

# NEUTRAL DENSITY FILTERS

UNIFORM - GRADUATED SHADING - NEUTRALITY - TRANSITION - ADJUSTMENT



**DESIGNED so that absolutely no colour** from the entire visible spectrum prevails, the COKIN® neutral density filters can be used in many different contexts, depending on which type is used: uniform shading (square) or graduated shading (rectangular).

**In the first case**, they uniformly reduce the quantity of light that reaches the film - or the sensor - increasing the exposure time. The filters have 3 main practical applications: emphasizing the flow of movement, reducing the depth of field or avoiding overexposure.

**In the second case**, they are used to reduce the contrast difference of a composition in film as well as in digital photography. They allow for a well-balanced image; they are the filters most used by landscape «pro» photographers to yield both harmonious skies and detailed foregrounds at once.

**In both cases**, they are offered in 3 gradations - equal to 1, 2 or 3 stops - and can be used individually or combined as necessary in order to extend their range, whether shooting in black and white or colour.

☺ **With these filters, images can be created which are impossible** to obtain in digital post-processing. When an excess in contrast has produced a sky whose level is set to 255, no software filter will ever bring back either pixels or detail. The neutral density filters are also currently used in filmmaking and video. When they are not simply irreplaceable, the need to maintain a constant shutter speed compels their use.



Here is a type of image impossible to achieve without ND Gradual filters. It was made with a 121 M and a 121 S overlay; the discrepancy between the sky and the foreground is 5 stops. One can thus capture the harmony of the entire composition, the darkening of the trees on the right - linked with the usage of filters - rests very acceptable.  
 > Photography A. Kime

## UNIFORM NEUTRAL DENSITY FILTERS



**Faithfully NEUTRAL**  
 Thanks to their exclusive tinting procedures and their continuous and rigorous quality control during the entire manufacturing process, COKIN is able to offer absolute neutrality for the entire visible spectrum with each of its professional neutral filters.

Filter 153  
 > Photography Lee Frost

**Prolonging** the exposure by 1, 2 or 3 stops is very useful for emphasizing the fluidity of water, accentuating the movement of waves, suggesting the rustling of wheat fields or capturing the bustle of passers-by... Thus, an ND4 (0.6) filter slows the shutter speed down from 1/15 to 1/2 second, a considerable amount.

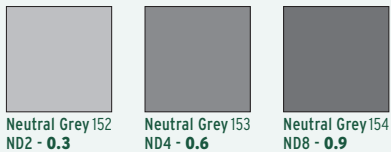
● The reduction of the light intensity allows for saving of 1, 2 or 3 stops and reduces the depth of field by just as much, thus focusing the attention on the principal subject.

● In digital, certain sensors are very sensitive to the diffraction whose effects become visible as from f/11. A neutral density filter can prove to be very useful for avoiding optical loss!

● In filmmaking and video, these filters are often used because the shutter speed is, apart from variable shutters, dependant on how quickly shots are taken. If one wishes to be able to play with the depth of field, or avoid overexposure under intense lighting, they provide a unique solution as simple as it is effective.

● Finally, in certain very bright environments, at high altitudes for example, and with a sensitive ISO, only a neutral density filter allows for the correct exposure. With a catadioptric lens, this type of filter is the only safeguard against overexposure.

COKIN also offers numerous other filters of neutral density for industrial or scientific use, as in the control of long processes or sun photography. For more information please contact your local distributor or contact COKIN directly.



- **NEUTRAL GREY ND2**: neutral optical density 0.3, factor 2, expo +1 stops, for fine adjustment.
- **NEUTRAL GREY ND4**: neutral optical density 0.6, factor 4, expo +2 stops, everyday use.
- **NEUTRAL GREY ND8**: neutral optical density 0.9, factor 8, expo +3 stops, very useful in video.

## NEUTRAL DENSITY GRADUAL FILTERS

**These** filters offer on the one hand, a zone of density that is rigorously neutral - absorbing 1, 2 or 3 diaphragms - and on the other hand, a completely transparent part, separated from each other by a transition zone that can be short or long. They are used either way, alone or combined, depending on the requirements of the composition. One can also combine them to other filters, such as a polarizing or warm filter (see pages 25 and 37).

● The neutral density gradual filter lets you bring the difference in contrast down to the limit of tonalities that film or sensor can record. When the accuracy of the exposure with 12-bit digital SLR cameras is

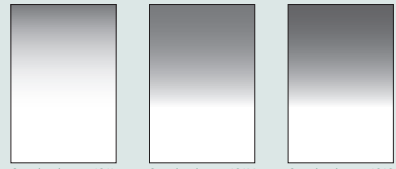
as essential as with slide film, one immediately grasps the importance of these filters from the time of the shooting.

● The remarkable efficiency of these filters is accompanied by the reliability of optical performance as well as the absolute neutrality of the chromatic balance of the image. When well-handled, this type of filtering is undetectable to the untrained eye.

☺ If their best-known use is in controlling the brightness of skies, these filters find their justification each time that the light level of one part of the image surpasses the range of tints reproducible by the recording medium: a partially lit street or a ray of light piercing the undergrowth, for example.

☺ Even a grey sky can benefit from the action of a neutral density gradual filter!

☺ These filters can also favour the effect of blurred movement in one part of the image, alike uniform neutral density filters.



- **GRADUAL GREY ND2**: neutral optical density 0.3 (upper part), factor 2, expo compensated for around 1 stop on the upper part, long transition, an additional choice for touch-ups.
- **GRADUAL GREY ND4**: neutral optical density 0.6 (upper part), factor 4, expo compensated for around 2 stops on the upper part, long transition, the usual choice for slide.
- **GRADUAL GREY SOFT ND8**: neutral optical density 0.9 (upper part), factor 8, expo compensated for around 3 stops on the upper part, long transition, the right choice for negatives film or digital.

### TRANSITION

#### Long or short ?

With long transition filters (all the Z-PRO graduated filters except the 124 & 125), passage from density to transparency is very gradual, while with the short transition filters, it is much more abrupt.

The first filters, by far the most often used, are more tolerant as to their placement and adapt themselves to subjects where the break in contrast is irregular or not well defined; thus, the filters of the second type are reserved more for images whose «horizons» breath are well-marked. Their adjustment, both vertical and horizontal, must be more precise.

### HOW TO CHOOSE and USE a COKIN Neutral Density Gradual filter ☺

• To decide which filter density to use, you just need to **measure** - preferably in manual mode, spot measuring with the TTL of your SLR camera or with a separate spot-meter - the clear zone where you wish to keep the detail and the zone that will be used for the final exposure. Then **count the number of stops difference** - at constant speed - and round up to the lesser normalized value. Thus, 2<sup>1/2</sup> stops will be rounded to 2; you will then need a density of 0.6 (ND4).

Take care however to **modulate your effect** depending on the subject; for example, a reflection must be less bright than its source. Case in point: a snow-covered mountain that is reflected in a lake and becomes duller than its reflection!

Finally, depending on the way that the zone separating light and shadow

presents itself, you will choose either a **short or long transition** zone filter, the latter being by far the most frequent. In our example, this will be a 121M long transition filter.

• You must then **adjust the filter** - close the diaphragm as much as possible by pressing the depth of field preview button to better see the transition zone in the viewfinder while adjusting the filter vertically (in its groove) until its transition zone corresponds perfectly with the light intensity line of your framing.

This test must be carried out in the viewfinder, as the effect of the filter - while visible to the naked eye - depends both on the lens and on the diaphragm setting. The more the aperture is reduced, the more the effect of the graduated shading will

be noticeable. Note that the type of film - like capture settings in digital photography - has an impact on what the filter can do.

• **Reset the diaphragm** and expose for the foreground. Note that modern SLR cameras perfectly manage this type of filter via their matrix metering.

With experience, you will determine at a glance the filter you need to use and it will only take you a few seconds to adjust it efficiently with precision. Until then, if you're just starting out, systematically take photos both with and without filters to familiarize yourself with their use...

In practice, the ideal is to use the 3 available densities (special sets are available from COKIN).