

# Infra-red Windows



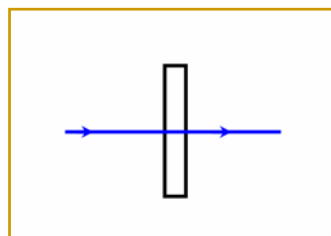
Many different types of material will transmit the infra-red. Selection of the most appropriate material is usually made with reference to the extent of the required transmittance and the nature of the environments being isolated by the window.

Zinc Selenide, Zinc Sulphide, Germanium or Gallium Arsenide are commonly used for the broad IR spectrum including both 3-5  $\mu\text{m}$  and 8-14  $\mu\text{m}$  bands. Cleartran is a form of Zinc Sulphide with improved visible transmittance.

Calcium Fluoride and Magnesium Fluoride are used in the 3-5  $\mu\text{m}$  band while maintaining high transmittance in the visible. Potassium Bromide has the widest transmission spectrum but is extremely soft and also hygroscopic. Here are some of the commonly available materials together with their transmission ranges, refractive index and hardness:

Material	Range of Transmittance	Refractive Index @10.6 $\mu\text{m}$	Knoop Hardness
ZnSe	600nm-20 $\mu\text{m}$	2.400	112
ZnS	600nm-15 $\mu\text{m}$	2.192	225
Cleartran	500nm-16 $\mu\text{m}$	2.192	155
Ge	2 $\mu\text{m}$ -20 $\mu\text{m}$	4.003	692
Si	1.2 $\mu\text{m}$ -10 $\mu\text{m}$	3.418	1150
GaAs	1 $\mu\text{m}$ -20 $\mu\text{m}$	3.273	750
CaF <sub>2</sub>	150nm-8 $\mu\text{m}$	1.400 @5 $\mu\text{m}$	158
MgF <sub>2</sub>	180nm-6 $\mu\text{m}$	1.334 @5 $\mu\text{m}$	415
KBr	300nm-25 $\mu\text{m}$	1.525	6

Typical diameters offered are: 6.35, 9.53, 12.7, 19.1, 25.4, 27.9, 38.1, 50.8, 63.5 and 76.3 mm.



Thickness varies from 2.0 to 7.0 mm as appropriate to maintain the flatness specification.

These windows are normally supplied uncoated but we can offer a range of anti-reflection coatings for broadband, narrow-band or dual wavelength applications. Please ask about coatings.

Typical Specifications	
Substrate Material:	ZnSe, ZnS, Ge, GaAs, MgF <sub>2</sub> , CaF <sub>2</sub> , KBr
Surface flatness:	$\lambda/20$ @ 10.6 $\mu\text{m}$
Surface quality:	40/20
Parallelism:	< 3 arcmin
Diameter:	+0.0 / -0.2 mm
Thickness:	$\pm$ 0.25 mm
Clear aperture:	> 85% of diameter

**To request a quote or to order, please specify:**

Quantity — Material — Diameter — Coating (if required)

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For a quotation — please phone, fax or email us with details of your requirements.