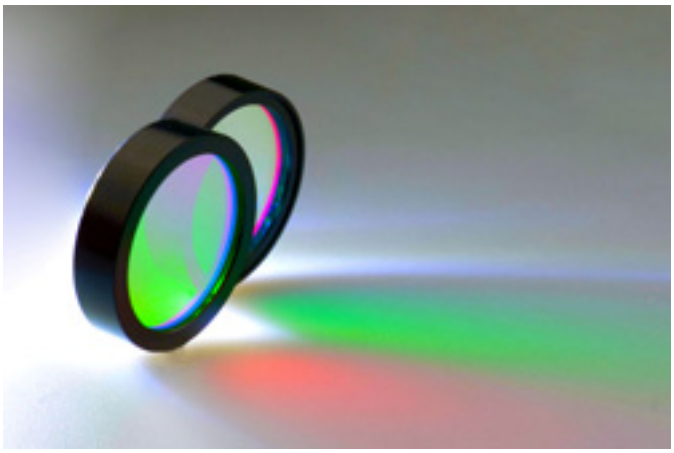
Choosing Suitable Technology

Artifex Engineering



Filters are optical elements with specific spectral transmission characteristics. They are used to modify the properties of a light source or to block unwanted wavelengths of light.

There are two principle types of optical filter: absorption filters and dielectric filters.

Absorption filters (colour filters) function on the basis of choosing a glass recipe with chromophoric constituents which absorb a specific range of wavelengths. Typically these are long pass edge filters, but some band pass types with limited functionality are available. Note that this filter type may fluoresce when used for blocking UV light.

Dielectric filters absorb very little light. The functionality is based on reflection of the unwanted spectral regions based on optical interference within the layer structure of the filter coating. In order to reduce the number of coating layers - and thus the cost - a combination may be made by dielectric coating a colour glass substrate. This is common for some band pass filters.

The following table gives an overview of the main criteria for deciding between these two filter types.

	Price	Power Handling	Angle Tolerance	Thickness	Malfunction	Reflection	RoHS Conform
Absorption	Low	Heating due to absorption: may break at high power	Wide angle tolerance	Level of blocking depends on thickness. Typ. 2-3mm	May fluoresce when blocking UV light	Low	Many types "No" but with "legal exeption" status
Dielectric	High in Small volumes. Low to mid in high volumes	Withstand high optical power due to low absorption	Functional spectrum blue shifts with angle	May be very thin eg 0.5mm	None	Low in transmission region, high in blocking region	Yes

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