

KRS5 Thallium Bromo-Iodide (TIBr-TII)

Specialist Data Sheet

Product Name	KRS5 Thallium Bromo-Iodide (TIBr-TII)
Transmission Range	0.6 ~ 40 μm
Refractive Index	2.371 @ 10 μm
Reflection Loss	28.4% @ 10 μm (2 surfaces)
Absorption Coefficient	n/a
Reststrahlen Peak	n/a
dN/dT	$-235 \times 10^{-6}/^{\circ}\text{C}$
dN/du	7 μm
Density	7.371 g/cc
Melting Point	414.5 $^{\circ}\text{C}$
Thermal Conductivity	0.544 $\text{W m}^{-1} \text{K}^{-1}$ @ 293K
Thermal Expansion	$58 \times 10^{-6}/^{\circ}\text{C}$
Hardness	Knoop 40.2
Specific Heat Capacity	200 $\text{J Kg}^{-1} \text{K}^{-1}$ @ 293K
Dielectric Constant	32.5
Youngs Modulus (E)	15.85 Gpa
Shear Modulus (G)	5.79 Gpa
Bulk Modulus (K)	19.78 Gpa
Elastic Coefficients	C11=331; C12=13.2; C44=5.79
Apparent Elastic Limit	26.2 Mpa
Poisson Ratio	0.369
Solubility	0.05g/100g water @ 293K
Molecular Weight	42 mole% TIBr; 58 mole% TII
Class/Structure	Cubic, CsCl structure, No cleavage planes

Notes:

KRS-5 crystals by 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 microns and all crystals are checked for quality by using a pathlength of 120mm.

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

Application:

A deep IR material with high refractive index, KRS5 is used extensively in spectroscopy for ATR prisms, windows and lenses, and in conjunction with germanium in athermalised IR imaging systems.



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μm	No	μm	No	μm	No	μm	No
0.54	2.68059	10.0	2.37069	21.0	2.33643	32.0	2.27531
1.00	2.44620	11.0	2.36854	22.0	2.33206	33.0	2.26823
1.50	2.40774	12.0	2.36622	23.0	2.32746	34.0	2.26087
2.00	2.39498	13.0	2.36371	24.0	2.32264	35.0	2.25322
3.00	2.38574	14.0	2.36101	25.0	2.31758	36.0	2.24528
4.00	2.38204	15.0	2.35812	26.0	2.31229	37.0	2.23705
5.00	2.37979	16.0	2.35502	27.0	2.30676	38.0	2.22850
6.00	2.37797	17.0	2.35173	28.0	2.30098	39.0	2.21965
7.00	2.37627	18.0	2.34822	29.0	2.29495	40.0	2.21047
8.00	2.37452	19.0	2.34451	30.0	2.28867		
9.00	2.37267	20.0	2.34058	31.0	2.28212		

Transmission Range Graph:



