

GETTING THE EFFECT WITH A NEUTRAL DENSITY FILTER

by Bruce Bouley

There are many times when taking photographs that the time of the day just doesn't work out for you to get the effect you want. Most of the time the amateur photographer will take scenery type photographs between 10:00 AM and 5:00 PM during the summer months and from between 10:00 AM and 3:00 PM in the winter months because of the time changes in the United States.

These times of the day are good; however, they are not always the perfect time to get special types of photographs because the bright sunlight can cause you to shoot at high shutter speeds causing action to be frozen.

There maybe times when you are a motorcycle race or auto race where you are trying to get a blur effect in the photo to show speed. You maybe able to pan the image (follow the image from left to right or right to left which ever motion the subject is moving in and snapping the shutter as you pan the image, this will blur the background showing motion but will do little to placing a blur effect on the subject itself.

Then there is that beautiful water fall that you come across when you're on vacation. Now is your chance to take the photo you always wanted to take. Flowing water on the falls showing a bridal veil effect. A Photo that will depict the water from the falls to show a soft flowing motion not the routine jagged water over the rocks.

However, again with the normal bright sunlight this is truly hard to accomplish. Since even using a small aperture f11 or f16 (lens opening) will more then likely create a fast enough shutter speed to freeze the motion of the water ruining your effect.

These are two incidents where going back at a different time of the day to get the photo you initially wanted is more then likely not possible. If you are on vacation and trying to take that waterfall shot it is probable that you will not have the time to wait around to evening so you are able to get a slow enough shutter speed to capture the veil type shot. In the race scenario, even if they run at night, the shutter speed then maybe to slow and the subject will be totally blurred out.

SO WHAT DOES A PHOTOGRAPHER DO?

To the rescue comes one of the best and least expensive of the filters to have in your photography bag. The infamous **Neutral Density Filter**.



Tiffen Neutral Density Filter

A **neutral density filter** or **ND filter** is normally a grey filter but can also be colorless. The ideal neutral density filter reduces and/or modifies intensity of all wavelengths or colors of light equally, giving no changes in hue or color rendition.

The purpose of standard photographic neutral density filters is to allow the photographer greater flexibility to change the aperture, exposure time and/or blur of subject in different situations.

The photographer can add the ND filter to limit the light entering the lens instead of reducing the aperture to limit the light. The photographer can then set the shutter speed according to the particular motion desired (blur of water movement, for example) with the aperture set as needed (small aperture for maximum sharpness or large aperture for narrow depth of field (subject in focus and background out of focus)).

The nice part of using the digital camera, the photographer can see the image right away, and can choose the best ND filter to use for the scene being captured by first knowing the best aperture to use for the maximum sharpness desired.

(NOTE: *I will usually use the aperture priority setting on my camera when using the ND filter. I then can control the aperture and the camera will make the adjustment for the desired shutter speed. Also, remember you may be working at real slow shutter speeds so a tripod may be in order, unless you have a real steady hand.*)

Examples of the ND filter use include:

- Blurring water motion (e.g. waterfalls, rivers, oceans).
- Reducing depth of field in very bright light (i.e. daylight).
 - o When using a flash on a camera with a focal-plane shutter exposure time is limited to the maximum speed -often 1/250th of a second, at best- at

which the entire film or sensor is exposed to light at one instant. Without an ND filter this can result in the need to use f8 or higher.

- Using a wider aperture to stay below the diffraction limit.
- Reduce the visibility of moving objects
- Add motion blur to subjects

ND filters are quantified by their optical density or equivalently their f-Stop reduction as follows:

	lens area opening, as fraction of the complete lens	Filter Optical Density	f-Stop Reduction	% transmittance
	1	0.0		100%
ND2	1/2	0.3	1	50%
ND4	1/4	0.6	2	25%
ND8	1/8	0.9	3	12.5%
ND16	1/16	1.2	4	6.25%
ND32	1/32	1.5	5	3.125%
ND64	1/64	1.8	6	1.563%
ND128	1/128	2.1	7	0.781%
ND256	1/256	2.4	8	0.391%
ND512	1/512	2.7	9	0.195%
ND1024	1/1024	3.0	10	0.098%
ND2048	1/2048	3.3	11	0.049%
ND4096	1/4096	3.6	12	0.024%
ND8192	1/8192	3.9	13	0.012%

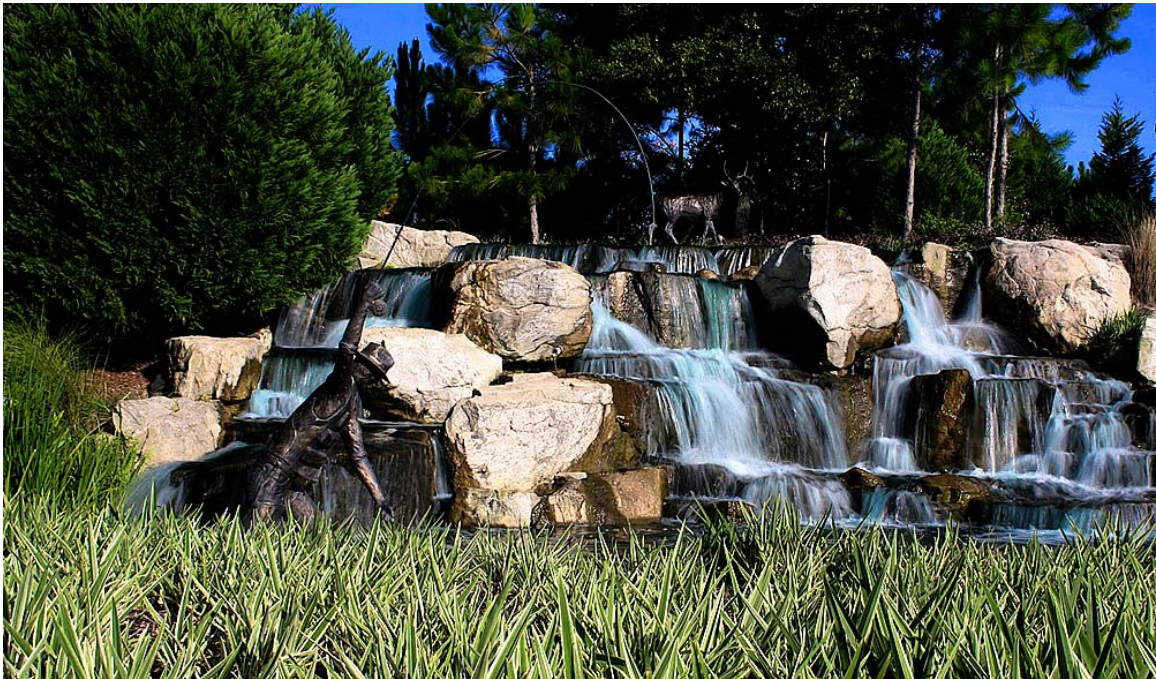
Another practical way of determining what type of ND filter to use is by the percent of light that the filter allows to pass (transmittance). Here is a more complete list of Filter Optical Density versus percent light transmitted:

When I was looking for ND filters I searched on Amazon.com and was able to find a set of 3 Tiffen 58mm ND filters with the densities of 0.3, 0.6 and 0.9 for around \$59.95. However, search the net for other good deals on ND filters. Also, remember that to get the desired effect you can also stack the filters. You can take a 0.9 and stack it with a 0.3 to get a density of 1.2. With these three ND filters there is any number of combinations.

Photo 1 below was taken with the Canon EOS DSLR with an 18-55mm lens with no filter. It was taken at approximately 10:30 AM in bright direct sunlight. The Aperture was set at F8, shutter speed 1/500 with ISO 100. As you can see the waterfall looks nice but the bridal veil effect is not there.



Photo 2 below was taken with the same camera and lens with a 0.6 ND filter. It was taken at the same time as the one above in bright direct sunlight. The Aperture was set at F32, shutter speed $\frac{1}{4}$ and ISO 100. As you can see the waterfall now shows the bridal veil effect.



The ND filter was able to give me the desired effect but keeps the exposure of the images basically the same.

I highly recommend the kit of ND filters mentioned above or if you can't afford the entire kit the 0.6 ND filter is the first one that I would put in my bag. If you have a polarizer, which most photographers that shoot scenery have, you can stack the 0.6 ND Filter and the polarizer and achieve a nice effect in getting that small aperture and slow shutter speed.

I hope this article will help in choosing an excellent filter for your camera. As you can see the ND filter can be used in a variety of ways. Enjoy and go out and experiment.

Bruce Bouley

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Reference: [Neutral density filter - Wikipedia, the free encyclopedia](#)