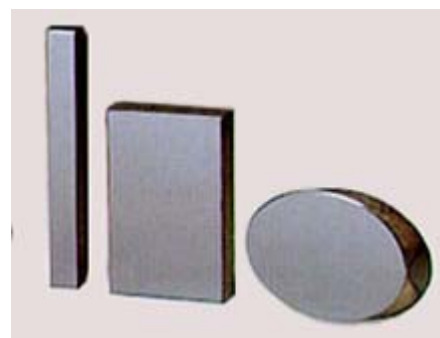


GALLIUM ARSENIDE CRYSTALS [GaAs]

Optical GaAs provides an alternative to ZnSe in medium and high power CW CO2 laser systems for lenses and rear mirrors. GaAs is particularly useful in applications where toughness and durability are important. Its hardness and strength make GaAs a good choice where dust or abrasive particles tend to build up on, or bombard, the optical surface. Softer substrates allow particles to imbed in the optic, even when the best of coatings are used. Often in cases where frequent cleaning by wiping is required, use of GaAs will extend optic lifetime.

Because most GaAs is manufactured for semiconductor, rather than optical applications careful screening of incoming material is vital in producing quality GaAs optics. At II-VI, we utilize our laser vacuum calorimetry capability and other techniques to screen out materials with voids, inclusions or other defects which cause inferior optical performance.



Specification

Transmission Range	0.6 to 21.0μm
Refractive Index	2.4028 at 10μm
Reflection Loss	29.1% at 10.6μm [2 surfaces]
Absorption Coefficient	0.0005cm ⁻¹ at 10.6μm
Restrahlen Peak	45.7microns
dn/dT	+61 × 10 ⁻⁶ /°C at 10.6μm at 298K
dn/dμ = 0	5.5μm
Density	5.27g/cm ³
Melting Point	1525°C [dissociates about 700°C]
Thermal Conductivity	18 W/ [m K] at 298K
Thermal Expansion	7.1 × 10 ⁻⁶ / °C at 273K
Hardness	Knoop 120 with 50g indenter
Specific Heat Capacity	339 J · kg ⁻¹ · K ⁻¹
Bulk Modulus [K]	40 GPa
Young's Modulus [E]	67.2 GPa
Apparent Elastic Limit	55.1 MPa [8,000psi]
Poisson Ratio	0.28