

5.6 Filters

For display and decorative lighting it is sometimes required to change the colour of light emitted by a luminaire. This can be done by the use of filters, either absorption or interference.

Absorption filters are usually made of plastic or glass. They absorb the unwanted wavelengths and thereby raise their temperature. Plastic absorption filters are likely to change their properties if they get too hot. The transmittance of absorption filters is limited. Typical transmittances for different colour filters are:

Filter Colour	Transmittance	Factor	Result/Light
Red	20%	5	100%
Green	15%	6.5	100%
Blue	5%	20	100%
Amber	50%	2	100%
Yellow	80%	1.25	100%
Orange	40%	2.5	100%
Purple	25%	4	100%
Pink	15	6.5	100%

Table 7
Factors for calculation of light loss through filters.

NOTE 1 Above Figures are approximate and will depend on material and quality of filters and manufacturer. Manufacturer to provide exact information about light transmittance factors of filter used, for approval.

NOTE 2 Coloured light through filters is not designed to achieve same light levels as under white light! The main point is to consider the environmental lighting conditions and to design the coloured light to achieve effects, this may require to avoid white light near to coloured light effects, to allow effects created with minimum power input.

Another type of filter is the interference filter. Interference filters are more expensive and more exact than absorption filters and do not absorb the unwanted wavelengths. Rather, they split the light into two beams, one transmitted and one reflected; of two different colours (hence the name dichroic filters).