

10. UV-broadband filter types DUG 11 & DUG 11 X

The UV-broadband filter types DUG 11 & DUG 11 X are made of SCHOTT UV-transmitting optical filter glass of the type UG 11, whereby its typical secondary passband at about 720 nm within the red spectral range has been blocked by means of vapor-desposited hard metal oxide layers on both sides. These layers also function as protective coating against external influences. The types DUG 11 and DUG 11 X, in contrast to pure UG 11 filter glass, are much more stable with regard to intensive shortwave UV-radiation (solarization resistance), as the layer systems absorb or reflect this radiation to a greater extend and hence prevent it from penetrating into the filter glass.

Type	DUG 11	DUG 11 X
Spectral values		
Center wavelength λ_m [nm]	approx. 340	approx. 320
Half width HW [nm]	approx. 70	approx. 100
Maximum spectral transmittance τ_{max} within passband	≥ 0.7	≥ 0.7
$Q = \frac{\text{tenth width}}{\text{half width}}$	approx. 1.3	approx. 1.3
$q = \frac{\text{thousandth width}}{\text{half width}}$	approx. 1.6	approx. 1.6
Average value τ_{SM} of spectral transmittance within blocking range	$\leq 10^{-5}$ (below 260 nm) $\leq 10^{-8}$ (420 nm to 649 nm) $\leq 5 \cdot 10^{-6}$ (650 nm to 799 nm) $\leq 5 \cdot 10^{-4}$ (800 nm to 999 nm) $\leq 5 \cdot 10^{-3}$ (1000 nm to 1200 nm)	
Other properties		
Humidity resistance	MIL-Std-810 C, method 507, proc. 1 : 10 cycles	
Coating abrasion resistance	MIL-C-675 C, para. 4.5.10	
Coating adhesion	MIL-M-13508 C, para. 4.4.6	
Operating temperature ¹⁾	up to approx. 220 °C	
Notes	¹⁾ If operating temperatures over 100 °C are envisaged, please indicate on ordering so that appropriate measures can be taken in order to minimize the risk of breakage (e.g. by suitable thermal tempering of the filter glass).	

Table 17: Specifications of filter type DUG 11

Preferred dimensions [mm]	
External dimensions	Dimensions of utilizable area
□ 50 +0/-0.3	□ ≥ 46
Thickness ¹⁾	2 ± 0.2
Other dimensions on request	
1) Change of the thickness leads to changes of the spectral values.	

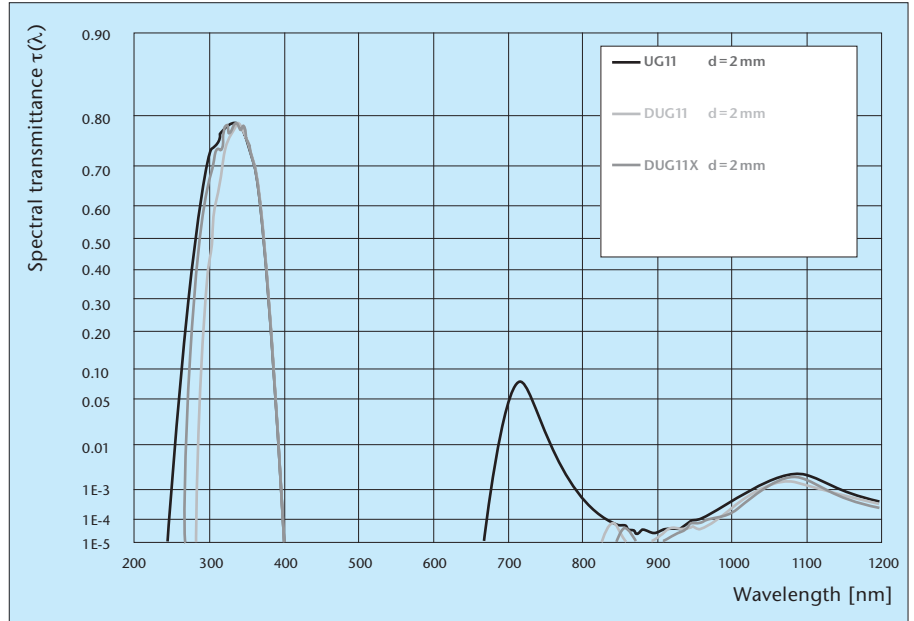


Fig. 29: Spectral transmittance curves (general curve) of filter type DUG 11 (thickness 2 mm), DUG 11 X (thickness 2 mm), to compare optical glass filter UG 11 (thickness 2 mm)