

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

KRS6 crystals are grown by the sealed-ampoule Stockbarger technique. Starting materials of the highest purity are selected to ensure that there are no anionic absorption bands between 2 and 16 μ m and all crystals are checked for quality by using a pathlength of 120mm. Thallium salts are toxic, and KRS6 has enough solubility to require extreme caution. Careful handling with plastic gloves covered with soft cotton gloves as appropriate to delicate optics is required.

APPLICATIONS: KRS6 has only a few applications. Occasionally, it is required for research.

Transmission Range	0.4 to 25 μ m
Refractive Index	2.1723 at 11 μ m (1)
Reflection Loss	24.0% at 11 μ m (2 surfaces)
Absorption Coefficient	n/a
Reststrahlen Peak	91.5 μ m
dn/dT	n/a
dn/d μ = 0	5 μ m
Density	7.18 g/cc (3)
Melting Point	423°C (3)
Thermal Conductivity	0.7 W m ⁻¹ K ⁻¹ at 329°K
Thermal Expansion	50 x 10 ⁻⁶ K ⁻¹ (2)
Hardness	Knoop 29.9 with 500g indenter (2)
Specific Heat Capacity	188 J Kg ⁻¹ K ⁻¹
Dielectric Constant	32 at 1 MHz
Youngs Modulus (E)	20.68 GPa (2)
Shear Modulus (G)	8.48 GPa (2)
Bulk Modulus (K)	22.81 GPa (2)
Elastic Coefficients	C ₁₁ =38.5; C ₁₂ =14.9; C ₄₄ =7.37
Apparent Elastic Limit	20.7 MPa (3000 psi)
Poisson Ratio	0.219
Solubility	0.3g/100g water at 20°C
Molecular Weight	40 mole% TlBr; 60 mole% TlCl
Class/Structure	Cubic, CsCl structure, Pm3m, no cleavage planes

(1) Hettner and Leisegang; Optik, V3, p305, 1948

(2) Combes, Ballard, McCarthy: J.Opt Soc.Am. V41, p 215, 1951

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



KRS6 Thallium Bromo-Chloride (TlBr-TlCl)

MATERIALS DATA

μm	No	μm	No	μm	No
0.6	2.3294	0.7	2.2982	0.8	2.2660
0.9	2.251	1.0	2.2404	1.5	2.2148
2.0	2.2059	3.0	2.199	4.0	2.1956
5.0	2.1928	6.0	2.190	7.0	2.187
8.0	2.1839	9.0	2.1805	10.0	2.1767
11.0	2.1723	12.0	2.1674	13.0	2.162
14.0	2.1563	15.0	2.1504	16.0	2.1442
17.0	2.1377	18.0	2.1309	19.0	2.1236
20.0	2.1154	21.0	2.1067	22.0	2.0976
23.0	2.0869	24.0	2.0752		

