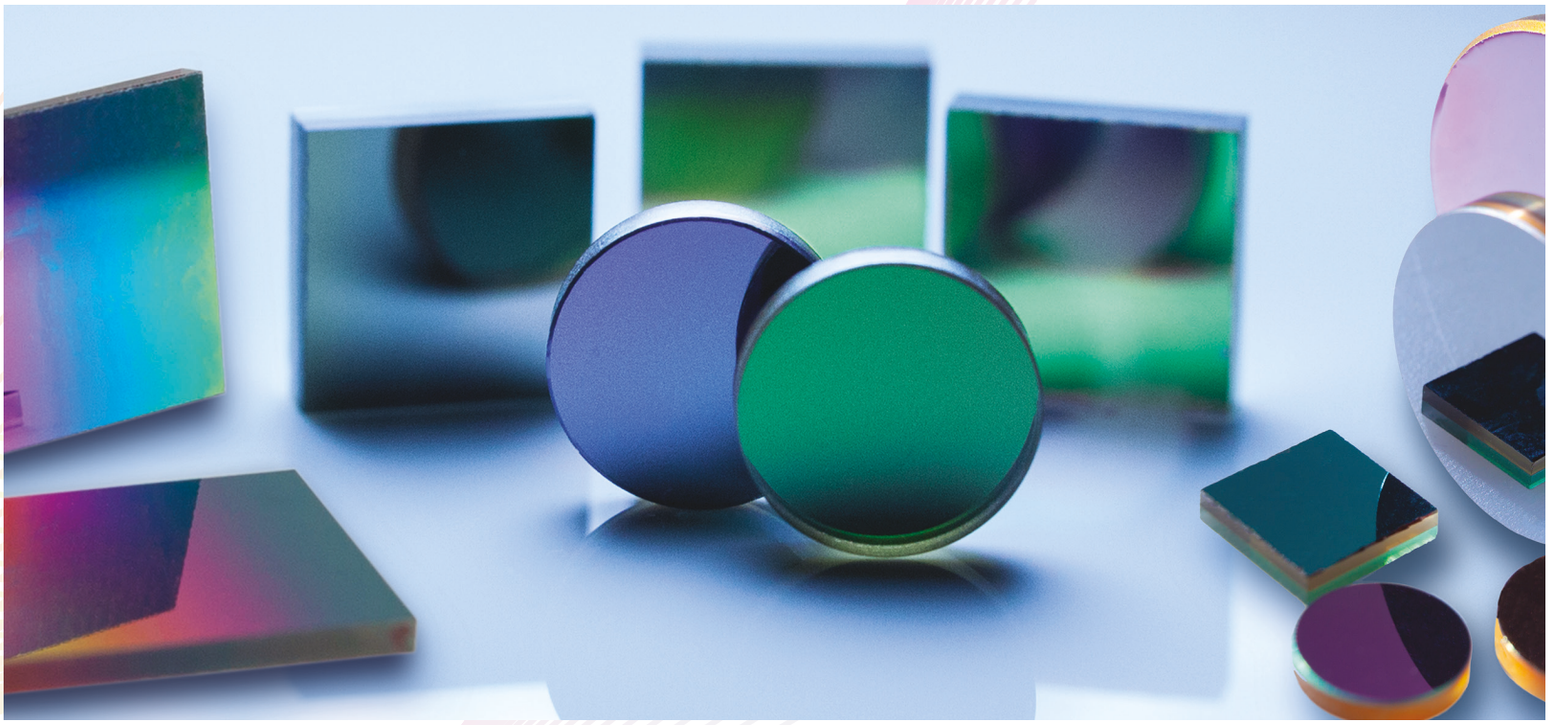
Vortex
Optical Coatings Ltd

INFRA-RED FILTERS

BEAM SPLITTERS & DICHROICS



www.vortexopticalcoatings.co.uk

VORTEX OPTICAL COATINGS LTD.

Located in the middle of the UK, Vortex was founded in 2008 in Hinckley Leicestershire, the small team had many years of experience in the photonics industry.

The aim from the outset was to design and manufacture filters and optical coatings with a speed and quality in an industry where late delivery was an accepted ‘given’. To make this possible a programme of work was undertaken to design state of the art fully automated deposition equipment which would challenge the industry norms.

Many years later Vortex is an independently owned, successful company with a number of unique products and technologies.

Our aim is quite simple, we will always support our customers especially when you really need us!

INFRA-RED OPTICAL FILTERS

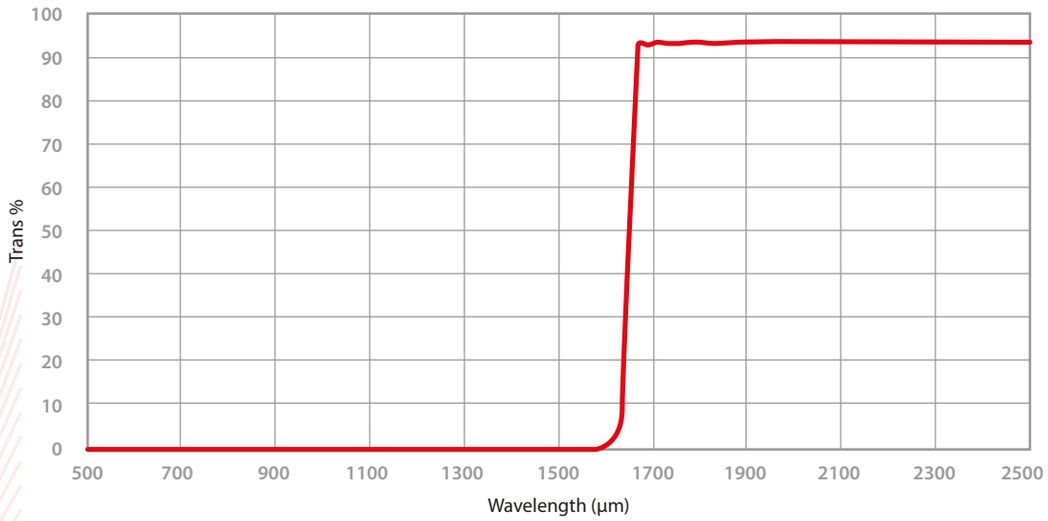
In recent years the infra-red has become an area of interest in a growing number of applications such as

- Gas detection
- Food manufacture
- Smart Agriculture
- Bio-marker detection for medical use
- Soil analysis
- Smart agriculture

Below are some examples of common filter types

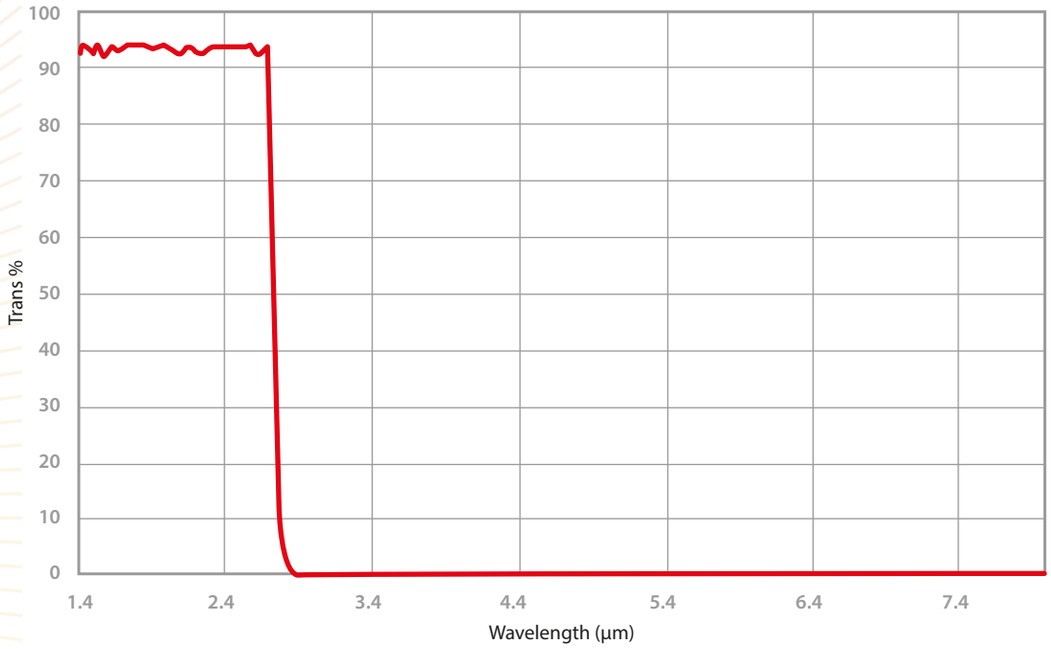
LONG WAVE PASS FILTERS
(see below edge position to suite application)

Long Wave Pass Edge Filter, 50% at 1650µm



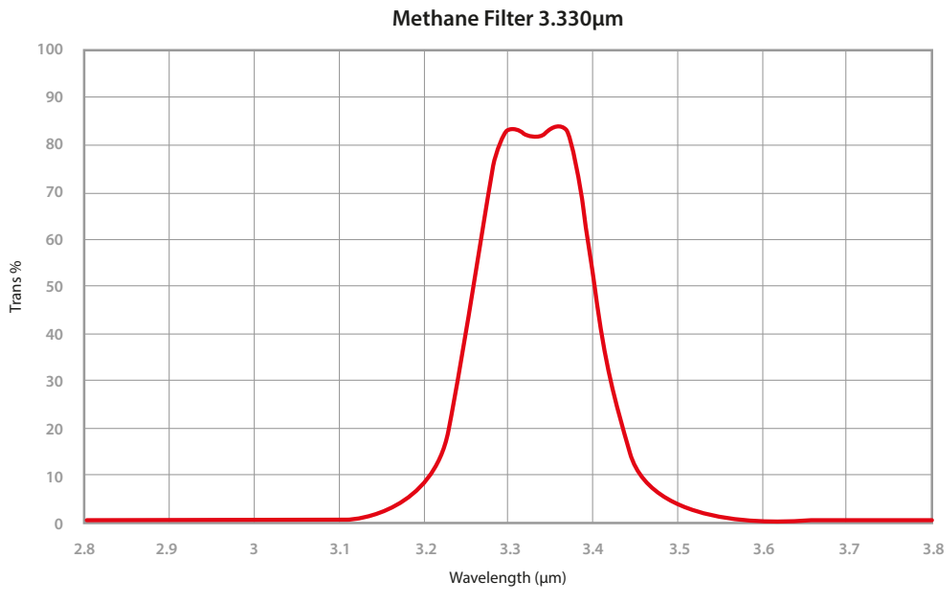
SHORT WAVE PASS FILTER
(see below edge position to suite application)

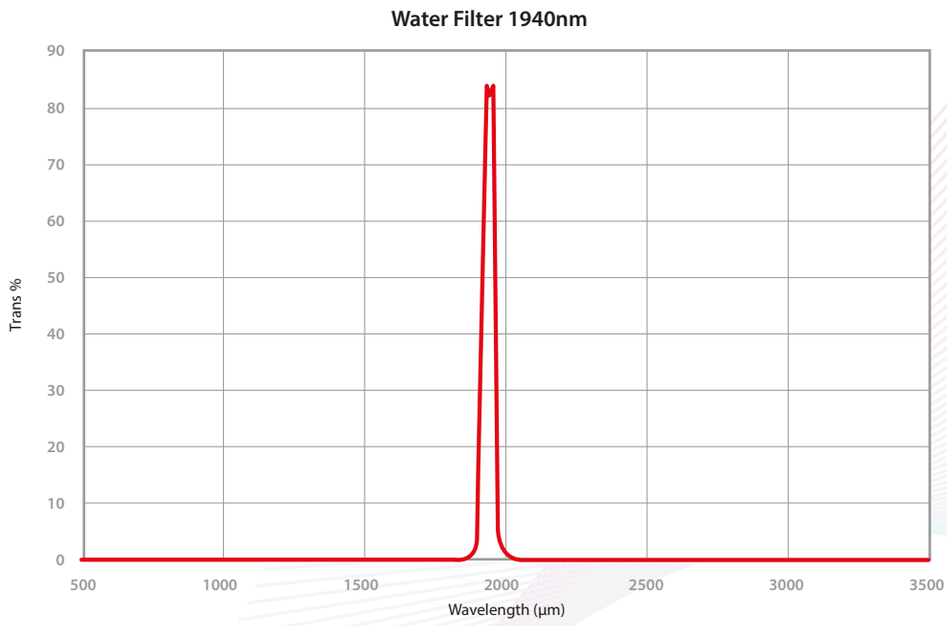
Trans of SWP 2.7µm Filter on Glass



INFRA-RED OPTICAL FILTERS

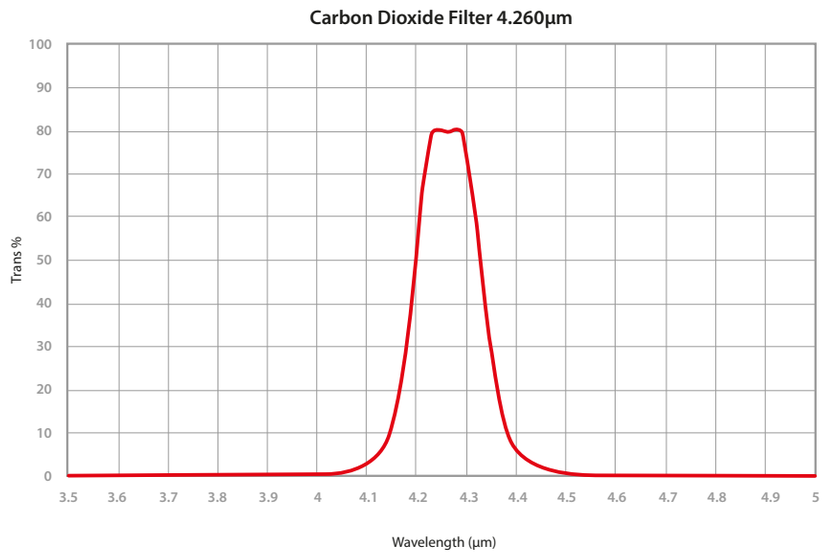
NARROW BAND PASS FILTERS
(e.g. for Methane, Water and Carbon dioxide etc.)



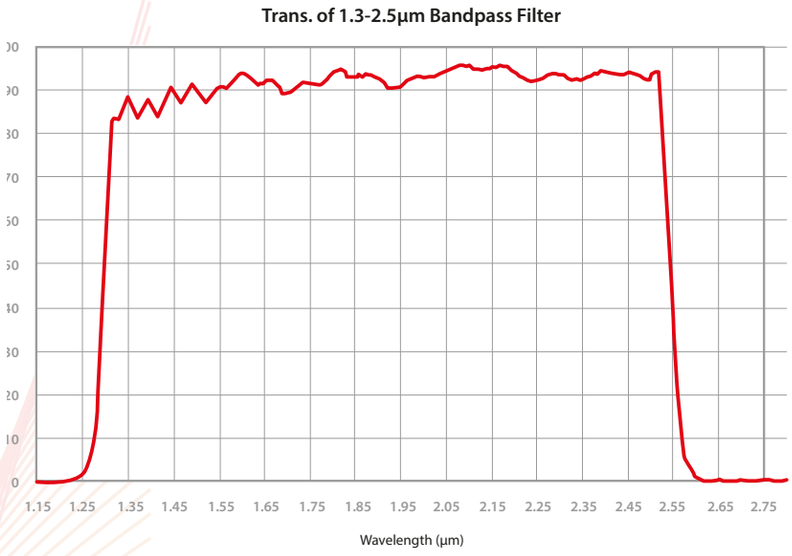


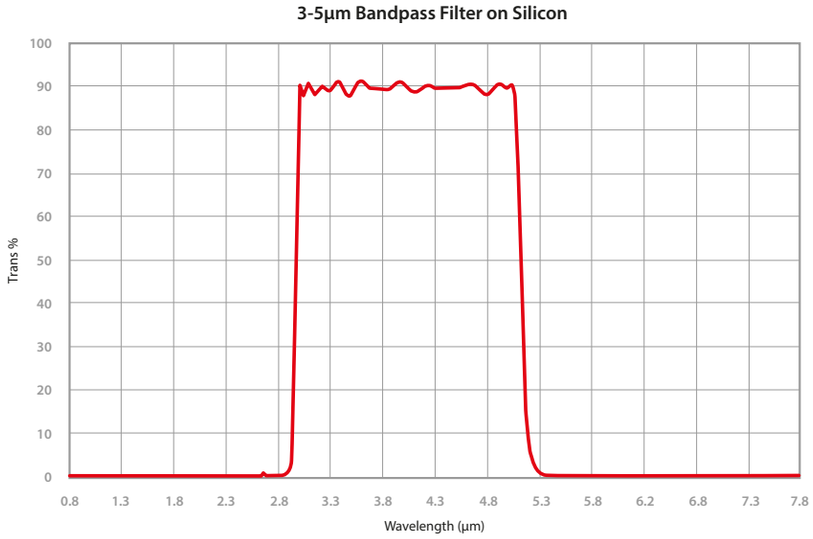
INFRA-RED OPTICAL FILTERS

NARROW BAND PASS FILTERS *(e.g. for Methane, Water and Carbon dioxide etc..)*



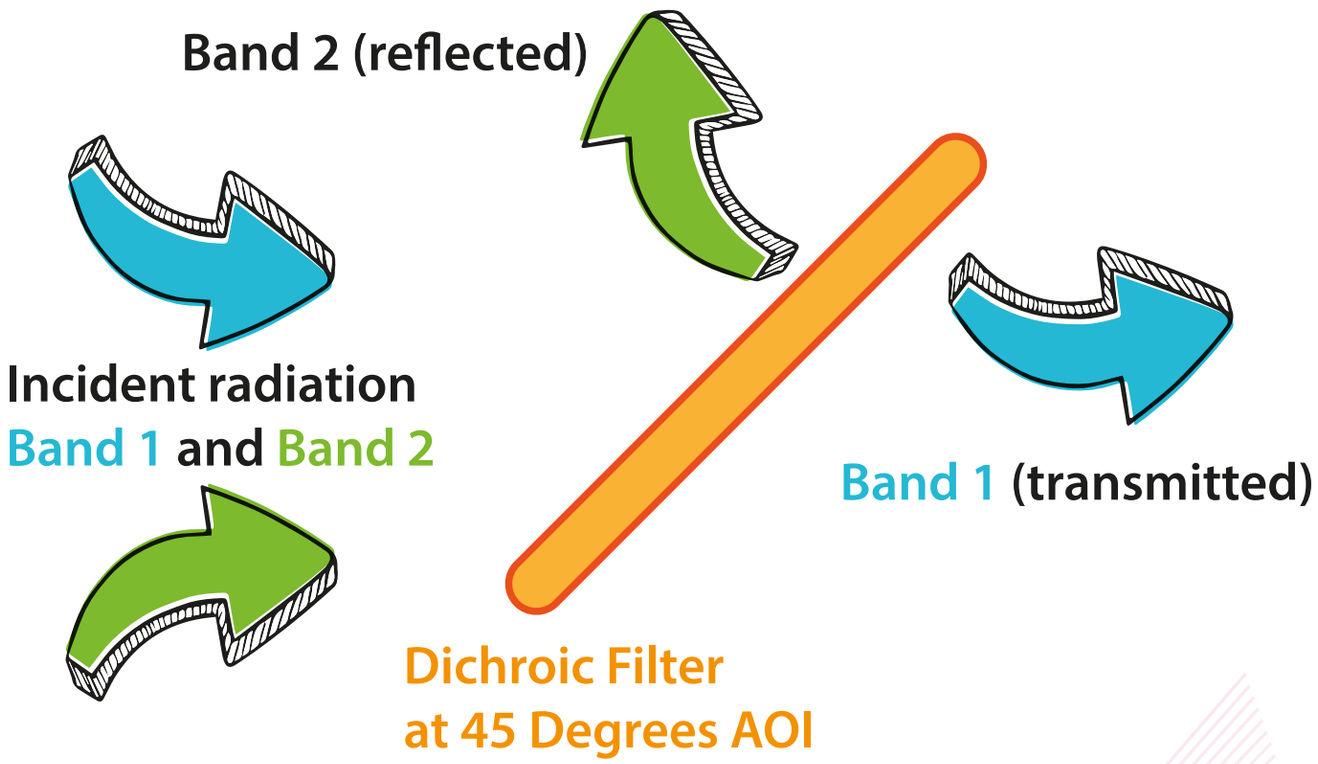
WIDE BAND PASS FILTER *(see below both edge positions adjustable)*



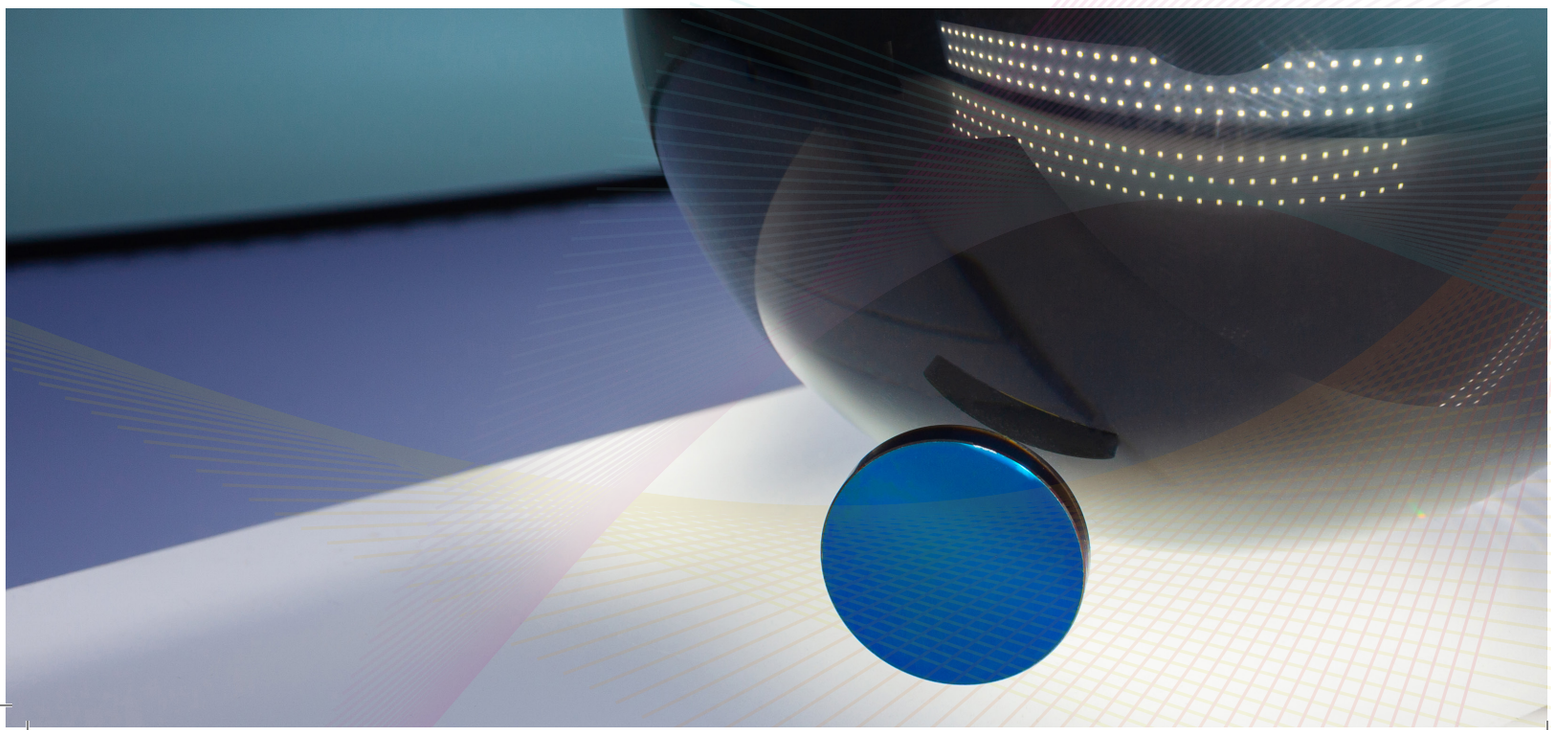


BEAM-SPLITTER AND DICHROIC FILTERS

Vortex design and make custom beam splitters and dichroics to separate wavebands as in the diagram below.

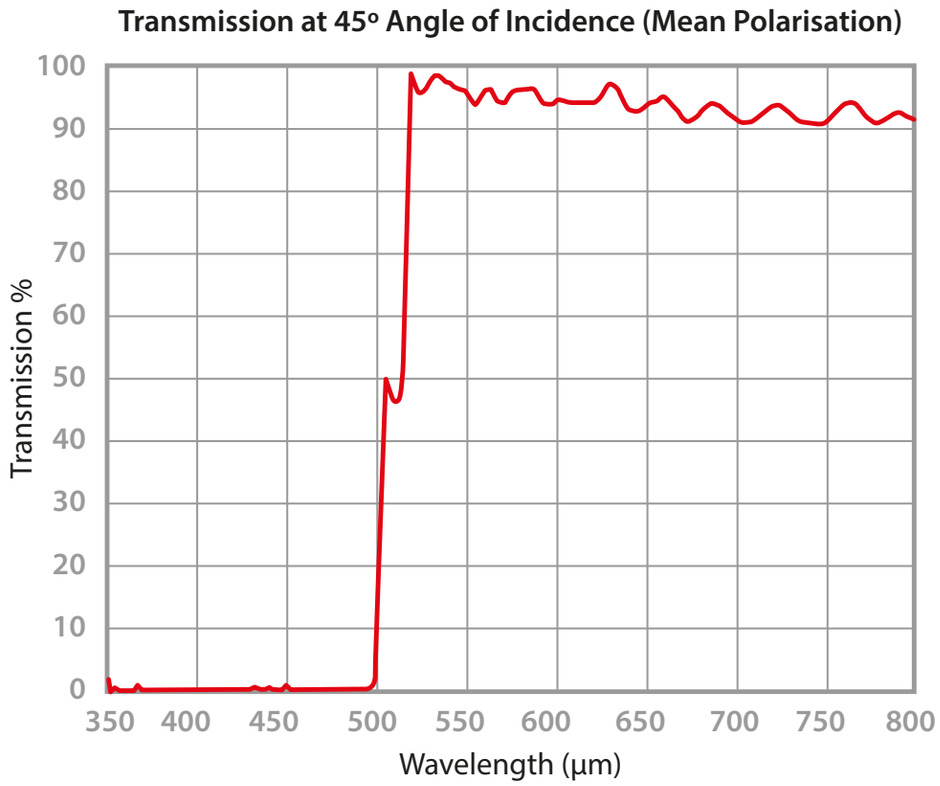


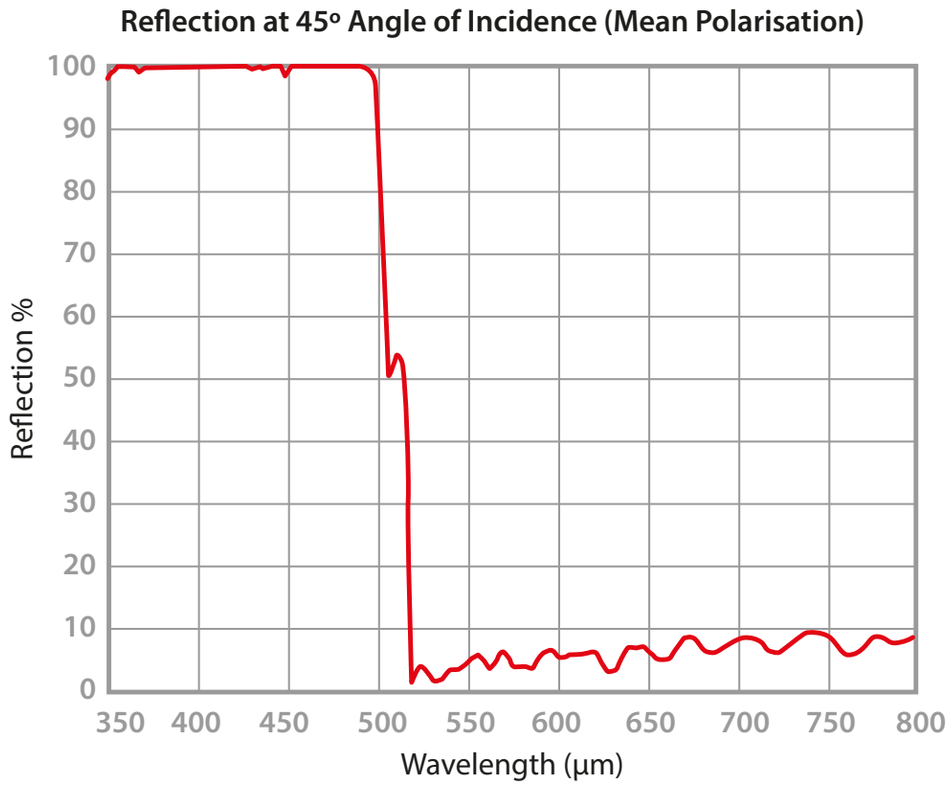
BASIC FUNCTION OF A DICHROIC FILTER



EXAMPLE 1:

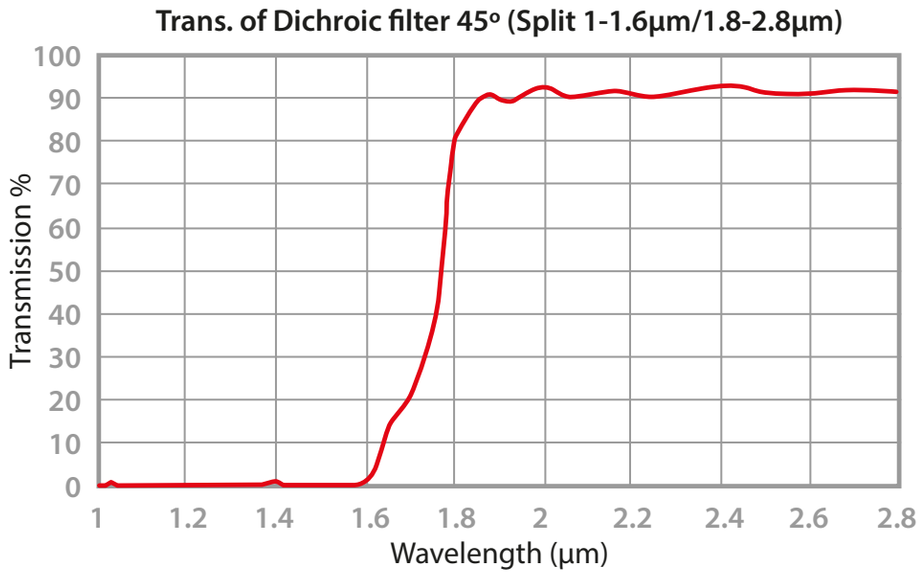
BEAM-SPLITTER FOR VISIBLE REGION TO SPLIT/COMBINE TWO BANDS 45°

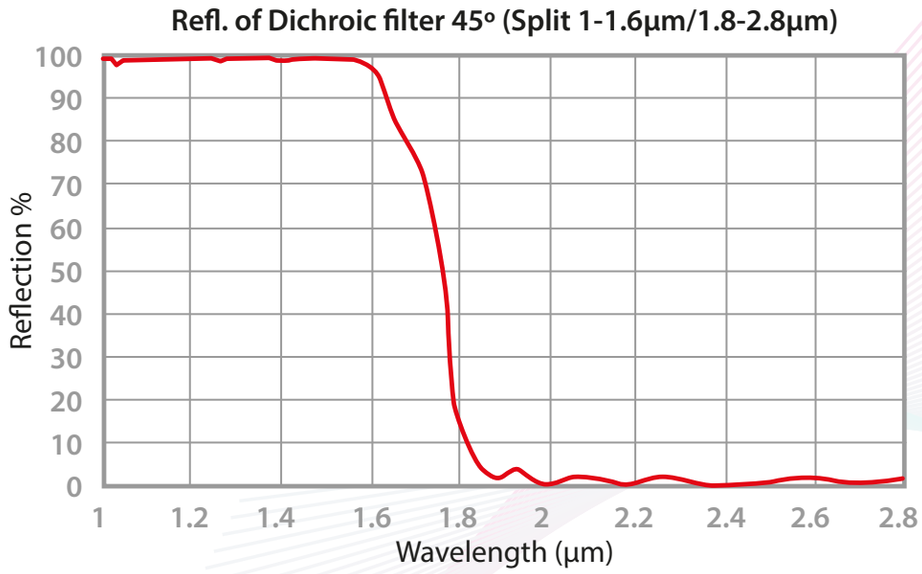




EXAMPLE 2:

BEAM-SPLITTER TO SEPARATE 2 BANDS IN THE MID IR REGION AT 45°

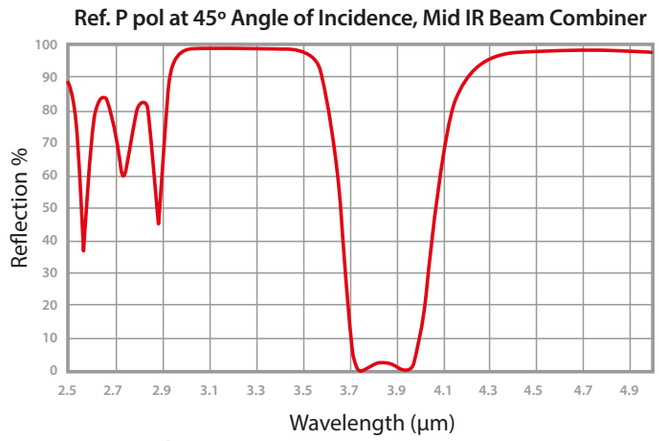


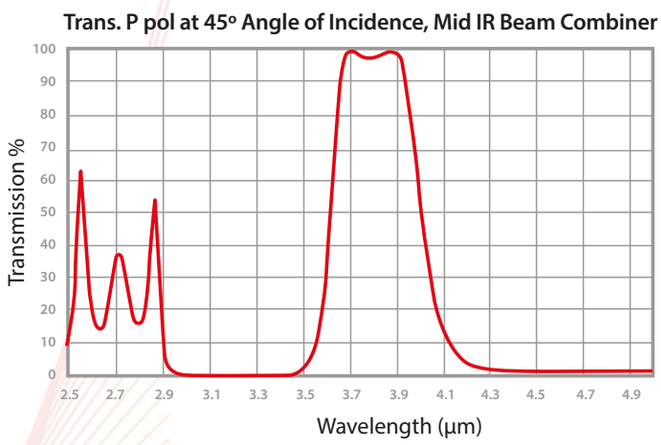


EXAMPLE 3:

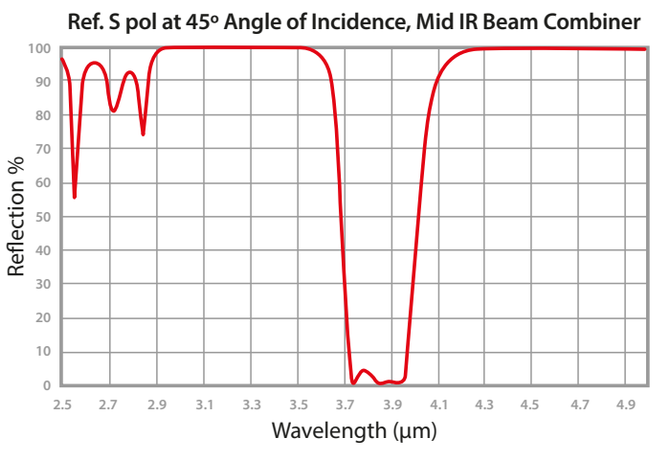
MID IR FILTER USED FOR SEPARATING S AND P POLARISATION BANDS AT 45°

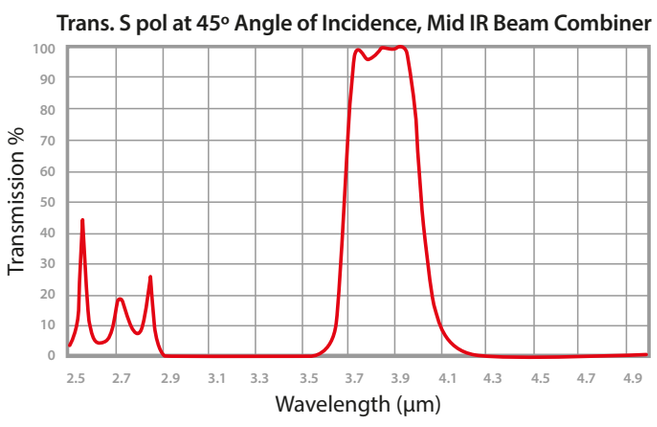
P Polarisation Performance Transmission and Reflection.





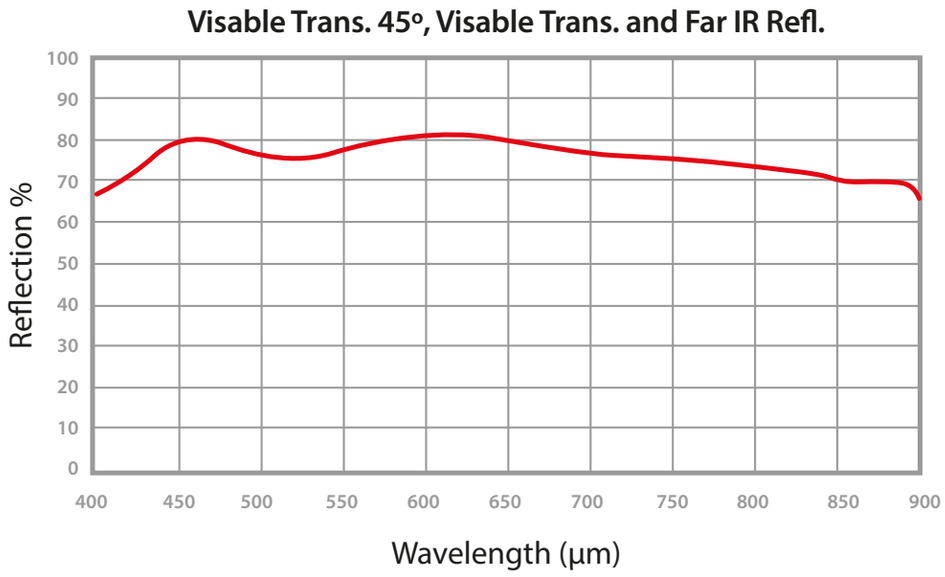
S Polarisation Performance Transmission and Reflection.

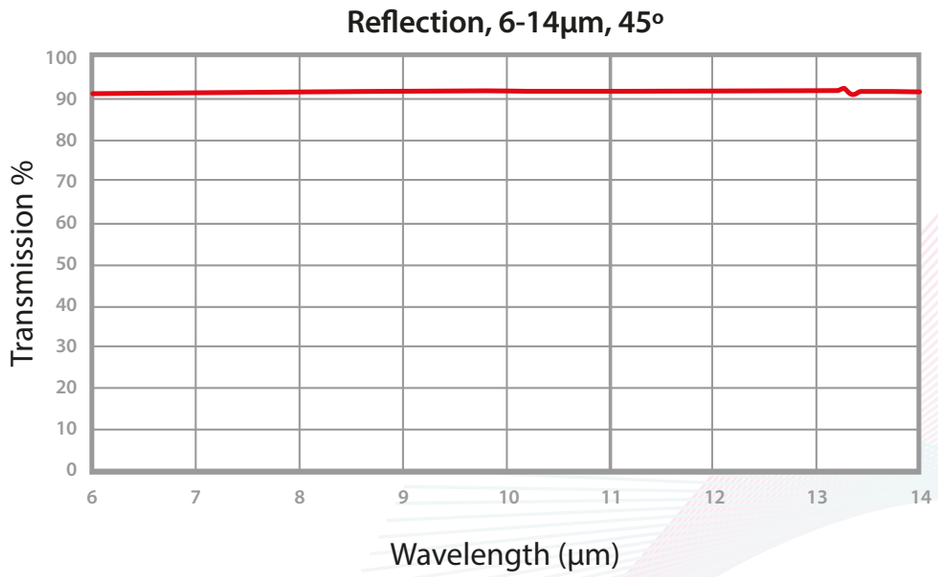




EXAMPLE 4:

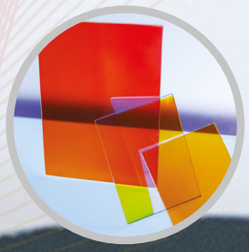
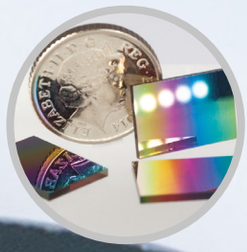
FILTER FOR SEPARATION OF VISIBLE AND FAR INFRA-RED AT 45°





ENVIRONMENTAL SPECIFICATION

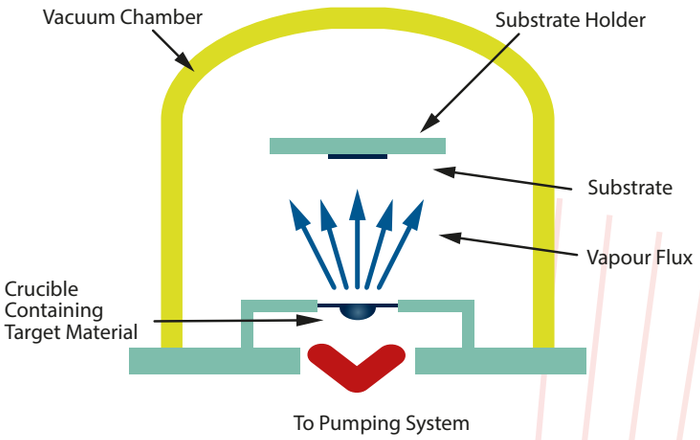
Adhesion	MIL-C-48497A	Para 4.5.3.1	PASS
Humidity	MIL-C-48497A	Para 4.5.3.2	PASS
Mild Abrasion	MIL-C-48497A	Para 4.5.3.3	PASS
Severe Abrasion	MIL-C-48497A	Para 4.5.5.1	PASS
Cleanability	MIL-C-48497A	Para 4.5.4.2	PASS
Water Solubility	MIL-C-48497A	Para 4.5.5.3	PASS

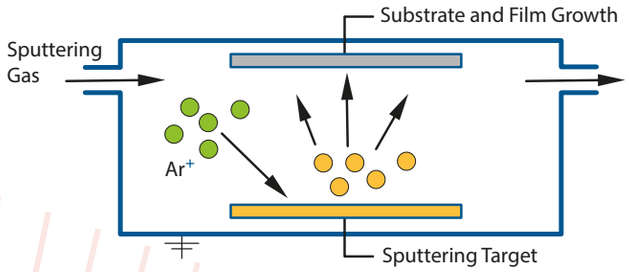

OUR TECHNOLOGY

Our filters are manufactured using sputter deposition rather than traditional thermal evaporation, both are illustrated below and the resulting film structure

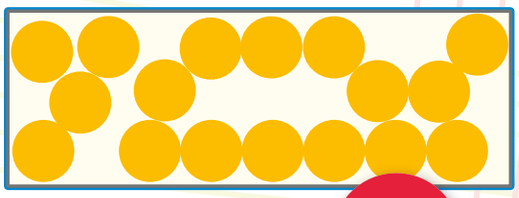
TRADITIONAL THERMAL EVAPORATION



SPUTTER DEPOSITION

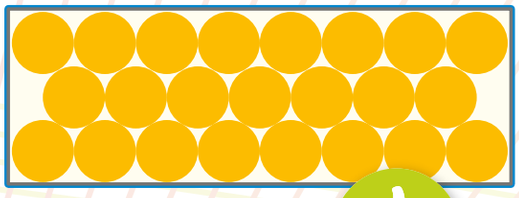


Open structure of traditionally evaporated coatings with gaps and voids.



Voids in coating. poor environmental performance. High shift with temperature change.

Densely packed sputtered coating with no gaps or voids.



Voids eliminated. Excellent environmental performance. Extremely low temperature shift.

Vortex Optical Coatings Ltd

Contact us to discuss your application

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EPIC European Photonics Industry Consortium

CERTIFIED ISO 9001:2015 COMPANY