## Lead Fluoride ($PbF_2$)

***CAUTION: Lead salts are considered TOXIC and should be handled with care.***

Lead fluoride has been grown by vacuum Stockbarger, but is not known to be in regular production. Crystran hold a very small stock of crystal ingot.

**APPLICATIONS:** Lead Fluoride has little optical application. Lead Fluoride has been used as a scintillator material as it has excellent stopping power for gamma rays.

| | |
|---|---|
| Transmission Range | 250nm to 11µm |
| Refractive Index | 1.7808 @ 5µm |
| Reflection Loss | 12.8% @ 5µm (2 surfaces) |
| Absorption Coefficient | 0.018 $cm^{-1}$ @ 4µm |
| Reststrahlen Peak | n/a |
| dn/dT | n/a |
| dn/dµ = 0 | 3.3µm |
| Density | 7.77 g $cm^{-3}$ (1) |
| Melting Point | 855°C |
| Thermal Conductivity | n/a |
| Thermal Expansion | 29 x $10^{-6}$ $K^{-1}$ @ 283K |
| Hardness | Knoop 200 |
| Specific Heat Capacity | 301 J $Kg^{-1}$ $K^{-1}$ |
| Dielectric Constant | 13 @ 1MHz |
| Youngs Modulus (E) | n/a |
| Shear Modulus (G) | n/a |
| Bulk Modulus (K) | n/a |
| Elastic Coefficients | $C_{11}$=91, $C_{12}$=46, $C_{44}$=23 |
| Apparent Elastic Limit | n/a |
| Poisson Ratio | n/a |
| Solubility | 0.064 g/100g water at 20°C |
| Molecular Weight | 245.21 |
| Class/Structure | Cubic, CaF2, Fm3m, (111) cleavage |

(1) Crystran Data

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| µm | No | µm | No | µm | No |
|---|---|---|---|---|---|
| 0.3 | 1.93665 | 0.4 | 1.81804 | 0.5 | 1.78220 |
| 0.6 | 1.76489 | 0.7 | 1.75502 | 0.8 | 1.74879 |
| 0.9 | 1.74455 | 1.0 | 1.74150 | 3.0 | 1.72363 |
| 5.0 | 1.70805 | 7.0 | 1.68544 | 9.0 | 1.65504 |