

## Strontium Fluoride (SrF<sub>2</sub>)

## MATERIALS DATA

Strontium fluoride is produced by the vacuum Stockbarger growth technique.

**APPLICATIONS:** Strontium Fluoride has only specialist applications. Optically, Strontium Fluoride has properties intermediate to Calcium and Barium Fluoride.

Transmission Range	0.15 to 11 $\mu$ m
Refractive Index	1.439 at 0.55 $\mu$ m (1)
Reflection Loss	6.3% at 0.55 $\mu$ m (2 surfaces)
Absorption Coefficient	$<1 \times 10^{-3} \text{ cm}^{-1}$ at 5 $\mu$ m
Reststrahlen Peak	46 $\mu$ m
dn/dT	$-12 \times 10^{-6} \text{ K}^{-1}$
dn/d $\mu$ = 0	n/a
Density	4.24 g/cc
Melting Point	1450°C
Thermal Conductivity	1.42 W m <sup>-1</sup> K <sup>-1</sup> at 298K
Thermal Expansion	18.4 x 10 <sup>-6</sup> K <sup>-1</sup> at 293K
Hardness	Knoop 154 (100) & 140 (110)
Specific Heat Capacity	543 J Kg <sup>-1</sup> K <sup>-1</sup>
Dielectric Constant	7.69 at 2 MHz
Youngs Modulus (E)	89.91 GPa
Shear Modulus (G)	34.6 GPa
Bulk Modulus (K)	24.65 GPa
Elastic Coefficients	C <sub>11</sub> =124; C <sub>12</sub> =45; C <sub>44</sub> =31.7
Apparent Elastic Limit	36.5 MPa (5300 psi)
Poisson Ratio	0.25
Solubility	0.012g/100g water at 27°C
Molecular Weight	125.62
Class/Structure	Cubic Fm $\bar{3}$ m (#225) Fluorite structure Cleaves on (111)

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(1) Handbook of Optical Constants, ed Palik, V3, ISBN 0-12-544423-0



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μm	No	μm	No	μm	No
0.15	1.594	0.20	1.504	0.31	1.45725
0.41	1.44556	0.51	1.44029	0.61	1.43740
0.71	1.43560	0.81	1.43435	0.91	1.43343
1.01	1.43269	1.51	1.43003	2.01	1.42761
3.01	1.42159	4.01	1.41337	5.01	1.40269
6.01	1.38934	7.01	1.37308	8.01	1.35362
9.1	1.3283	10.1	1.3800	11.1	1.2686
12.35	1.3002				

