

## Caesium Bromide (CsBr)

## MATERIALS DATA

CsBr is grown by sealed ampoule Stockbarger technique. It is a soft pliable material.

**APPLICATIONS:** Caesium Bromide has limited application in the deep IR. It is slightly more amenable to optical working than CsI and is sometimes used as a beamsplitter component in wide-band spectrophotometers

Transmission Range	0.25 to 40 $\mu$ m (1)
Refractive Index	1.6612 at 11 $\mu$ m (1)
Reflection Loss	11.6% at 11 $\mu$ m (2 surfaces)
Absorption Coefficient	n/a
Reststrahlen Peak	121.2 $\mu$ m (2)
dn/dT	-84 x 10 <sup>-6</sup> /°C at 0.6 $\mu$ m (5)
dn/d $\mu$ = 0	5.3 $\mu$ m
Density	4.44 g/cc
Melting Point	636 °C
Thermal Conductivity	0.94 W m <sup>-1</sup> K <sup>-1</sup> at 273K
Thermal Expansion	47.9 x 10 <sup>-6</sup> K <sup>-1</sup> at 273K
Hardness	Knoop 19.5 with 200g indenter
Specific Heat Capacity	263.8 J Kg <sup>-1</sup> K <sup>-1</sup> (3)
Dielectric Constant	6.51 at 2 MHz
Youngs Modulus (E)	15.85 GPa (4)
Shear Modulus (G)	7.5 GPa
Bulk Modulus (K)	13.01 GPa
Elastic Coefficients	C <sub>11</sub> =30.97; C <sub>12</sub> =4.03; C <sub>44</sub> =7.5
Apparent Elastic Limit	8.4 MPa (1220 psi) (4)
Poisson Ratio	0.279
Solubility	124.3g/100g water at 273K
Molecular Weight	212.83
Class/Structure	Cubic CsCl, Pm3m, no cleavage planes

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

(2) Mitsuishi et al., J Opt Soc. Am. V52, p14, 1962

(3) Kelly, Bureau of Mines Bulletin, No371, p51, 1934

(4) S.Ballard et al; J.Opt.Soc.Am. Vol42, p684, 1952

(5) H.H.Li; J.Phys. Chem. Ref. Data. Vol 5, No 2. 1976



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$\mu\text{m}$	No	$\mu\text{m}$	No	$\mu\text{m}$	No
0.5	1.70896	1.0	1.67793	2.0	1.67061
3.0	1.66901	4.0	1.66813	5.0	1.66737
6.0	1.66659	7.0	1.66573	8.0	1.6477
9.0	1.6637	10.0	1.66251	11.0	1.6612
12.0	1.65976	13.0	1.6582	14.0	1.6561
15.0	1.65468	16.0	1.65272	17.0	1.65062
180	1.64838	19.0	1.646	20.0	1.64348
21.0	1.6408	22.0	1.63798	23.0	1.635
25.0	1.62856	26.0	1.62509	27.0	1.62146
28.0	1.61764	29.0	1.61365	30.0	1.60947
31.0	1.6051	32.0	1.60053	33.0	1.59576
34.0	1.59078	35.0	1.58558	36.0	1.58016

