

Table 8. Lithium Fluoride Refractive Index vs. Wavelength

λ (μm)	n	λ (μm)	n	λ (μm)	n
0.20	1.44	0.29	1.41	1.75	1.38
0.22	1.43	0.39	1.40	2.75	1.37
0.24	1.42	0.60	1.39	3.40	1.36

Magnesium Fluoride (MgF_2)

Magnesium fluoride is used for optical elements in the infrared where extreme ruggedness and durability are required. Its useful transmission range is from 0.11 to 7.5 μm . The single crystal exhibits slight birefringence through its useful transmission range and its birefringence in the infrared could be useful. The refractive index varies from about 1.4 to 1.3. The difference $n_e - n_o$ is 0.012 at 0.6 μm for the birefringent single crystal.

Magnesium fluoride is similar to calcium fluoride in its resistance to water. The material is sensitive to thermal shock but does not cleave. Irradiation does not lead to color centers. Figure 27 shows its spectral transmission, and Table 9 presents data on its refractive index.

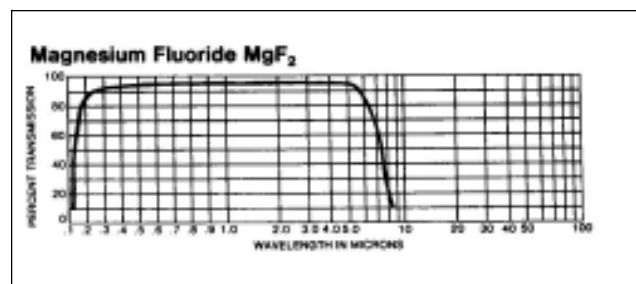


Figure 27. Magnesium fluoride (MgF_2).

Table 9. Magnesium Fluoride Refractive Index vs. Wavelength

λ (μm)	n_e	n_o	λ (μm)	n_e	n_o
0.20	1.43	1.42	0.34	1.40	1.39
0.23	1.42	1.41	0.56	1.39	1.38
0.27	1.41	1.40			

Potassium Chloride (KCl)

Potassium chloride is used for infrared windows, lenses, and prisms when transmission in the range 0.3 to 20 μm is desired. Its transmission extends beyond that of sodium chloride. The refractive index ranges from about 1.6 to 1.4 in this wavelength range. Potassium chloride is soluble in water, and polished surfaces must be protected from moisture. Maximum use temperature is 400°C. Figure 28 shows its spectral transmission, and Table 10 presents data on its refractive index.

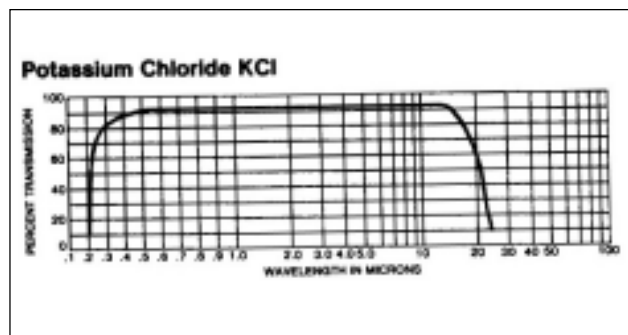


Figure 28. Spectral transmission of potassium chloride.

Table 10. Potassium Chloride Refractive Index vs. Wavelength

λ (μm)	n	λ (μm)	n	λ (μm)	n
0.40	1.51	11.7	1.45	20.2	1.39
0.47	1.50	13.5	1.44	21.0	1.38
0.59	1.49	15.0	1.43	22.8	1.37
0.98	1.48	16.7	1.42	23.4	1.36
5.30	1.47	18.1	1.41	24.3	1.35
8.90	1.46	19.1	1.40		

Quartz (SiO_2)

Cultured quartz is a crystal used primarily for prisms, but also for windows and lenses, in the ultraviolet. Its useful transmission range is 0.15 to 3.6 μm . Cultured quartz exhibits birefringence. Its refractive index varies from about 1.7 to 1.5 through the transmission range. Orienting the optical axis along the crystal c axis produces higher vacuum-ultraviolet transmission. The spectral transmission is shown in Figure 29, and Table 11 presents data on its refractive index.

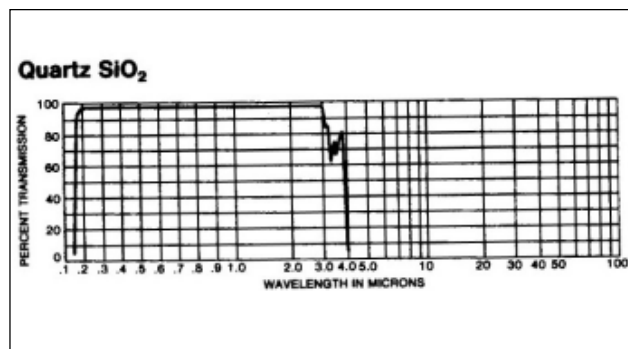


Figure 29. Spectral transmission of quartz.