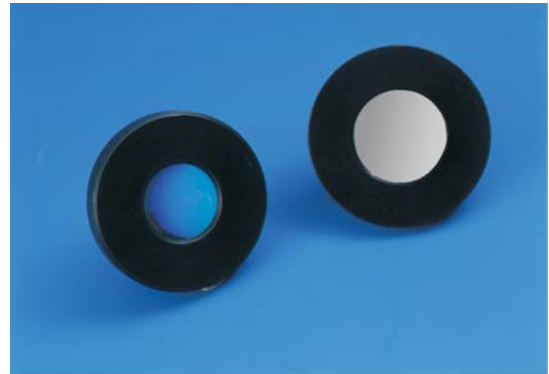


FIR- and THz-Polarizers

For operation in FIR and THz regions we supply polyethylene polarizers designed to polarize radiation from 7 microns to MM waves. They are the sort of diffraction gratings and operate in transmission. The polarizer grating is made by forming grooves of a triangle profile on the substrate and subsequent deposition of a metal coating (aluminum) on one of the groove facets.



Applications:

- THz microscopy;
- Molecular orientation studies of crystal and polymer films;
- Imaging;
- Sensors and detectors;
- FTIR spectroscopy;
- THz spectroscopy studies.

Features:

- Used in extremely wide wavelength range from MIR (7 μm) to THz (3 mm and even more);
- Substrate is high density polyethylene (HDPE);
- High FIR transmission;
- High degree of polarization;
- Polarizers are supplied in holders (protective ring with marked grid direction).

Advantages of polyethylene grid polarizers compared to free-standing wire grid polarizers:

- Lower cost
- Possibility to use one polarizer for the wide wavelength range



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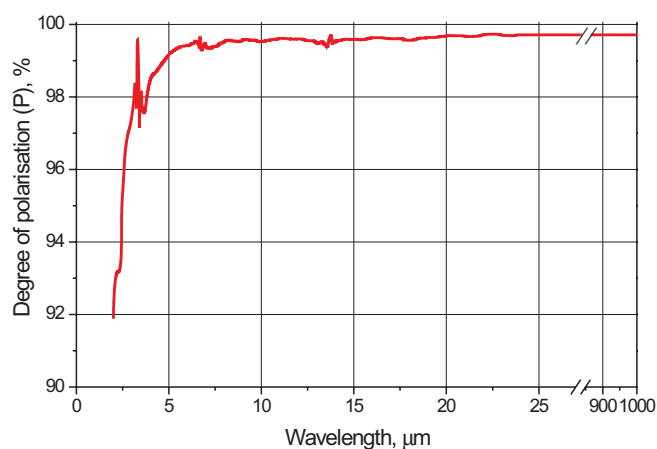
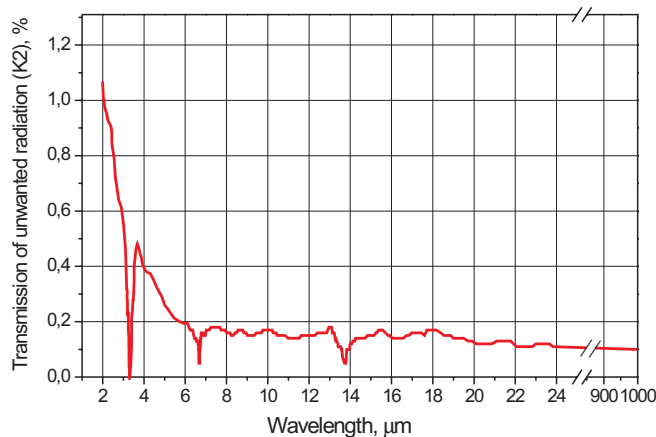
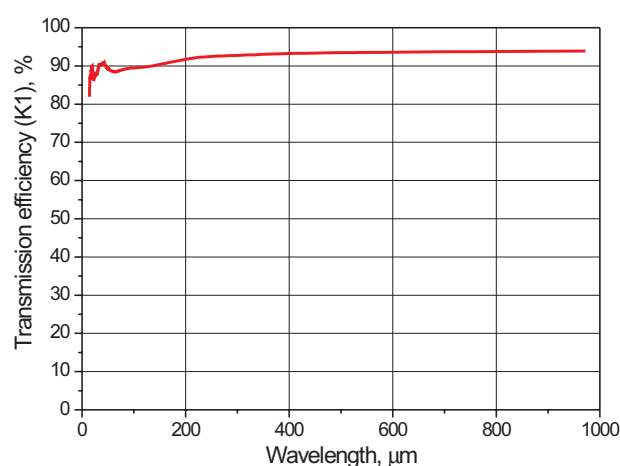
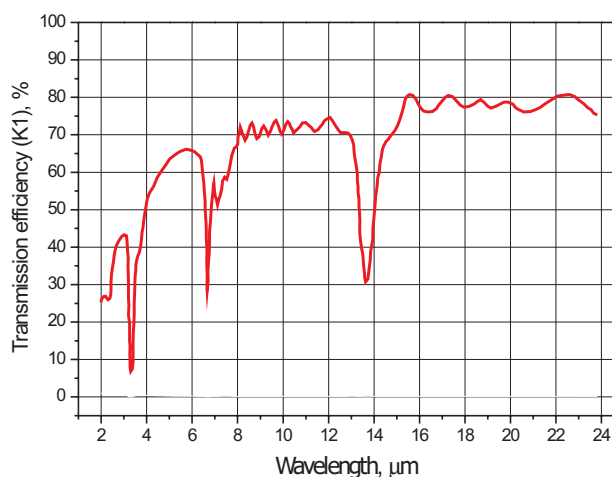
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SPECIFICATION

Tab. 1 Parameters of polyethylene polarizers.

Substrate material	Hard polyethylene (HDPE)
Spectral range, μm	≥ 7
Typical operation aperture, mm	25
Standard holder size at typical aperture, mm	D34.9 x 7.9
Maximal operation aperture, mm	100*
Grooves per mm	1200
Transmission efficiency K1 (average), %	70 - 80
Transmission of unwanted radiation K2, %	<1 @ 8 μm <0.1 @ 30-1000 μm
Degree of polarization (K1-K2)/(K1+K2), %	>98 @ 8 μm >99.5 @ 30-1000 μm
Extinction ratio $E=K1/(2*K2)$	35-40 @ 8 μm 350-400 @ 30-1000 μm

* For square shape polarizer maximal aperture size can be higher, up to 110 x 110 mm.



SIZES AND SHAPE

Polyethylene polarizers are produced using the ruled grating technique. The grid is ruled onto large size material, which is subsequently cut. Thus clear aperture can be round or, on customer's request square or rectangular. Standard clear aperture (CA) of polarizers is D25 mm, which is available from our stock.



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