

Colour deviation (shift) will be more apparent in darker images compared with lighter ones. For this reason we recommend that density be corrected before colour deviations.

Make use of this fact of natural science if you are not able to reach the solution of a difficult photograph. Do a print lightly underexposed, it looks sometimes better.

The exact filtering gives you the optimal basic filtering for all succeeding photographs of this series. For the correct setting of your exposure timer you now have to calibrate it again.

Analyzer programming

Take a colourgrey card photograph taken at a standard value corresponding to 5500° Kelvin colour temperature. Most electronic flashes produce such a light. The correct filtering of this standard light grey card photograph gives you the basic filtering.

Or use an idealnegativ, i.e. our **Colour-Gray-testslide N° 8858 and N° 8857**.

To program your analyzer you proceed similarly as with the exposure timer. Instead of turning the control for the guide number, you set the instrument to mid-zero with the control for the colour channels. For those photo series where other colour temperatures were used, you only have to align to zero by changing the filtering values of the preceding grey card shot. This filter setting is valid for the whole succeeding series.

When using Positiv-Analyzers we recommend additionally our standard strip for the **TPA DES 100 (EICHFOLIE N° 4959 or N° 4957)**.

Densitometer

Although it is customary to zero densitometers to white, we recommend the zeroing to neutral grey, as you then have an exact reference value.

White is not usually pure white and not light enough. You have to reckon with minus-values, correct white would have the conversion factor -0.75. White is usually a bit above that, e.g. 0.07, then you'd have the conversion factor -0.68 etc.

To avoid constant calculations you can determine your value for white once and then set your densitometer especially to 0.07 for white instead of zero. That way you avoid a displacement of the whole scale.

Attention: *Densitometer-values are not in all cases compatibel!*

To compare its values the densitometers must have unanimous technical features:

- . same principle of measurement, i.e. with/without polarizationfilter
- . identically charakteristik of filters (small or wide band)
- . they should be calibrated to the same density reference
- . you should set the same slope faktor

Sudwalde, December 2005

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The reference card may only be pictured as a reference by working out your own pictures.

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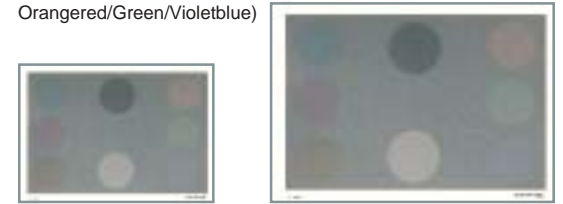
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4958 / 4930 COLOUR-GREY CARD (half/standard) A5/A4

Technical Datas

Format	half 8 1/4" x 5 4/5" / standard 8 1/4" x 11 5/8"
Thickness	1mm
Material	Polystyrène (frostwood) white, washable
Colour Stability	7-8 Blue Wool Scale
Colour	Neutral Grey ND=0.75 (17,68% reflexion) 2 ± 5 resp 10 densitys neutral grey = 0.70(0.65) and 0.80(0.85) log D.
6 Colourgrey circle	6 ± 5 densitys Y/M/C-O/G/V (Yellow/Magenta/Cyan Orangered/Green/Violetblue)



Application

The colour-grey card is a help in those situations where you require a reference value for a correct reproduction. As you cannot take the object that you want to photograph into the darkroom for comparison, you just proceed the other way round. Photograph the card on the spot together with your object and then later compare your photograph in the darkroom with the original card.
More details follow.

As the card is used in the open air, high demands are put on its durability. That is the reason why we have made it washable, strong and highly fade-resistant. Nevertheless you should treat it with care. Exposure to the sun or other bright light for some time does not harm it. Over longer periods, however, you should keep it wrapped up to avoid colour changes over the years.

If the card has got dirty, wash it only with water and a little washing-up liquid or, even better, with a plastic cleansing agent. Never use a solvent or a detergent. Avoid scratches.

The card is intended to last a photographer's life-time.

You do not, however, have to be overcareful. *The grey card can stand a lot.*

For those of our customers who are irritated by the white border on the card, we recommend the following: Slit the card on the back with a stanley Knife, then you can break it; that way you can remove the white border. The card can also be split in this way.

The white border is a result of production techniques and prevents wear of the grey area.

Grey is not grey

There is a genuine grey and one that is not genuine. Under certain circumstances you cannot differentiate the two visually.

Genuine grey has a diffuse reflection independent of the wavelength of the illumination, as achieved nowhere as ideally as by the **FOTOWAND-Colour-Grey-Card**.

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In other words: **The same percentage of light is reflected, independent of the light conditions, independent of the colour of the light.** A non-genuine grey, however, can have a strong varying remission, i.e. the light can be reflected differently according to the colour of the light.

Under certain light conditions genuine and non-genuine grey can seem identical. Seen under different light the difference appears. *The neutral grey is an absolute value.*







Exposure measurement

The exposure meters of most cameras are set to an average value, the middle grey value, also called **neutral grey**. It corresponds to the average distribution of light of most subjects.

As those values are only average values, these meters are bound to fail in non-average situations. A pale complexion or a winter landscape is inevitably reproduced too darkly; a dark complexion or a twilight atmosphere too lightly.

Most photographers come across this phenomenon when the shining white winter landscape turns out as the most dirty grey.

The exposure meter shows a value which makes the area in question grey; black turns to grey, i.e. *too light*, white also turns to grey, i.e. *too dark*.

SUBJECTS	RESULTS
 <i>average</i>	 <i>ok</i>
 <i>winter-landscape</i>	 <i>too darkly</i>
 <i>coal-stock</i>	 <i>too lightly</i>

In such situations it will help you to substitute the grey card to get the right exposure. Because the eight additional fields of the color-gray card will compensate each other it can be used as a normal neutral grey card for exposure measurement.

The grey card has to be placed next to the object facing the camera. In the case of a strong deviation of light direction - that is, the direction of the object to the strongest source of light: sun, sky, lamp - from the shooting direction; for example when the sun comes from the side, you hold the grey card between camera and main light source; that is, at an angle in the middle of both directions.

Always hold the exposure meter at a distance of 7 to 10 inches in front of the grey card without throwing a shadow on it.

If you are using the built-in exposure meter of your camera and this has an integral and centre-accentuated metering system, please take care to focus the card in **full format**, otherwise the measuring will be wrong.

Neutral grey

We presume a normal range of subjectcontrast of 1:32. To enable a comparison of exposures despite different contrast ranges, the exposure meter of the cameras were set to the average value of contrast range.

This results in an average grey value (our neutral grey) of density of **ND = 0,75** (resp. a **transmission or reflection of 17,68%**).

Here is the formula for those who want to know how to work that out:

ND = neutral density, C = contrast range
Y% = percentage of transmission, R% = percentage of reflection

$$\text{Neutral Grey ND} = \frac{\log C}{2}$$

$$\text{Y\% resp. R\%} = \frac{100}{C}$$

The average density can be regarded as a log. of the reciprocal value of the reflection.

Development

Place a photograph of the grey card taken under the same light conditions in front of every series of photographs. This should neither be overshadowed nor brightened up. This photograph is an objective value as you have now as it were stored the light conditions.

In processing you should use your working results (exposure and developing time) to achieve the reproduction corresponding exactly to the grey value. You should put attention mainly on the density and try to reach an approximate grey. Last color deviations you should remove in the further step. For that you should do four partexposures, respectively with double time or half the blind. Through comparison with the original card you will find the correct value. The two big fields $\pm 5/10$ Dens will give you a help of orientation. ± 5 log Dens corresponds 1/6 blind or time value. If you remain in between the tolerance of this densityfields you will be **very close** to the right value.

Next steps follow.

Setting of the exposure timer

The above described working results of your referencecard photograph have given you the values for setting your exposure timer. Place the measuring probe of the timer under the projection of the negative of the referencecard and set the time that you have determined in the course of your test enlargement. Now set the instrument to mid-zero with the control for the paper guide value. Thus you have achieved the testing of the paper guide value. Take a note of the value, it is relevant for the paper used.

From then on you need not work out the grey card photograph every time you take a series of photographs under different light conditions. You just set the determined paper guide value, place the measuring probe on the enlarger easel and then set the correct exposure time with the time control by setting the meter to mid-zero. This time value is valid for the whole following series of photographs.

Colour-cast filtering

One can see colour casts easily in neutral grey.

Our eyes react more sensitively to neutral grey than to colours. This is due to the adaptability of our eyes, their aim being to produce the complete totality of colours. Every extreme stimulant disturbing this balance is weakened in the direction of grey.

That way we can differentiate well fine shades of pale colour or various shades of grey. We see them almost like under a magnifying lens.

Shades of stronger colour are much harder to differentiate. That is why colour photographs do not have to be so exact (a fact that some colour film manufacturers make use of in their advertising campaign). Well balanced and finely adjusted colour compositions are, however, harmed by the slightest deviation.

Each of the 6 colourfields have a deviation of ± 5 (resp. ± 10) dens from neutral grey in its direction. Watch the fields closely and remember how they are titled (left Y/M/C, right O/G/V). So you can realize the tendency of the deviation easier.

Find the correct working values again, this time the correct filtering. Colour saturation (exposure time) and colour cast (filter) you can easily realize. The teststrips for searching the correct exposure time determines almost the direction. Do some teststrips until you will reach the tolerance of the six colourfields.

Try to achieve the correct value of the neutral grey, after analysing the remaining colour deviation through comparison.