------------------|-----------|---------|--------|----------|--------|--------|--------|-----------|----------|--------|--------|-----------------------------------------------------------------------------------------------------|---------|--|--|
|                                                                                                       | (°C)      | $dn/dT$ |        |          |        |        |        |           |          |        |        | $d\nu/dT$                                                                                           |         |  |  |
|                                                                                                       |           | $n_h$   | $n_g$  | $n_{F'}$ | $n_F$  | $n_e$  | $n_d$  | $n_{633}$ | $n_{C'}$ | $n_C$  | $n_r$  | $\nu_e$                                                                                             | $\nu_d$ |  |  |
|                                                                                                       |           | 404.66  | 435.84 | 479.99   | 486.13 | 546.07 | 587.56 | 632.80    | 643.85   | 656.27 | 706.52 | 546.07                                                                                              | 587.56  |  |  |
| $dn/dT$ & $d\nu/dT$ (rel.)                                                                            | -40 / -20 | 10.0    | 9.2    | 8.4      | 8.3    | 7.6    | 7.3    | 7.1       | 7.0      | 7.0    | 6.8    | -2.4                                                                                                | -2.4    |  |  |
|                                                                                                       | -20 / 0   | 10.1    | 9.2    | 8.4      | 8.3    | 7.6    | 7.3    | 7.0       | 7.0      | 6.9    | 6.7    | -2.4                                                                                                | -2.5    |  |  |
|                                                                                                       | 0 / 20    | 10.2    | 9.3    | 8.4      | 8.3    | 7.6    | 7.3    | 7.0       | 7.0      | 6.9    | 6.7    | -2.5                                                                                                | -2.5    |  |  |
|                                                                                                       | 20 / 40   | 10.3    | 9.4    | 8.5      | 8.4    | 7.7    | 7.3    | 7.0       | 7.0      | 6.9    | 6.7    | -2.6                                                                                                | -2.6    |  |  |
|                                                                                                       | 40 / 60   | 10.4    | 9.5    | 8.5      | 8.4    | 7.7    | 7.4    | 7.1       | 7.0      | 6.9    | 6.7    | -2.7                                                                                                | -2.7    |  |  |
|                                                                                                       | 60 / 80   | 10.6    | 9.6    | 8.6      | 8.5    | 7.7    | 7.4    | 7.1       | 7.0      | 6.9    | 6.7    | -2.8                                                                                                | -2.8    |  |  |
|                                                                                                       | 80 / 100  | 10.7    | 9.6    | 8.6      | 8.5    | 7.7    | 7.4    | 7.1       | 7.0      | 6.9    | 6.7    | -2.9                                                                                                | -2.9    |  |  |
|                                                                                                       | 100 / 120 | 10.8    | 9.7    | 8.7      | 8.6    | 7.7    | 7.4    | 7.0       | 7.0      | 6.9    | 6.7    | -3.0                                                                                                | -3.0    |  |  |
|                                                                                                       | 120 / 140 | 10.8    | 9.7    | 8.7      | 8.6    | 7.7    | 7.3    | 7.0       | 6.9      | 6.8    | 6.6    | -3.1                                                                                                | -3.1    |  |  |
|                                                                                                       | 140 / 150 | 10.9    | 9.7    | 8.7      | 8.5    | 7.7    | 7.3    | 6.9       | 6.9      | 6.8    | 6.6    | -3.1                                                                                                | -3.1    |  |  |
| $dn/dT$ & $d\nu/dT$ (abs.)                                                                            | -40 / -20 | 7.5     | 6.6    | 5.9      | 5.8    | 5.2    | 4.9    | 4.6       | 4.6      | 4.5    | 4.4    | -2.4                                                                                                | -2.4    |  |  |
|                                                                                                       | -20 / 0   | 7.9     | 7.1    | 6.3      | 6.2    | 5.5    | 5.2    | 5.0       | 4.9      | 4.9    | 4.7    | -2.5                                                                                                | -2.4    |  |  |
|                                                                                                       | 0 / 20    | 8.3     | 7.4    | 6.6      | 6.5    | 5.8    | 5.5    | 5.2       | 5.2      | 5.1    | 4.9    | -2.5                                                                                                | -2.5    |  |  |
|                                                                                                       | 20 / 40   | 8.7     | 7.8    | 6.9      | 6.8    | 6.1    | 5.7    | 5.5       | 5.4      | 5.4    | 5.2    | -2.6                                                                                                | -2.6    |  |  |
|                                                                                                       | 40 / 60   | 9.0     | 8.0    | 7.1      | 7.0    | 6.3    | 6.0    | 5.7       | 5.6      | 5.6    | 5.4    | -2.7                                                                                                | -2.7    |  |  |
|                                                                                                       | 60 / 80   | 9.3     | 8.3    | 7.4      | 7.3    | 6.5    | 6.1    | 5.8       | 5.8      | 5.7    | 5.5    | -2.8                                                                                                | -2.8    |  |  |
|                                                                                                       | 80 / 100  | 9.5     | 8.5    | 7.5      | 7.4    | 6.6    | 6.3    | 6.0       | 5.9      | 5.8    | 5.6    | -2.9                                                                                                | -2.9    |  |  |
|                                                                                                       | 100 / 120 | 9.7     | 8.7    | 7.7      | 7.6    | 6.7    | 6.4    | 6.1       | 6.0      | 5.9    | 5.7    | -3.0                                                                                                | -3.0    |  |  |
|                                                                                                       | 120 / 140 | 9.9     | 8.8    | 7.8      | 7.7    | 6.8    | 6.4    | 6.1       | 6.0      | 6.0    | 5.7    | -3.1                                                                                                | -3.1    |  |  |
|                                                                                                       | 140 / 150 | 10.0    | 8.9    | 7.8      | 7.7    | 6.8    | 6.4    | 6.1       | 6.0      | 6.0    | 5.7    | -3.2                                                                                                | -3.2    |  |  |

| 線膨張係数 $\alpha$<br>( $\times 10^{-7}/^{\circ}\text{C}$ )<br>Coefficient of Thermal Expansion |          |
|---------------------------------------------------------------------------------------------|----------|
| (°C)                                                                                        | $\alpha$ |
| -40 / -30                                                                                   | 55       |
| -30 / -20                                                                                   | 56       |
| -20 / -10                                                                                   | 57       |
| -10 / 0                                                                                     | 58       |
| 0 / 10                                                                                      | 59       |
| 10 / 20                                                                                     | 60       |
| 20 / 30                                                                                     | 61       |
| 30 / 40                                                                                     | 61       |
| 40 / 50                                                                                     | 62       |
| 50 / 60                                                                                     | 62       |
| 60 / 70                                                                                     | 63       |
| 70 / 80                                                                                     | 63       |
| 80 / 90                                                                                     | 63       |
| 90 / 100                                                                                    | 63       |
| 100 / 110                                                                                   | 64       |
| 110 / 120                                                                                   | 64       |
| 120 / 130                                                                                   | 64       |
| 130 / 140                                                                                   | 65       |
| 140 / 150                                                                                   | 65       |

| 着色度 Coloration Code                              |         |
|--------------------------------------------------|---------|
| $\lambda_{80}(\lambda_{70})/\lambda_5$           | 395/335 |
| 着色度 (内部透過率) Coloration of Internal Transmittance |         |
| $\lambda_{\tau 80}/\lambda_{\tau 5}$             | 366/335 |

| CCI Color Contribution Index |      |
|------------------------------|------|
| CCI (G)                      | 0.84 |
| CCI (R)                      | 0.90 |

| 冷却速度による屈折率の変化 Difference of refractive indices by cooling rate |     |
|----------------------------------------------------------------|-----|
| $\beta_C$                                                      | 148 |
| $\beta_d$                                                      | 148 |
| $\beta_F$                                                      | 150 |
| $\beta_g$                                                      | 151 |

| 備考 Remarks                           |             |        |       |        |        |      |
|--------------------------------------|-------------|--------|-------|--------|--------|------|
| 硝種対照表 Glass Cross Reference Index    |             |        |       |        |        |      |
|                                      | HOYA        | SCHOTT | OHARA | HIKARI | SUMITA | CDGM |
| Glass_Type                           | MC-NBFD130L |        |       |        |        |      |
| Code                                 | 806-407     |        |       |        |        |      |
| Excel File Name : HOYA20250701M.xlsm |             |        |       |        |        |      |