# Data Sheet

SCHOTT

## LLF1
## 548458.294

| | | |
|---|---|---|
| $n_d = 1.54814$ | $\nu_d = 45.75$ | $n_F - n_C = 0.011981$ |
| $n_e = 1.55099$ | $\nu_e = 45.47$ | $n_{F'} - n_{C'} = 0.012118$ |

### Refractive Indices

| | λ [nm] | |
|---|---|---|
| $n_{2325.4}$ | 2325.4 | 1.51865 |
| $n_{1970.1}$ | 1970.1 | 1.52354 |
| $n_{1529.6}$ | 1529.6 | 1.52884 |
| $n_{1060.0}$ | 1060.0 | 1.53470 |
| $n_t$ | 1014.0 | 1.53541 |
| $n_s$ | 852.1 | 1.53845 |
| $n_r$ | 706.5 | 1.54256 |
| $n_C$ | 656.3 | 1.54457 |
| $n_{C'}$ | 643.8 | 1.54513 |
| $n_{632.8}$ | 632.8 | 1.54566 |
| $n_D$ | 589.3 | 1.54803 |
| $n_d$ | 587.6 | 1.54814 |
| $n_e$ | 546.1 | 1.55099 |
| $n_F$ | 486.1 | 1.55655 |
| $n_{F'}$ | 480.0 | 1.55725 |
| $n_g$ | 435.8 | 1.56333 |
| $n_h$ | 404.7 | 1.56911 |
| $n_i$ | 365.0 | 1.57932 |
| $n_{334.1}$ | 334.1 | 1.59092 |
| $n_{312.6}$ | 312.6 | |
| $n_{296.7}$ | 296.7 | |
| $n_{280.4}$ | 280.4 | |
| $n_{248.3}$ | 248.3 | |

### Constants of Dispersion Formula

| | |
|---|---|
| $B_1$ | 1.21640125 |
| $B_2$ | 0.13366454 |
| $B_3$ | 0.883399468 |
| $C_1$ | 0.00857807248 |
| $C_2$ | 0.0420143003 |
| $C_3$ | 107.59306 |

### Constants of Dispersion dn/dT

| | |
|---|---|
| $D_0$ | $3.25 \cdot 10^{-7}$ |
| $D_1$ | $1.74 \cdot 10^{-8}$ |
| $D_2$ | $-6.12 \cdot 10^{-11}$ |
| $E_0$ | $6.53 \cdot 10^{-7}$ |
| $E_1$ | $2.58 \cdot 10^{-10}$ |
| $\lambda_{TK}$ [µm] | 0.233 |

### Internal Transmittance $\tau_i$

| λ [nm] | $\tau_i$ (10mm) | $\tau_i$ (25mm) |
|---|---|---|
| **2500** | 0.758 | 0.500 |
| **2325** | 0.821 | 0.610 |
| **1970** | 0.933 | 0.840 |
| **1530** | 0.996 | 0.990 |
| **1060** | 0.998 | 0.996 |
| **700** | 0.999 | 0.997 |
| **660** | 0.998 | 0.996 |
| **620** | 0.998 | 0.996 |
| **580** | 0.999 | 0.997 |
| **546** | 0.999 | 0.997 |
| **500** | 0.998 | 0.996 |
| **460** | 0.998 | 0.996 |
| **436** | 0.998 | 0.996 |
| **420** | 0.998 | 0.995 |
| **405** | 0.998 | 0.994 |
| **400** | 0.997 | 0.993 |
| **390** | 0.997 | 0.992 |
| **380** | 0.995 | 0.988 |
| **370** | 0.994 | 0.984 |
| **365** | 0.992 | 0.981 |
| **350** | 0.982 | 0.955 |
| **334** | 0.919 | 0.810 |
| **320** | 0.618 | 0.300 |
| **310** | 0.240 | 0.010 |
| **300** | 0.024 | |
| **290** | 0.002 | |
| **280** | | |
| **270** | | |
| **260** | | |
| **250** | | |
| | | |
| | | |

### Color Code

| | |
|---|---|
| $\lambda_{80}/\lambda_5$ | 33/31 |
| (*= $\lambda_{70}/\lambda_5$) | |

### Remarks

lead containing glass type

### Relative Partial Dispersion

| | |
|---|---|
| $P_{s,t}$ | 0.2537 |
| $P_{C,s}$ | 0.5108 |
| $P_{d,C}$ | 0.2983 |
| $P_{e,d}$ | 0.2376 |
| $P_{g,F}$ | 0.5660 |
| $P_{i,h}$ | 0.8520 |
| | |
| $P'_{s,t}$ | 0.2508 |
| $P'_{C',s}$ | 0.5516 |
| $P'_{d,C'}$ | 0.2484 |
| $P'_{e,d}$ | 0.2349 |
| $P'_{g,F'}$ | 0.5017 |
| $P'_{i,h}$ | 0.8424 |

### Deviation of Relative Partial Dispersions ΔP from the "Normal Line"

| | |
|---|---|
| $\Delta P_{C,t}$ | 0.0025 |
| $\Delta P_{C,s}$ | 0.0012 |
| $\Delta P_{F,e}$ | -0.0003 |
| $\Delta P_{g,F}$ | -0.0009 |
| $\Delta P_{i,g}$ | -0.0062 |

### Other Properties

| | |
|---|---|
| $\alpha_{-30/+70°C}$ [$10^{-6}$/K] | 8.1 |
| $\alpha_{+20/+300°C}$ [$10^{-6}$/K] | 9.2 |
| $T_g$ [°C] | 431 |
| $T_{10}^{13.0}$ [°C] | 426 |
| $T_{10}^{7.6}$ [°C] | 628 |
| $c_p$ [J/(g·K)] | 0.650 |
| λ [W/(m·K)] | |
| | |
| ρ [g/cm³] | 2.94 |
| **E** [$10^3$ N/mm²] | 60 |
| μ | 0.208 |
| **K** [$10^{-6}$ mm²/N] | 3.05 |
| **HK**$_{0.1/20}$ | 450 |
| **HG** | 3 |
| | |
| **B** | 1 |
| | |
| **CR** | 1 |
| **FR** | 0 |
| **SR** | 1 |
| **AR** | 2 |
| **PR** | 1 |
| | |
| | |
| | |

### Temperature Coefficients of Refractive Index

| | $\Delta n_{rel}/\Delta T$ [$10^{-6}$/K] | | | $\Delta n_{abs}/\Delta T$ [$10^{-6}$/K] | | |
|---|---|---|---|---|---|---|
| **[°C]** | **1060.0** | **e** | **g** | **1060.0** | **e** | **g** |
| **-40/ -20** | 1.5 | 2.4 | 3.4 | -0.6 | 0.3 | 1.3 |
| **+20/ +40** | 1.9 | 2.9 | 3.9 | 0.6 | 1.5 | 2.5 |
| **+60/ +80** | 2.0 | 3.0 | 4.1 | 1.0 | 2.0 | 3.0 |