



Outback Western Australia – part of the Pilbara mining region

## How do you .....? make best use of Neutral Density & Polarising Filters

All dSLR lenses and better quality superzoom camera lenses are able to accept screw-in filters onto the front of the main lens. Panasonic FZ and mirrorless “G-series” cameras have lenses that can accept filters!

The purpose of a filter is to alter the brightness or colour or tone of the final image. A filter **DOES NOT** change or affect the focus of the lens.

Neutral Density (or ND) filters have a grey colour and the density varies across the range of filters. They are used to lower the quantity of light entering the lens, thus causing the shutter speed to extend -or- if the photographer chooses, to cause the aperture to open up to allow the selection of a smaller aperture number therefore creating less depth of field. For example, an ND-8 filter will cause a EV -3 exposure variation either opening the aperture by 3 units (called 'stops') or as most photographers use the ND filter for, to drop shutter speeds by 3 units. Polarising Filters are unique in that after installing onto the camera lens, the user then gently rotates the filter and watches the changing scene, stopping the rotation when the maximum or desired alteration is reached.

### About the author:-

*G'day .... a good Aussie greeting to friends*

*My photographic history / career started as a 10 yr old being given my first camera - a 120-roll film job. Then in the 1960s I went to 35mm & had several of them before going to a Pentax in the mid-60s, then through the 70s & 80s I expanded to four lenses and a second camera body. The lenses covered the range from 24mm to 1000mm*

*In 1975 I was invited to join the teaching staff at the Canberra [Australia] Adult Education college, offering several Photographic Techniques modules which I did part-time for many years and later full-time once I retired from my career in engineering and as an I.T. specialist. In 2006 I retired from college activities and took a modified college course to outback Australia, whereby we were offering up to 24 weekend workshops annually to small outback communities, cattle stations, sheep farms etc. Our motorhome accumulated over 400,000km over 15 years!*

*In 2015 we ceased this activity as my spouse wanted to spend more time by ourselves. We now tour Australia as 'photographic-tourists', spending between 250-300 days each year as travellers*

*In 2003 I went Digital with my first Fuji superzoom camera. I graduated to a Panasonic FZ-30 which was used for magazine work, then the Fuji was replaced with a Panasonic FZ-200. The FZ-30 was replaced by the Panasonic G2 plus several lenses, and it has now been replaced by the FZ-2500*

*Readers wishing to know more can email me if they wish*

*Regards and all the best in your photography,*

**Phil Jones**

These pages are set up for printing if you wish. I trust that you'll find these notes useful, and queries or suggestions are welcome. Unless otherwise acknowledged, all images shown within this document were created by the author and are copyrighted.

**Neutral Density Filters** - (or **ND** filters for short)

As mentioned above, Neutral Density (**ND**) filters have a grey colour and have a density varying from light grey to very dark grey. They are used to decrease the quantity of light entering the lens, thus causing the shutter speed to extend. They are given a code number relating to the fraction of light allowed through the filter. i.e. an ND8 allows 1/8 and an ND100 allows 1/100 of the light to transmit through the filter. You also need to remember that as the quantity of light being recorded is being reduced, longer shutter speeds will be used, and a tripod will also be required.



ND-8



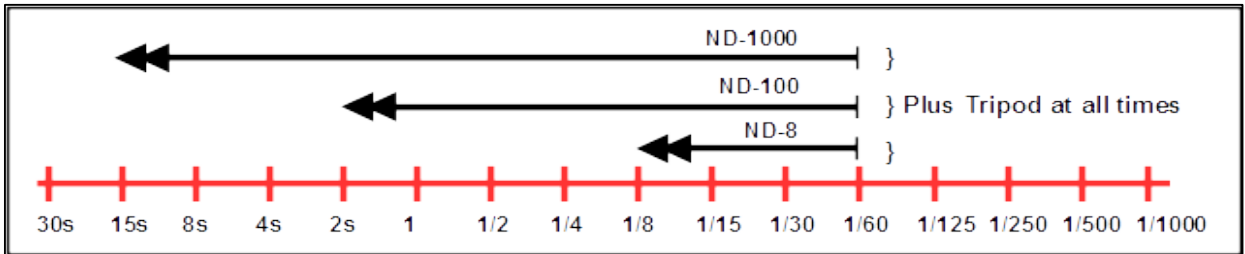
ND-100



ND-1000

**What will each of the above do with a selected shutter speed?**

Presuming that in a certain location the camera gives you an exposure of 1/60sec x F8. Presuming also that you want to record moving waters running over rocks in a stream, and would like an exposure "around 1-second" to get the woolly smoothness of water as it moves.



Using an ND-8 filter will drop the shutter speed from 1/60 sec down to 1/8 sec ... not enough for your needs. However if using an ND-100 filter, the shutter speed will drop from 1/60s down to 2 seconds – now a long enough shutter speed to record and display lots of water movement.

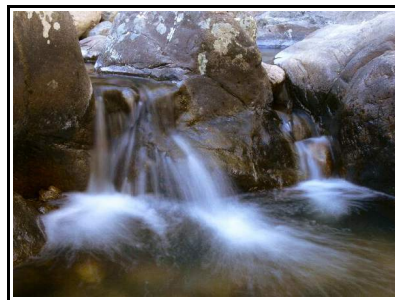
**Some samples from the author**



ND-8 ... 1/2-sec



1/8-sec



1-sec



ND-1000 ... 60 seconds



40 seconds



30 seconds



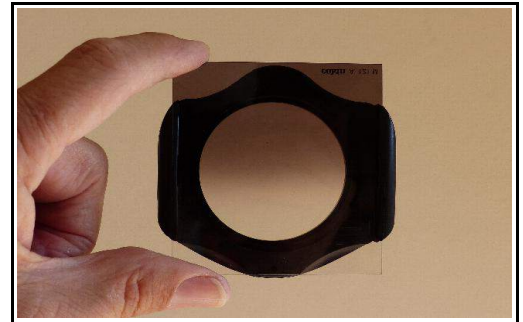
### Graduated tone filters- (or Grad filters for short)

these filters are a slightly specialised type of filter, and very popular with advanced and skilled photographers. They are made by a number of companies ~ the author's filters are made by Cokin.

Graduated filters are square and made from optical plastic – a specially made product, but easily scratched. They are fitted to the camera via a special adapter.



2 grad filters and 2 full-tone filters



a graduated ND filter inserted into the holder

The filter holder and the lens adapter ring. You screw the adapter ring into the main lens's filter thread, then push the filter holder onto the adapter ring. Once it is all in place, the grad filters are pushed into a slot in the filter holder. There are 3 slots for multiple filters should they be wanted by the photographer.

The big advantage via using grad filters is that the photographer can selectively alter a portion of the image – be it the top or the bottom of the image. The filter holder can also be rotated sideways should the user want to modify a vertical selection to one side of the image or another!

### Some samples from the author



Here you can see the effect of the grad on the sky leaving the lower half of the image unchanged.



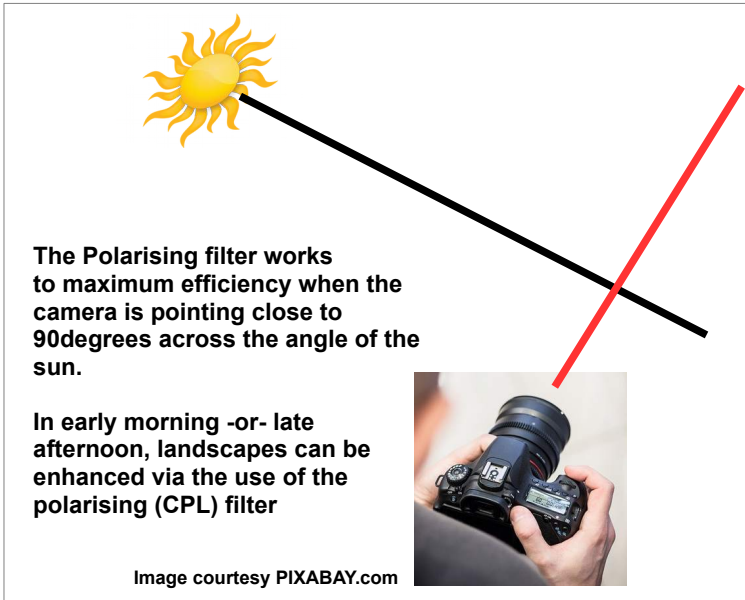
this image from central Australia had had the sky darkened via the grad filter, but the lower portion of the image remains at full brightness.

## Polarising filters- (or CPL filters for short)

CPL stands for Circular Polarising filter – the optical style used with digital camera sensors.

A polarising filter is used to a) darken skies so that clouds appear more vibrant, and b) to reduce reflections from water or glass surfaces. Because they have a grey tone (similar to the ND filters) there is some light loss when you use them.

Although sun light starts as a single-point source a long way away, when it reaches our eyes it has come through the earth's atmosphere dust and all, bounced around a few clouds, reached the surface of the earth before being reflected back into the sky and onto whatever it is that has caught our eyes. The colours that we see are the regular, everyday colours that we are used to, so our vision accepts things as we see them. However by using a polarising filter, we can delete much of the reflected light and retain the pure light and its colours.



The actual filter consists of 2 parts, tightly connected together. The user screws the filter onto the lens in the usual way, then gently rotates the front portion of the filter and watches the changes as they take place. One stops rotating when the desired effect is achieved.



Image courtesy Amazon

If you look carefully, you will see the grooved ring for attaching the filter, and the top ring (labelled Polariser) ready to rotate as needed.

## Some samples from the author



No filter in use



CPL filter in use

**Note: a polarising filter is NOT left on the lens all the time – it is used selectively according to the subject and lighting conditions. Because the Pola filter consumes 1-1/2 EV of light, when it is left on the lens all the time, it causes your shutter speeds to slow down by the same amount for every photo you take, maybe creating unintentional camera shake issues.**

**ps- the filter that is often attached permanently is the “UV” filter, often sold to beginners for 'lens protection'**



Landscapes with polarising filters used



Polarising filters are also used to remove reflections from water & glass surfaces



non-polarised image



polarising filter used



non-polarised image



polarising filter used



non-polarised image



polarising filter used

## Warning – there are counterfeit products widely sold across the internet ...

When you decide to buy some filters, please buy from an acknowledged photo industry source and avoid cheap, often poor quality counterfeit copies sold over the internet.

Some cheap filters have ripples in the glass causing your image sharpness to be badly degraded.



Counterfeit on the left, genuine on the right