



# NEUTRAL DENSITY FILTER WHEELS



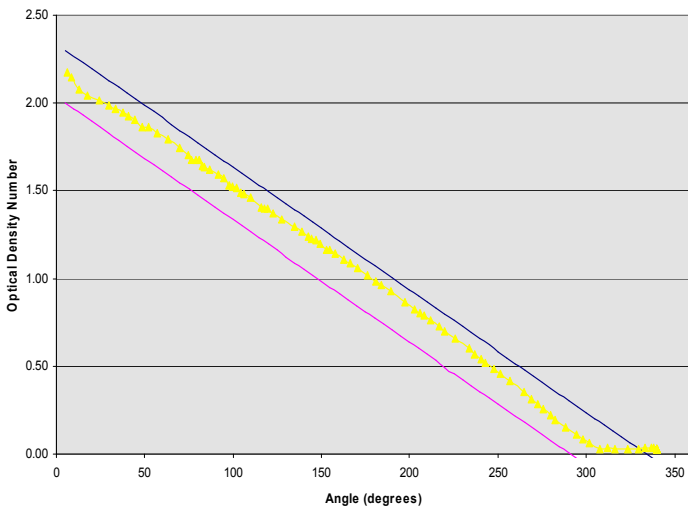
## Linear Filter Wheel

Torr Scientific make Neutral Density Filter Wheels in a range of sizes from 50mm  $\phi$  to 120mm diameter, and with differing optical densities 0-1, 0-2, and 0-3,

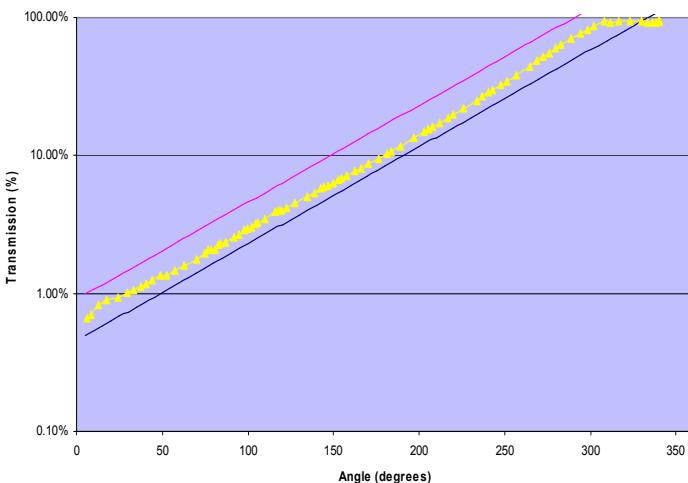
These filters are useful as beam splitters and for applications requiring variable light attenuation in a continuous analogue mode, such as in Spectrophotometers, laser measuring systems etc.

We use Laser quality Spectrosil for UV / VIS / NIR applications, and for its thermal stability.

All filter wheels are manufactured to tight tolerances especially parallelism to minimise beam movement with rotation (see below)



Neutral Density Filter Test



**Material:** Laser quality quartz/ Spectrosil  
Trans > 80% for 250nm <math>\lambda</math> <math><2500\text{nm}</math> - see over

**Optical Density Linearity:** +/- 6% (with angle)

**Coated Sector:** 300<sup>0</sup>

**Parallelism:** +/- 20 arc sec\*

\* 20 arc sec is equivalent to 80 $\mu$ m spot movement at 1 m. 3 arc min sometimes specified on low cost wheels is equivalent to 0.7 mm @ 1m

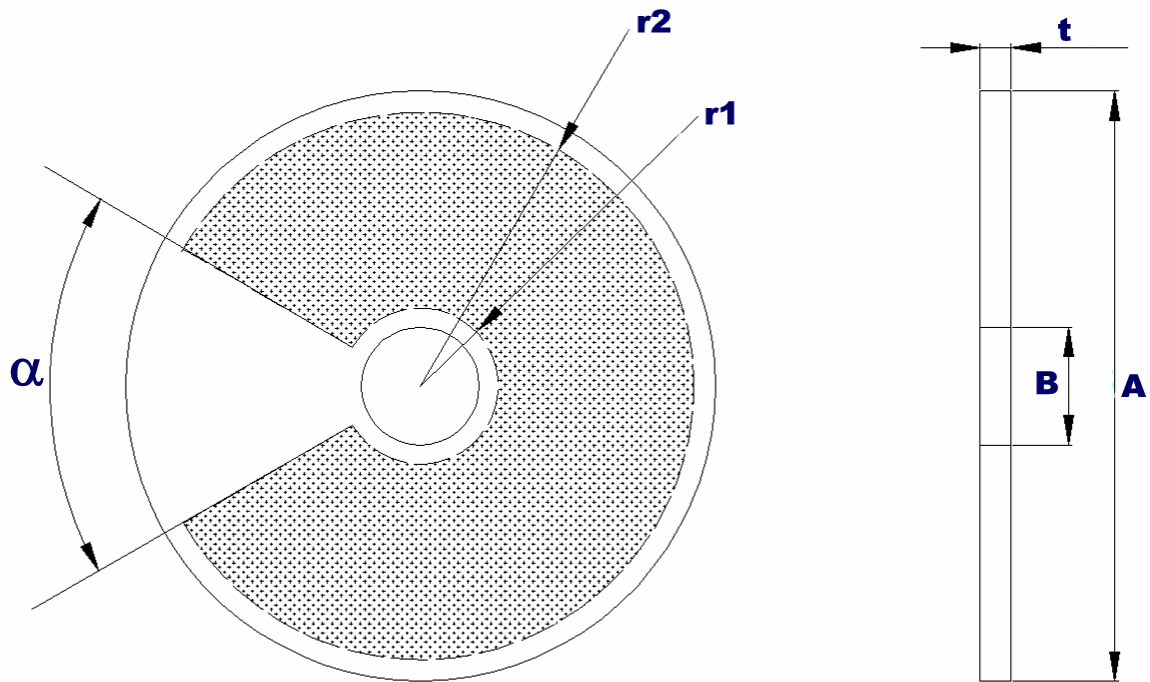
**Surface Quality:** 20-10 scratch / dig

**Coating:** PVD metallic alloy\*  
\* optimised for spectral neutrality

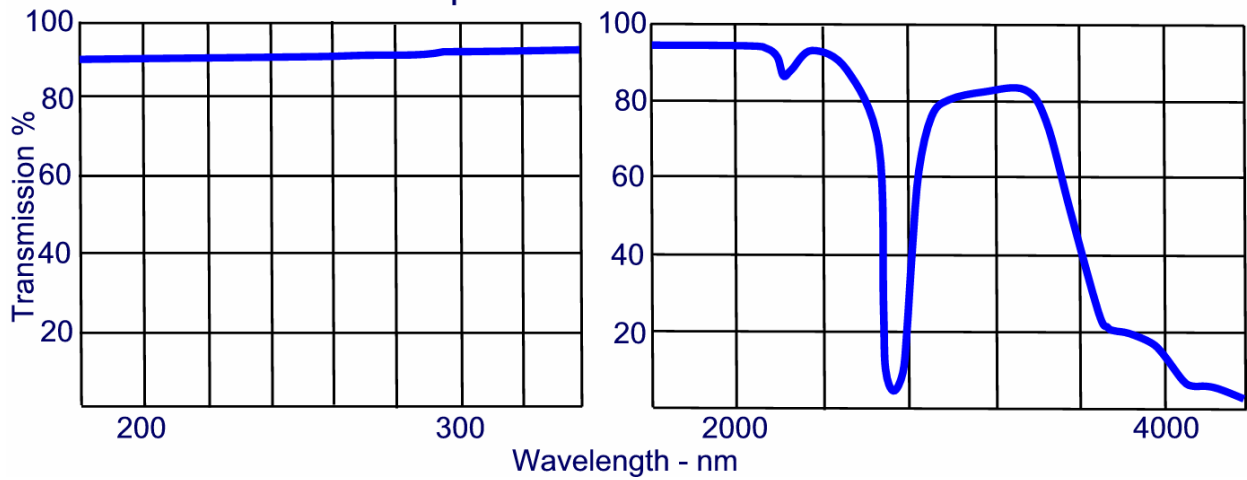
**Dimensional Tolerance:** <math>< +/-0.2\text{mm}</math>

Specially designed items can also be accommodated on request.

Each filter wheel is supplied with a test certificate - typical data for a non-standard density of 2.25 is shown on the left, and stays well within the specified linearity tolerance of +/- 6%



### Spectrosil Transmission



Product Designation	$\phi A$	$\phi B$	$r_1$	$r_2$	$t$	$\alpha$
LFW 50	50	15	10	24	4	55°
LFW75	75	15	10	35.5	4	55°
LFW100	100	15	10	48	4	55°
LFW120	120	15	10	58	4	55°

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