

LEYSOP LTD

Manufacturers and suppliers of electro-optic components

Calcite Glan-Taylor Polarizers



Air spaced design

High power handling

Wide transmission range

High extinction ratio

AR coating options

Optional cylinder mount

Low wave-front distortion

The Glan-Taylor design produces a high extinction ratio polarizer with low reflection losses and a high power handling capability. It is therefore particularly useful for polarizing laser light, with the further advantages that there is no transmission deviation or offset and that a wide spectral range can be polarized.

Leysop supplies Glan-Taylor polarizers with apertures ranging from 10-30mm. Side faces are supplied as standard with a fine ground finish which is adequate to disperse the internally reflected S-polarization state. For high power applications we recommend that either one or two polished side exits are specified to facilitate the removal of the rejected polarization state from the polarizer. The standard interface angle used makes

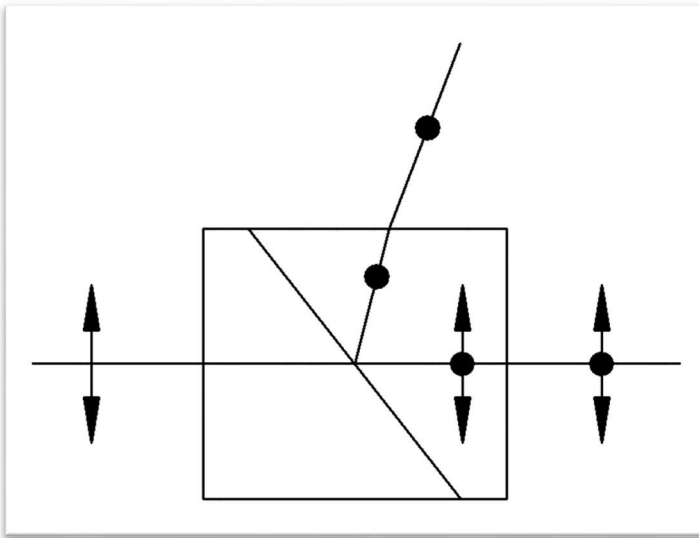
the polarizer suitable for operation across the transmission range of 0.25-1.2 μm . Other interface angles may be specified for operation at other wavelengths within the 0.2-2.5 μm transmission window of calcite.

The optical surfaces are polished to a typical flatness of $\lambda/4$ at 633nm and may be specified with anti-reflection coatings. We usually recommend single layer quarter wave coatings of MgF_2 .

A black anodized aluminium alloy open cylinder mount may be specified to protect the prisms and facilitate mounting.

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The Glan-Taylor polarizer takes advantage of the high birefringence of calcite to separate the ordinary ray which suffers total internal reflection from the extra-ordinary ray which, because it does not exceed the critical angle is transmitted across the air space (exaggerated here for clarity) into the second identical prism and then onwards. Because the incident angle at the interface is close to the Brewster angle for the e-ray, the insertion loss is relatively low although still slightly higher than typical cemented designs.

Product Specifications

Polarizer Model	GT10	GT12	GT15	GT18	GT20	GT25	GT30
Nominal Aperture (mm)	10	12	15	18	20	25	30
Clear Aperture (mm)	9	11	14	17	19	24	29
Width (un-mounted, mm)	12	14	17	20	22	27	32
Height (un-mounted, mm)	10	12	15	18	20	25	30
Length (mm, ± 1 mm)	11	15	18	21	24		
Transmission Range	0.2 – 2.5 μ m						
Extinction Ratio	10^{-5}	10^{-5}	10^{-5}	10^{-6}	10^{-6}	10^{-6}	10^{-6}
Transmission Un-Coated	~88%						
Peak Transmission Coated	~94%						
Maximum Beam Deviation	3 min	3 min	3 min	2 min	2 min	2 min	2 min
Maximum Optical Power Pulsed (polished side exit)	300MWcm ⁻² for <10ns pulse regime						
Maximum Optical Power CW (polished side exit)	300Wcm ⁻²						
Mount Diameter (mm)	25	25	35	35	35	50	50

Specifications for guidance only, subject to modification without notice.

Specifying the Glan-Taylor Polarizer:

The polarizer is specified by its size, number of exits, AR coating options and whether a mount is required. The model code is thus GTXX-SY-ARZZZZ-M

Key: XX= 10,12,15,18,20,25, or 30

Y= 0 for no side exit, 1 for single side exit or 2 for double side exit

ZZZZ= Centre wavelength of coating (nm) if required, or 0000 if un-coated

M: Specify M if mount required or omit if no mount required.