





The 35mm SLR Photo SourceBook

Section 4

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UV FILTERS

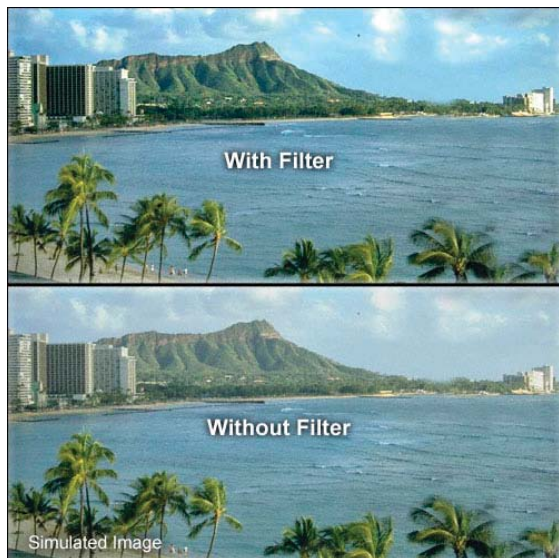
The B+W Difference

Most other filter manufacturers start with ordinary window glass that has been poured in thin sheets and cooled quickly, introducing internal flaws. B+W filters, on the other hand, start with a cylinder of Schott German optical glass from which the filters are diamond cut, precision ground, and then polished to ensure flatness on both surfaces and uniform thickness throughout. Every B+W filter is interferometrically tested for plane parallelism. This process is used routinely by the world's leading lens makers, but only rarely by filter manufacturers.

To reduce unwanted reflection and lens flare, which can seriously degrade the image contrast and resolution, B&W gives their filters a single coating on both sides. This guarantees that the high MTF performance of your lens is maintained exactly as the lens manufacturer intended it.

You can also purchase filters with Multi Resistant Coating (MRC).

Developed by B+W, Multi Resistant Coating (MRC) technology is not only an enhanced process that assures virtually complete elimination of surface reflections on both sides of each filter —maximizing light transmission— it also offers an extraordinary hardness that minimizes scratching and its water- and dirt repelling surfaces facilitate the care of filters. Finally, most B+W screw-in filters are mounted in a matte black, corrosion-free brass ring, further reducing surface reflections and minimizing distortion or binding of the filter to the lens, even during rapid temperature changes. All filters must pass manual as well as automated tests to insure that each and every one that leaves the factory meets B&W's critical standards.



UV 010 Filters

A UV filter blocks the invisible UV component of light from the sky, which can cause blur and causes many color films to react with a blue cast. UV Filters are ideal for when shooting in high altitudes (in the mountains), by the sea and in regions with very clean air. The pictures gain brilliance and disturbing blue casts are avoided. Because the glass is colorless, color rendition is not altered, aside from the elimination of the unwanted blue cast, and no increase in exposure is required. Filter factor is 1.0.

Good lenses are far more expensive than filters, therefore it makes good sense to attach a filter to protect the lens' sensitive front element. The colorless, multi-coated UV 010 is ideal, protecting the lens' front element against dust, flying sand, sea water spray and the like, and it can be kept on the lens at all times. Taking it a step further, the extremely hard MRC coating optimizes the protective effect and facilitates cleaning in case of accidental fingerprints or when the surface becomes soiled. This, by the way, is all the more important with digital cameras, whose picture quality, because of the shorter focal length of their lenses, is much more sensitive to dirt on the front element of a lens!

UV filters are also available in Wide Angle (they have a larger front diameter than the screw-in diameter to eliminate vignetting on wide angle lenses, and can only be used without a lens hood), and SLIM mounts (no front threads) for even wider-angle

photography without vignetting. Wide Angle and SLIM filters are also available in a choice of multi-coated or MRC.

UV FILTERS

UV HAZE 010 FILTERS

Filter Size (mm)	30.5	35.5	37	39	40.5	43	46	48	49	52	55
UV Haze 010 #BWUV()	24.95	24.95	24.95	24.95	24.95	24.95	24.95	24.95	19.95	19.95	22.95
UV Haze 010-W/A #BWUV()EW	—	—	—	—	—	—	—	—	49.95	49.95	56.95
UV Haze 010-SLIM #BWUVS()	—	—	—	—	—	—	—	—	44.95	44.95	49.95
UV 010 MRC #BWUVMC()	39.95	39.95	39.95	39.95	39.95	39.95	39.95	39.95	29.95	29.95	32.95
UV 010 MRC-W/A #BWUVMC()EW	—	—	—	—	—	—	—	—	59.95	59.95	77.95
UV 010 MRC-SLIM #BWUVMCS()	—	—	—	—	—	—	—	—	52.95	52.95	69.95

UV HAZE 010 FILTERS

Filter Size (mm)	58	60	62	67	72	77	82	86	95	105	112
UV Haze 010 #BWUV()	24.95	39.95	29.95	36.95	46.95	52.95	72.95	79.95	109.95	134.95	174.95
UV Haze 010-W/A #BWUV()EW	67.95	—	76.95	79.95	92.95	94.95	112.95	119.95	139.95	169.95	—
UV Haze 010-SLIM #BWUVS()	64.95	82.95	69.95	69.95	79.95	84.95	97.95	106.95	142.95	164.95	—
UV 010 MRC #BWUVMC()	34.95	59.95	42.95	49.95	62.95	79.95	104.95	109.95	154.95	179.95	—
UV 010 MRC-W/A #BWUVMC()EW	89.95	—	99.95	109.95	124.95	124.95	144.95	159.95	179.95	219.95	—
UV 010 MRC-SLIM #BWUVMCS()	79.95	99.95	89.95	96.95	107.95	112.95	124.95	142.95	159.95	192.95	—

UV HAZE 010 FILTERS

Filter Size (mm)	122	Bay 1	Bay 2	Bay 3	Bay 6	Bay 50	Bay 60	Bay 70	Bay 104	Series 7	Series 93
UV Haze 010 #BWUV()	179.95	32.95	37.95	42.95	154.95	—	132.95	149.95	—	27.95	84.95
UV Haze 010-W/A #BWUV()EW	—	—	—	—	—	—	—	—	—	—	—
UV Haze 010-SLIM #BWUVS()	—	—	—	—	—	—	—	—	—	—	—
UV 010 MRC #BWUVMC()	—	42.95	49.95	56.95	194.95	—	144.95	174.95	—	42.95	119.95
UV 010 MRC-W/A #BWUVMC()EW	—	—	—	—	—	—	—	—	—	—	—
UV 010 MRC-SLIM #BWUVMCS()	—	—	—	—	—	—	—	—	—	—	—

1. In the parenthesis insert the filter size. For example, a 67mm UV Haze 010-W/A would be BWUV67EW.
2. For Bay sizes insert just the letter B and the number. For example, UV Haze 010-SLIM in Bay 60 is BWUVSB60.
3. For Series 7 and 93, insert just the letter S and the number. For example, UV Haze 010 in Series 93 is BWUVS93.
4. Series 5.5, Series 6, Series 8 and Series 9 are also available special order.

NEUTRAL DENSITY FILTERS

B+W neutral density filters are made out of neutral gray Schott NG-glass. They block the entire visible spectrum evenly and allow light reduction without influencing color rendition or contrast. Sometimes it is necessary to cut down the amount of light with neutral density filters when working with high-speed films. For example, the B+W 102 filter allows exposures with ISO 400/27 degree film as if it were 100/21 degree film. It is often used to portray a subject against an out of focus background. A neutral density filter comes in handy if you would like to increase the aperture more than the light situation and camera capabilities permit. They are also good for the long exposures which are necessary for a blur-effect or zooming during the shot.



Charming Selective Sharpness:

Modern high speed lenses produce bright viewfinder images in reflex cameras and make fast shutter speeds possible in all types of cameras, even with slow speed films or under poor light conditions. But their larger apertures can also be used as an interesting creative element.

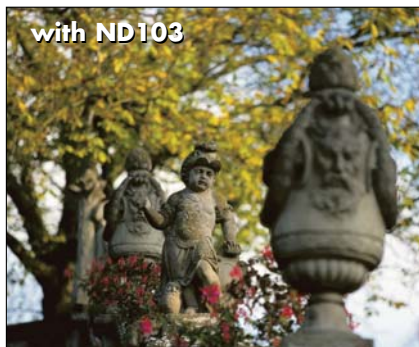
At wide apertures the depth of field is reduced so much that eventually only the main subject will be rendered sharply, whereas the foreground and background will be unsharp. This also focuses the attention on the main subject in a creative sense, it draws the attention of the viewer as if by magic, relegating everything else to the background. In intense brightness, however, with high-speed film or a short focal length (with correspondingly higher depth of field), using a large aperture to achieve the desired selective sharpness effect may not be possible without incurring over-exposure. This when B&W neutral density filters provide the solution.

When the shutter speed is reduced by two or three steps instead of opening the aperture, for instance, a neutral density filter can be used for equally creative blur effects with moving subjects.

Neutral Density Filter Number	Filter Factor	Reduction f-stop	Density
101	2	1	0.3
102	4	2	0.6
103	8	3	0.9
106	64	6	1.8
110	1,000	10	3.0
113	10,000	13	4.0
120	1,000,000	20	6.0

ND Filter 101: The lightest ND filter, it attenuates light by one f-stop (log density 0.3), which can be beneficial, for instance, for the correct exposure of high-speed films when the brightness of the subject is still too high for the fastest shutter speed and the smallest aperture. Ideal as a complement to the ND 102 for fine adjustments. The filter factor is 2x.

ND Filter 102: The most popular ND filter, the ND 102 reduces light by two f-stops (log density 0.6) and offers many benefits, for instance f/4 instead of f/8 for selective sharpness instead of a great depth of field, or 1/15 sec. instead of 1/60 sec. for a flowing instead of a "frozen" waterfall. It has excellent color neutrality, costs less than the denser filters, and is recommended as part of a basic outfit. The filter factor is 4x.

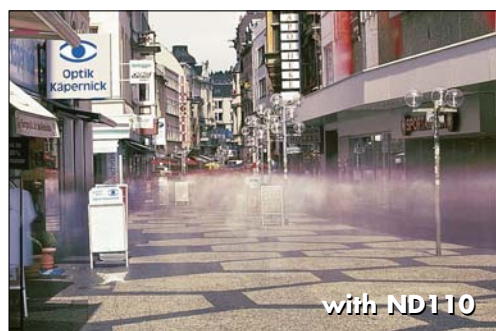


ND Filter 103: Somewhat more difficult to manufacture and thus a little more expensive, the ND 103 reduces light intensity by three f-stops (log density 0.9). It still features very good color neutrality. Ideal for use on video cameras when the lens cannot be stopped down sufficiently in great brightness or when a deliberately low depth of field is desired. The filter factor is 8x.

NEUTRAL DENSITY FILTERS

ND Filter 106: The ND 106 reduces light by six f-stops. That means without changing the f-stop, a shutter speed of 1/60 sec. is changed to a full second, thus requiring the use of a tripod. Flowing water is rendered as flowing in the photo, and people moving in streets are dissolved in unsharpness. Because of its higher transmission in the red beyond 660 nm, brings a slightly warm tone to color photographs. (If this effect is undesirable, a B+W UV-/IR-Blocking Filter 486 in front of the ND filter remedies that situation). The filter factor is 64x.

ND Filter 110: With a light intensity reduction of ten f-stops, the ND 110 has a slightly stronger warm tone than the ND 106. Its principal field of application is the observation and documentation of industrial processes with extreme brightness, such as steel furnaces, incinerators, glowing filaments in halogen- and other bulbs. The filter factor is 1000x.



ND Filter 113: With its light reducing capability of 13 f-stops, the ND 113 is used in astronomy for photographs of the sun and the relative movements of heavenly bodies as light traces in extremely long exposure times. Not be used for observation of the sun (danger of blindness!) due to its greater transmission in the infrared range. Filter factor is 10,000x.

ND Filter 120: With light reduction capability of 20 f-stops, the ND 120 is used for the same astro-photographic applications as the ND 113 when an even greater light attenuation is required. In spite of its much higher density, this filter too, must not be used for visual observation because of its transmission in the infrared range. The filter factor is 1,000,000x.

NEUTRAL DENSITY FILTERS

Filter Size (mm)	30.5	35.5	37	39	40.5	43	46	48	49	52	55
ND 101 or 102 #BW()()	24.95	24.95	24.95	24.95	24.95	24.95	24.95	24.95	19.95	19.95	22.95
ND 101 or 102-W/A #BW()()EW	—	—	—	—	—	—	—	—	49.95	49.95	56.95
ND 101 or 102-SLIM #BW()S()	—	—	—	—	—	—	—	—	44.95	44.95	49.95
ND 101 or 102 MRC #BW()MC()	39.95	39.95	39.95	39.95	39.95	39.95	39.95	39.95	29.95	29.95	32.95
ND 101/102 MRC-SLIM #BW()MCS()	—	—	—	—	—	—	—	—	52.95	52.95	69.95
ND 103 #BW103()	46.95	46.25	46.95	46.25	46.25	46.25	46.95	46.95	35.95	36.95	43.95
ND 103-W/A #BW103()EW	—	—	—	—	—	—	—	—	82.95	82.95	92.95
ND 103-SLIM #BW103S()	—	—	—	—	—	—	—	—	64.95	64.95	74.95
ND 106 or 110 #BW()()	46.95	46.95	46.95	46.25	46.95	46.95	46.95	46.95	35.95	36.95	43.95
ND 106 or 110-W/A #BW()()EW	—	—	—	—	—	—	—	—	82.95	82.95	92.95
ND 106 or 110-SLIM #BW()S()	—	—	—	—	—	—	—	—	64.95	64.95	74.95
ND 113 or 120 #BW()()	46.95	46.95	46.95	46.25	46.95	46.95	46.95	46.95	35.95	36.95	43.95
ND 113 or 120-W/A #BW()()EW	—	—	—	—	—	—	—	—	82.95	82.95	92.95
ND 113 or 120-SLIM #BW()S()	—	—	—	—	—	—	—	—	64.95	64.95	74.95

In the parenthesis insert the ND number and then the filter size. For example, a 67mm ND 113-SLIM would be BW113S67.

Series 5.5, Series 6, Series 8 and Series 9 are also available special order.

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1-800-290-6750 • www.bhphotovideo.com**



NEUTRAL DENSITY FILTERS

FILTERS

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NEUTRAL DENSITY FILTERS												
Filter Size (mm)		58	60	62	67	72	77	82	86	95	105	112
ND 101 or 102	#BW()()	24.95	39.95	27.95	36.95	46.95	52.95	72.95	79.95	109.95	134.95	174.95
ND 101 or 102-W/A	#BW()()EW	67.95	—	76.95	79.95	92.95	94.95	112.95	119.95	137.95	169.95	—
ND 101 or 102-SLIM	#BW()S()	64.95	82.95	69.95	69.95	79.95	84.95	97.95	106.95	142.95	164.95	—
ND 101 or 102 MRC	#BW()MC()	34.95	59.95	42.95	49.95	62.95	79.95	104.95	109.95	154.95	179.95	—
ND 101/102 MRC-SLIM	#BW()MCS()	79.95	99.95	89.95	96.95	107.95	112.95	124.95	142.95	159.95	192.95	—
ND 103	#BW103()	45.95	74.95	72.95	74.95	94.95	104.95	—	—	—	—	—
ND 103-W/A	#BW103()EW	109.95	—	124.95	128.50	—	—	—	—	—	—	—
ND 103-SLIM	#BW103S()	94.95	134.95	102.95	106.95	129.95	137.95	—	—	—	—	—
ND 106 or 110	#BW()()	45.95	74.95	72.95	44.95	94.95	104.95	—	—	—	—	—
ND 106 or 110-W/A	#BW()()EW	109.95	—	124.95	128.95	—	—	—	—	—	—	
ND 106 or 110-SLIM	#BW()S()	74.95	134.95	102.95	106.95	129.95	137.95	—	—	—	—	—
ND 113 or 120	#BW()()	45.95	74.95	72.95	74.95	94.95	104.95	119.95	—	—	—	—
ND 113 or 120-W/A	#BW()()EW	109.95	—	124.95	128.95	—	—	—	—	—	—	
ND 113 or 120-SLIM	#BW()S()	94.95	134.95	102.95	106.95	129.95	137.95	—	—	—	—	—

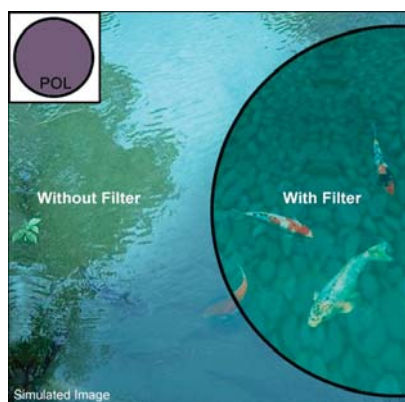
NEUTRAL DENSITY FILTERS												
Filter Size (mm)		122	Bay 1	Bay 2	Bay 3	Bay 6	Bay 50	Bay 60	Bay 70	Bay 104	Series 7	Series 93
ND 101 or 102	#BW()()	179.95	32.95	37.95	42.95	154.95	—	132.95	149.95	207.95	27.95	84.95
ND 101 or 102-W/A	#BW()()EW	—	—	—	—	—	—	—	—	—	—	—
ND 101 or 102-SLIM	#BW()S()	—	—	—	—	—	—	—	—	—	—	—
ND 101 or 102 MRC	#BW()MC()	—	42.95	49.95	56.95	194.95	—	144.95	174.95	254.95	42.95	119.95
ND 101/102 MRC-SLIM	#BW()MCS()	—	—	—	—	—	—	—	—	—	—	—
ND 103	#BW103()	—	52.95	62.95	69.95	264.95	—	154.95	179.95	—	44.95	199.95
ND 103-W/A	#BW103()EW	—	—	—	—	—	—	—	—	—	—	—
ND 103-SLIM	#BW103S()	—	—	—	—	—	—	—	—	—	—	—
ND 106 or 110	#BW()()	—	52.95	62.95	69.95	264.95	—	154.95	179.95	—	44.95	—
ND 106 or 110-W/A	#BW()()EW	—	—	—	—	—	—	—	—	—	—	—
ND 106 or 110-SLIM	#BW()S()	—	—	—	—	—	—	—	—	—	—	—
ND 113 or 120	#BW()()	—	52.95	62.95	69.95	264.95	—	154.95	179.95	—	44.95	—
ND 113 or 120-W/A	#BW()()EW	—	—	—	—	—	—	—	—	—	—	—
ND 113 or 120-SLIM	#BW()S()	—	—	—	—	—	—	—	—	—	—	—

1. In the parenthesis insert the filter size. For example, a 122mm ND 101 MRC would be BW101MC122.
2. For Bay sizes insert just the letter B and the number. For example, 122mm ND 101 MRC in Bay 60 is BW101MCB60.
3. For Series 7 and 93, insert just the letter S and the number. For example, 122mm ND 101 MRC in Series 93 is BW101MCS93.
4. Series 5.5, Series 6, Series 8 and Series 9 are also available special order.



POLARIZING FILTERS

With B+W polarizing filters, reflections on glass, plastic and lacquer surfaces can be reduced or even eliminated. B+W polarizing filters give you the control over how much reflection you wish to remain because the light reflected at an angle of about 40° to 70° by these surfaces is strongly polarized. Its transmission can be reduced, blocked or even enhanced in relation to the remaining unpolarized light, depending on the rotation of the filter. Thus a clear view is made possible through plates of glass, of goldfish below the surface of the water, or of writing or pictures behind a glossy layer of lacquer.



Every object outdoors reflects light from the sky more or less diffusely and largely polarized, some objects, such as green plants and red roof tiles are covered by a bluish-gray veil that can make them appear pale and dirty. B+W polarizing filters remove this polarized veil thus increasing the saturation of the true color. Bring out deep, rich greens in foliage and reduce the objectionable effect of smog in a photograph of a cityscape horizon. Because the blue light from the sky, especially at an angle approximately perpendicular to the sun is strongly polarized, a polarizer can be used to render the sky with a more saturated color, so that white clouds will stand out more dramatically. Using a polarizer for black-and-white film, reflections can be accentuated or reduced, and can have higher image contrast. The effect of B+W polarizers can be observed through the viewfinder while rotating the front element of the polarizer.

Linear and circular polarizers both consist of a linear polarizer foil but differ in their construction. Today's SLR cameras have a beam-splitting prism that sends part of the incoming light to the meter and part to the viewfinder. The effect is that the light entering the meter is partially polarized by the beam-splitter. A linear polarizer placed on the lens of such a system will act as a second polarizer and block light to the meter by a degree dependent on the angle between the prism and the polarizer on the lens. The result is incorrect exposure/aperture values from the meter. The circular polarizer circumvents this problem through the addition of a 1/4-wave retarder, or delay, foil. This ensures that the linearly polarized light is changed into a rotation that appears unpolarized to the meter, resulting in proper exposure/aperture readings.

The B&W Difference

Unlike some other polarizing filters, B+W Polarizing Filters do not consist of a plastic polarizing foil loosely sandwiched between two protective glass discs. Instead, the polarizing foil is cemented to both glass discs for much better optical quality. Even the tiniest surface irregularities on plastic polarizing foils, which can not be produced as smoothly and as evenly as polished glass, are evened out by this process. The number of reflective glass-to-air or foil-to-air surfaces is reduced from six to only two. B+W Polarizing Filters are distinguished by their higher light transmission, brilliance, and yield excellent detail even in the shadow areas. This preserves the full image-quality of the lens.

Versatile Tools

Polarizers are commonly used to control glare on water and to allow the camera to see below the surface. They are also used to reduce glare on car bumpers and to control reflections on plate-glass windows. Polarizers are so versatile that they can perform the opposite functions as well. Some use polarizers to increase or enhance reflections, simply by changing the filter's setting.

- ◆ Darkening skies in color photography for dramatic impact. While graduated neutral density filters can also be used to achieve this effect, the need to position their transition line accurately precludes their use in many applications. Polarizers do not suffer from this limitation.
- ◆ Suppressing reflections and capturing truer color when shooting subjects through a windshield, and from other rigged-car camera positions.
- ◆ Greatly adding to the drama and appeal of the shot when photographing food (particularly meat or liquids).
- ◆ Increasing the color saturation of any object with a glossy surface.
- ◆ In fact, virtually any subject involving glare or reflections, or that is illuminated with specular light, can be improved through the skillful use of a quality polarizing filter.



POLARIZING FILTERS

Top-Pol (Linear) Polarizer

Linear polarization filter for SLRs and rangefinder cameras without beam splitters in their light paths. High-quality optical glass ensures excellent pictorial quality. B+W Top-Pol Polarizing Filters are available uncoated and with B+W's proprietary MRC coating.

Circular Polarizer

Highly efficient standard circular polarizing filter for all cameras with beam splitters in the light paths of their TTL exposure meter and with autofocus lenses. Circular polarization has the same pictorial effect as linear polarization, but allows for proper exposure metering and/or autofocus distance settings.

Warm Tone Polarizer

These filters are special versions of the B+W Linear- and Circular Polarizing Filters with an KR 1.5 correction filter or an 81A warm tone filter as protection glass (KR 3 or 81B on request). This combines the optical qualities of both filters in a single filter.

B+W Redhancer 491

Designed to strengthen the reddish components of orange, near red or brown subjects, the B+W Redhancer is popular for use in nature- and landscape photography. It is particularly effective in conjunction with a polarizing filter, controlling a potentially bluish-gray veil and for increasing color saturation, e.g. to capture fabulously vivid scenery during the colorful autumn season. The use of color reversal film is recommended, because the automatic correction applied by printers to color negatives can erroneously interpret the desired effect as a color cast and reduce it by filtering it out.

**'Käsemann' Polarizer**

The "high-end" polarizing foils of the Käsemann-type filters are neutral in color, have a higher efficiency than conventional polarizing foils and they are cemented between high-grade plano-parallel optical glass. The resulting sandwich is then precision-polished again to achieve highly accurate plano-parallel surfaces. Subsequently they are edge-sealed to protect the foil against humidity. Brass mounts made on CNC-controlled machines ensure precise seating on the lens. Discriminating photographers regard the B+W Käsemann-Type to be the best of all polarizing filters. They are well suited for applications that require the highest possible imaging quality, especially with high-speed telephoto lenses and apochromatic lenses. They are available as linear and circular polarizing filters, and also with SLIM- or oversized wide-angle mounts.

POLARIZERS											
Filter Size (mm)	30.5	35.5	37	39	40.5	43	46	48	49	52	55
Top-Polarizer #BWP()	—	—	—	—	44.95	44.95	44.95	44.95	34.95	37.95	42.95
Top-Polarizer MRC #BWPMC()	—	—	—	—	—	—	—	—	52.95	53.95	59.95
Circular Polarizer #BWCP()	79.95	79.95	79.95	79.95	79.95	79.95	79.95	79.95	58.95	67.95	69.95
Circular Polarizer SLIM #BWCPs()	—	—	—	—	—	—	—	—	54.95	54.95	64.95
Circular Polarizer MRC #BWCPMC()	—	—	—	—	—	—	—	—	79.95	79.95	89.95
Circ. Pola. MRC-SLIM #BWCPMCS()	—	—	—	—	—	—	—	—	72.95	79.95	89.95
Kasemann Polarizer #BWKP()	79.95	79.95	79.95	79.95	79.95	79.95	79.95	79.95	72.95	76.95	87.95
Kasemann Pola-WA #BWKP()EW	—	—	—	—	—	—	—	—	—	—	—
Kasemann Circ. Pola #BWKP()	89.95	89.95	89.95	89.95	89.95	89.95	89.95	89.95	89.95	94.95	102.95
Kas. Circ. Pola-MRC-SLIM #BWKP()	—	—	—	—	—	—	—	—	89.95	94.95	104.95
Kas. Circ. Pola-MRC WA #BWKP()EW	—	—	—	—	—	—	—	—	—	—	—
Warm Polarizer 81A #BWWP81A()	—	—	—	—	—	—	92.95	94.95	79.95	102.95	114.00
Warm Polarizer KR1.5 #BWWP()	—	—	—	—	—	—	—	—	—	—	—
Warm Circular Pola #BWWP81A()	—	—	—	—	—	—	99.95	104.95	92.95	125.95	127.95
Warm Circular Pola KR1.5 #BWWP()	—	—	—	—	—	—	99.95	104.95	92.95	125.95	127.95
Redhancer 491 #BWE()	—	—	—	—	—	—	—	46.95	35.95	36.95	43.95

In the parenthesis insert the filter size. For example, a 37mm Circular Polarizer would be BWCP37.

POLARIZING FILTERS

POLARIZERS

Filter Size (mm)	58	60	62	67	72	77	82	86	95	105	112
Top-Polarizer #BWP()	44.95	—	49.95	54.95	62.95	72.95	97.95	124.95	154.95	179.95	—
Top-Polarizer MRC #BWPMC()	62.95	—	62.95	72.95	79.95	89.95	—	—	—	—	—
Circular Polarizer #BWCP()	74.95	99.95	79.95	89.95	102.95	114.95	—	—	—	—	—
Circular Polarizer SLIM #BWCPSL()	72.95	—	79.95	89.95	99.95	109.95	124.95	—	—	—	—
Circular Polarizer MRC #BWCPMRC()	94.95	119.95	98.95	114.95	129.95	144.95	—	—	—	—	—
Circ. Pola. MRC-SLIM #BWCPMCSL()	99.95	—	109.95	129.95	154.95	164.95	199.95	—	—	—	—
Kasemann Polarizer #BWKP()	94.95	—	99.95	109.95	124.95	149.95	169.95	179.95	199.95	229.95	339.95
Kasemann Pola-WA #BWKP()EW	—	—	179.95	179.95	209.95	239.95	269.95	289.95	309.95	349.95	—
Kasemann Circ. Pola-MRC #BWKP()EW	104.95	129.95	114.95	129.95	144.95	164.95	194.95	214.95	234.95	264.95	379.95
Kas. Circ. Pola-MRC Slim #BWKP()EW	109.95	—	114.95	139.95	154.95	174.95	—	—	—	—	—
Kas. Circ. Pola-MRC WA #BWKP()EW	—	—	199.95	199.95	229.95	259.95	299.95	319.95	339.95	389.95	—
Warm Polarizer 81A #BWWP81A()	117.95	129.95	124.95	142.95	152.95	182.95	214.95	—	234.95	—	—
Warm Circular Pola #BWWP81A()	137.95	154.95	138.95	164.95	179.95	199.95	—	—	—	—	—
Warm Circular Pola KR1.5 #BWWP()	137.95	154.95	138.95	164.95	179.95	199.95	244.95	234.95	259.95	289.95	—
Redhancer 491 #BWE()	45.95	—	72.95	74.95	94.95	104.95	—	—	—	—	—

1. In the parenthesis insert the filter size. For example, an 82mm Redhancer 491 would be BWE82.

2. For Bay sizes insert just the letter B and the number. For example, a Circular Polarizer in Bay 104 is BWCPB104.

3. For Series 7 and 93, insert just the letter S and the number. For example, a Circular Polarizer in Series 93 is BWCP93.

4. Series 5.5, Series 6, Series 8 and Series 9 are also available special order.

POLARIZERS

Filter Size (mm)	122	Bay 1	Bay 2	Bay 3	Bay 6	Bay 50	Bay 60	Bay 70	Bay 104	Series 7	Series 93
Top-Polarizer #BWP()	—	—	—	—	—	—	—	—	—	—	—
Top-Polarizer MRC #BWPMC()	—	—	—	—	—	—	—	—	—	—	—
Circular Polarizer #BWCP()	—	—	—	—	—	—	—	—	—	—	—
Circular Polarizer SLIM #BWCPSL()	—	—	—	—	—	—	—	—	—	—	—
Circular Polarizer MRC #BWCPMRC()	—	—	—	—	—	—	—	—	—	—	—
Circ. Pola. MRC-SLIM #BWCPMCSL()	—	—	—	—	—	—	—	—	—	—	—
Kasemann Polarizer #BWKP()	49.95	92.95	94.95	104.95	274.95	—	254.95	279.95	15.50	74.95	344.95
Kasemann Pola-WA #BWKP()EW	—	—	—	—	—	—	—	—	—	—	—
Kasemann Circ. Pola #BWKP()EW	524.95	109.95	119.95	134.95	344.95	37.50	279.95	299.95	—	96.95	369.95
Kas. Circ. Pola-MRC Slim #BWKP()EW	—	—	—	—	—	—	—	—	—	—	—
Kas. Circ. Pola-MRC WA #BWKP()EW	—	—	—	—	—	—	—	—	—	—	—
Warm Polarizer 81A #BWWP81A()	—	—	—	—	—	—	—	—	—	—	—
Warm Circular Pola #BWWP81A()	—	—	—	—	—	—	—	—	—	—	—
Redhancer 491 #BWE()	—	—	—	—	—	—	—	—	—	—	—

LIGHT BALANCING (CONVERSION) FILTERS

Cooling Filters

Illumination with a high percentage of red, as in light from a photoflood lamp, leads to a complete distortion of the original composition when used with daylight color film. Despite the handicaps of inadvertently selecting the wrong film and inappropriate lighting, color conversion (cooling) filters, such as the blue-violet KB-20, make more natural looking results possible.

KB 1.5 (82A): The conversion filter with the most delicate shade of blue attenuates the slightly higher red, orange and yellow components in order to produce a neutral color rendition. It can also be used for subjects that are to be shown with a cooler coloring. In addition, it adapts the color temperature of the very bright photoflood lamps to color films balanced for halogen light of 3200 K. Filter factor is approximately 1.1.

KB 3 (82C): With about twice the correcting effect of the KB 1.5 filter, this filter removes the orange-red color cast that appears on photographs made on tungsten reversal film with artificial light using 100 to 200w light bulbs, or from aged photoflood lamps. Therefore this filter is ideal for neutral color reproduction with appropriate illumination. Filter factor is approximately 1.2.

KB 6 (80D): This nearly medium blue conversion filter neutralizes the strong red tendency of light at sunrise or sunset out in the open when the original colors of the subject are wanted instead of a warm morning- or evening mood. In addition, the KB 6 filter is ideal for "under-corrected" filtering of artificial light photographs on color negative films. When filtration is performed only later during printing, there is a visible color shift, and full correction leads to a higher loss of light. Its filter factor is approximately 1.5.

Filter Type	Color Temperature Corrected From
KB 1.5	3000 K to 3200 K
KB 3	2800 K to 3200 K
KB 6	4100 K to 5500 K
KB 12	3400 K to 5500 K
KB 15	3200 K to 5500 K
KB 20	2600 K to 5500 K

KB 12 (80B): The deep blue KB 12 blocks so much red, orange and yellow that it increases the color temperature of very bright halogen and special photoflood lamps (around 3400 K) to that of daylight. With that kind of illumination, and with daylight color reversal film, subjects will be reproduced in their original colors. With weaker halogen bulbs or stronger incandescent bulbs in conjunction with this filter and with daylight reversal film, a residue of "warmth" is retained for an optimal mood in interior photographs. Filter factor is 2.0.

KB 15 (80A): The slightly denser KB 15 filter is recommended for daylight color reversal film with artificial light from the 60 to 100w halogen bulbs commonly used in lights aimed at the ceiling. With weaker incandescent bulbs, there will again be that pleasant warm tone for moody interior photographs. Its filter factor is approximately 2.2.

KB 20: Used when the illumination provided by 40 to 150w household incandescent bulbs, and the transparencies are to show the subject in its original colors (e.g., technical interior, architectural photographs, or reproductions). However, it shouldn't be used for moody interior pictures because unlike the KB 12 and KB 15, the KB 20 filter corrects the light to a neutral balance, eliminating the warmth that one might intuitively expect from bulbs. Filter factor is 2.7.



LIGHT BALANCING (CONVERSION) FILTERS

KB1.5/KB3/KB6/KB12/KB15/KB20 COOLING FILTERS

Filter Size (mm)	30.5	35.5	37	39	40.5	43	46	48	49	52	55
Standard #BW()()	24.95	24.95	24.95	24.95	24.95	24.95	24.95	24.95	19.95	19.95	22.95
Standard-SLIM #BW()S()	—	—	—	—	—	—	—	—	44.95	44.95	49.95
Standard- W/A #BW()()EW	—	—	—	—	—	—	—	—	49.95	49.95	56.95
MRC #BW()MC ()	—	—	39.95	39.95	—	39.95	39.95	39.95	29.95	29.95	32.95
MRC-SLIM #BW()MCS()	—	—	—	—	—	—	—	—	52.95	52.95	69.95
MRC-W/A #BW()MC()EW	—	—	—	—	—	—	—	—	59.95	59.95	77.95

KB1.5/KB3/KB6/KB12/KB15/KB20 COOLING FILTERS

Filter Size (mm)	58	60	62	67	72	77	82	86	95	105	112
Standard #BW()()	24.95	39.95	29.95	36.95	46.95	52.95	72.95	79.95	109.95	134.95	174.95
Standard-SLIM #BW()S()	64.95	82.95	69.95	69.95	83.75	79.95	97.95	106.95	142.95	164.95	—
Standard- W/A #BW()()EW	67.95	—	75.95	79.95	92.95	94.95	112.95	119.95	139.95	169.95	—
MRC #BW()MC ()	34.95	59.95	42.95	49.95	62.95	79.95	104.95	109.95	154.95	179.95	—
MRC-SLIM #BW()MCS()	79.95	99.95	89.95	96.95	107.95	112.00	124.95	142.95	159.95	192.95	—
MRC-W/A #BW()MC()EW	89.95	—	99.95	109.95	124.95	124.95	144.95	159.95	179.95	219.95	—

KB1.5/KB3/KB6/KB12/KB15/KB20 COOLING FILTERS

Filter Size (mm)	122	Bay 1	Bay 2	Bay 3	Bay 6	Bay 50	Bay 60	Bay 70	Bay 104	Series 7	Series 93
Standard #BW()()	179.95	32.95	37.95	42.95	154.95	—	132.95	149.95	105.95	279.95	84.95
Standard-SLIM #BW()S()	—	—	—	—	—	—	—	—	—	—	—
Standard- W/A #BW()()EW	—	—	—	—	—	—	—	—	—	—	—
MRC #BW()MC ()	—	42.95	49.95	56.95	194.95	—	144.95	174.95	—	42.95	119.95
MRC-SLIM #BW()MCS()	—	—	—	—	—	—	—	—	—	—	—
MRC-W/A #BW()MC()EW	—	—	—	—	—	—	—	—	—	—	—

1. In the first parenthesis insert the filter type. In the second parenthesis insert the filter size.

For example, a 58mm KB-6 Standard Wide Angle filter would be BWKB658EW.

2. For Bay sizes insert just the letter B and the number. For example, a KB-3 Bay 60 would be BWKB3B60.

3. For Series 7 and 93, insert just the letter S and the number. For example, a KB-6 Standard in Series 7 is BWKB6S7.

4. Series 5.5, Series 6, Series 8 and Series 9 are also available special order.

LIGHT BALANCING (CONVERSION) FILTERS

Warming Filters

Color conversion filters balance the spectral composition of the photographic light source to the color temperature balance of photographic films. This color temperature is expressed in degrees Kelvin ('K'). High color temperature light becomes blue while low tends to have a reddish tone. Depending upon the degree of necessary color temperature conversion, reddish to brown or blue-toned, color conversion filters in varying density are required to absorb the predominant color tones of the light. Refer to the color temperature tables to see which filters are necessary.

Filter Type	Color Temperature Corrected From
KR 1.5	3400 K to 3200 K
KR 3	3600 K to 3200 K
KR 6	3900 K to 3200 K
KR 12	5500 K to 3400 K
81A	3400 K to 3200 K
81B	3500 K to 3200 K



Atmospheric haze causes blue cast

Color Correction with KR 1.5

Warm autumn vegetation with KR 6



Blue cast on walls in the shade

81A filter neutralizes the blue cast

Rendition of neutral colors with KR 3

KR 1.5 (1A): This filter also blocks UV radiation and reduces haze in the scene. However, due to its light pink color, the KR 1.5 reduces the high blue cast in the shadow portions of color photographs caused by light coming from a blue sky. Because of its very faint color, a skylight filter can be kept on a lens constantly for protection, as long as a slightly warmer color rendition is desired, as it would be with color reversal films that tend to produce cooler colors. The exposure factor is only 1.1 so for practical purposes it can be ignored.

KR 3 (81C): This filter is recommended for daylight photographs, especially in spring and summer with cloudless skies and clear air. It helps eliminate the strong blue tone and haziness which is produced by this level of ultraviolet light. Furthermore, it reduces the unwanted blue tone in shadow areas with an overcast sky. Filter factor is approx. 1.2.

KR 6 (81EF): Daylight with a high percentage of blue (midday in the mountains during the summer) is neutralized by the KR 6 in color photos where an extreme blue tone is to be expected. Not only does it block ultraviolet light and reduce blue tones in the shade, but it also penetrates light fog. Filter factor is approx. 1.4.

KR 12 (8SEF): When using the brown toned KR 12 with tungsten-balanced color film, one can photograph in daylight or with flash illumination. This eliminates the strong overall bluish cast which would be present otherwise. In addition, many color films respond to this color conversion filter with particularly brilliant color tones. Filter factor is approx. 2.0.

B+W 81A: This filter balances color temperature from artificial light sources to the color tungsten film standard of 3200 degrees and balances the difference up to 3400 degrees. Due to this characteristic, a noticeable warmer color reproduction is produced. This fine balancing is important for special work such as art reproductions where true color reproduction is required. Filter factor is approx. 1.2.

B+W 81B: The 81B makes possible a stronger color temperature balance from artificial light sources to 3500 degrees which also results in a slightly warmer color reproduction. In addition, when using artificial light for portraits, especially when more flattering warmer colors are appropriate (portraits of women and children), this filter is highly recommended. Filter factor is approx. 1.2.

LIGHT BALANCING (CONVERSION) FILTERS

KR1.5/KR3/KR6/KR12/81A/81B WARMING FILTERS

Filter Size (mm)	30.5	35.5	37	39	40.5	43	46	48	49	52	55
Skylight KR1.5 #BWSL()	24.95	24.95	24.95	24.95	24.95	24.95	24.95	24.95	19.95	19.95	22.95
Standard #BW()()	24.95	24.95	24.95	24.95	24.95	24.95	24.95	24.95	19.95	19.95	22.95
Standard-SLIM #BW()S()	—	—	—	—	—	—	—	—	44.95	44.95	49.95
Standard- W/A #BW()()EW	—	—	—	—	—	—	—	—	49.95	49.95	56.95
MRC #BW()MC()	39.95	39.95	39.95	39.95	39.95	39.95	39.95	39.95	29.95	29.95	32.95
MRC-SLIM #BW()MCS()	—	—	—	—	—	—	—	—	52.95	52.95	69.95
MRC-W/A #BW()MC()EW	—	—	—	—	—	—	—	—	59.95	59.95	77.95

KR1.5/KR3/KR6/KR12/81A/81B WARMING FILTERS

Filter Size (mm)	58	60	62	67	72	77	82	86	95	105	112
Skylight KR1.5 #BWSL()	24.95	39.95	29.95	36.95	46.95	52.95	72.95	79.95	109.95	134.95	174.95
Standard #BW()()	24.95	39.95	29.95	36.95	46.95	52.95	72.95	79.95	109.95	134.95	174.95
Standard-SLIM #BW()S()	64.95	82.95	69.95	69.95	79.95	84.95	97.95	106.95	142.95	164.95	—
Standard- W/A #BW()()EW	67.95	—	76.95	79.95	92.95	94.95	113.95	119.95	139.95	169.95	—
MRC #BW()MC()	34.95	59.95	47.95	49.95	62.95	79.95	104.95	109.95	154.95	179.95	—
MRC-SLIM #BW()MCS()	79.95	99.95	89.95	96.95	107.95	112.95	124.95	142.95	159.95	192.95	—
MRC-W/A #BW()MC()EW	89.95	—	99.95	109.95	124.95	124.95	144.95	159.95	179.95	219.95	—

KR1.5/KR3/KR6/KR12/81A/81B WARMING FILTERS

Filter Size (mm)	122	Bay 1	Bay 2	Bay 3	Bay 6	Bay 50	Bay 60	Bay 70	Bay 104	Series 7	Series 93
Skylight KR1.5 #BWSL()	179.95	32.95	37.95	42.95	154.95	—	132.95	149.95	—	27.95	84.95
Standard #BW()()	179.95	32.95	37.95	42.95	154.95	—	132.95	149.95	—	27.95	84.95
Standard-SLIM #BW()S()	—	—	—	—	—	—	—	—	—	—	—
Standard- W/A #BW()()EW	—	—	—	—	—	—	—	—	—	—	—
MRC #BW()MC()	—	42.95	49.95	56.95	194.95	—	144.95	174.95	—	42.95	119.95
MRC-SLIM #BW()MCS()	—	—	—	—	—	—	—	—	—	—	—
MRC-W/A #BW()MC()EW	—	—	—	—	—	—	—	—	—	—	—

1. In the first parenthesis insert the filter type. In the second parenthesis insert the filter size.

For example, a 58mm KR-6 Standard Wide Angle filter would be BWKR658EW.

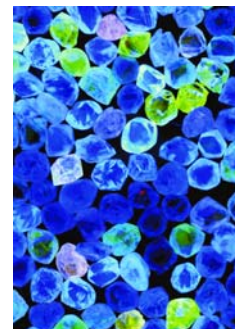
2. For Bay sizes insert just the letter B and the number. For example, a KR-3 Bay 60 would be BWKR3B60.

3. For Series 7 and 93, insert just the letter S and the number. For example, a KR-6 Standard in Series 7 is BWKR6S7.

4. Series 5.5, Series 6, Series 8 and Series 9 are also available special order.

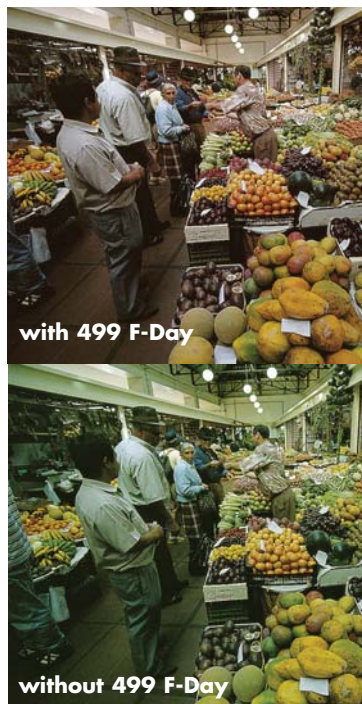
SPECIAL FILTERS

What photographer wouldn't love to leave the beaten path and create pictures that stand out, fascinate, perhaps even take one's breath away? To show objects or landscapes as no eye would see them in nature is an irresistible challenge. A large selection of B+W Special Filters can help you to take on this challenge and master it with perfection. B+W filters that transmit ultraviolet or infrared light, but which block or severely limit the visible spectrum can reveal otherwise hidden worlds, when used in conjunction with appropriately sensitized films. On the other hand, different B+W Special Filters prevent disturbing light and radiation that distorts the pictorial impression from passing through the lens and reaching the film. The FL-Day should be an indispensable accessory for every photographer, because it suppresses the green hue of the light emitted by fluorescent tubes. While inconspicuous to our eyes, it can cause an unpleasant green cast in color photographs.



499 F-Day (Fluorescent Daylight) Filter:

This filter eliminates the green cast that occurs when daylight-type color film is used under fluorescent lighting. For example, shooting in offices, reception areas, factory halls and subway stations, as well as night-time shots of office buildings whose windows would appear green because their interiors are usually illuminated with fluorescent tubes. The 499 F-Day is designed for the most commonly used type of fluorescent tube, which emit light of a color that, as mentioned above, resembles daylight. Fluorescent tubes are not "thermal radiators"—they don't produce continuous spectrum like those of the sun and incandescent bulbs. Instead, they emit a sharply defined line spectrum that has high intensity spikes in the green region. Our eyes barely perceive this special green, so the fluorescent light appears to us as nearly neutral in color. However, most color films are especially sensitive to those wavelengths and they react with a strong pronounced cast. Using color temperature meters for three color metering, photographers can undertake the correct filtering with of a combination of Light Balance (LB) and CC filters. With this method, they can also correct the light emitted by other types of fluorescent tubes, such as Warm Tone, Standard Light, White Light, etc. But for those who don't care to carry along a selection of LB- and CC filters, the F-Day Filter is far less expensive and much more practical. Filter factor is approximately 2.



UV Blocking Filter 415 (=2B):

This sharp-cutting, nearly colorless filter blocks UV radiation up to the limit of visible light. It is used in ultraviolet fluorescence photography for the prevention of unsharpness caused by the intense UV illumination (which is due to chromatic aberration in the UV range). It can also prevent the fluorescence that may occur in the cement between lens elements. Because of the usually rather colorful fluorescent subjects, the delicate yellow cast in color photographs is negligible. Its filter factor is 1.

UV-Blocking Filter 420 (= 2A):

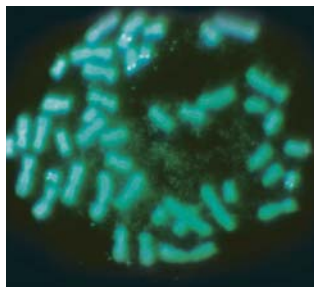
This even more stringent UV-blocking filter behaves like the 415 except that its filtering slope completely blocks the UV radiation all the way into the visible violet region. As a result, it has a noticeably yellow tint. It is used for fluorescence photography on black-and-white film, where it is even more effective. Its filter factor is 1.2.

Digital UV-/IR-Blocking Filter 486:

This B+W Interference Filter has a completely colorless glass carrier coated with a number of extremely thin, partially reflecting layers with precisely computed thicknesses, similar to MC coating. The 486 does not block by means of absorption, but by interference of the unwanted UV- and IR radiation that is repeatedly reflected between these layers, affecting the wavelengths on both sides of the visible spectrum with a steep cut-off. It is used mainly on digital- and video cameras with CCD sensors without an integrated IR protection filter, because the IR sensitivity of the CCD sensor would otherwise cause color changes and unsharpness. That unsharpness results from the chromatic aberration of the lenses that are only corrected for visible light. In the visible range, the transmission curve is very high and straight. This filter is completely clear and it requires no increase in exposure. Its filter factor is 1.

UV Black Filter 403:

Not to be confused with the UV-blocking "UV Filter", the 403 passes UV A radiation (320 to 385 nm), but blocks visible light and looks pitch-black to our eyes. It is used with appropriately sensitized films in such applications as ultraviolet reflection photography in forensics or in materials research, but also as filters on UV-emitters for fluorescence photography. Depending on the illumination and on the film's sensitization, its filter factor is in the range of 8 to 20.



SPECIAL FILTERS

Infrared-Blocking Filter 489

This IR-blocking filter must not be confused with heat-resisting protection filters for projectors or spotlights. Instead, it is intended for use as protection for IR-sensitive CCD sensors or in the light path of illumination devices with low thermal characteristics. It suppresses infrared radiation ≥ 780 nm. Because it gradually begins to absorb infrared radiation at 600 nm, long-wave red light is slightly weakened, so that this filter has a subtle green tint. But in CCD applications, this can be readily corrected electronically. Its filter factor is approximately 1.2.

Infrared Filter 092 (=89 B)

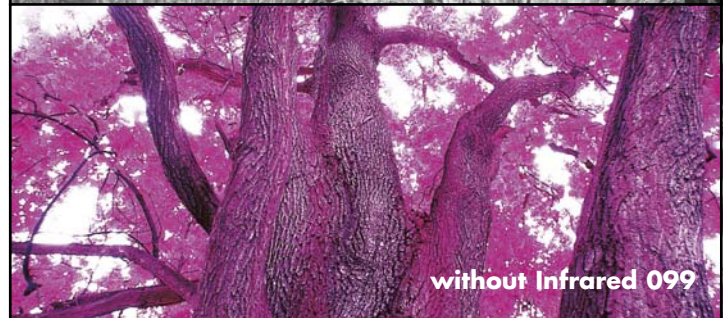
The nearly opaque Infrared Filter 092, which looks dark purplish red when held in front of a light source, blocks visible light up to 650 nm, and passes only 50% of the radiation just below 700 nm (thus the dark red color). From 730 nm to 2000 nm, transmission is greater than 90%. This makes photographs of pure red and infrared images possible with the best utilization of the relatively low sensitivity of infrared films. As the sensitization of infrared black-and-white films barely extends beyond 1000 nm, the red portion that is transmitted still makes a relevant contribution to the exposure. That is why this filter is the preferred filter for pictorial photography on IR black-and-white film. Its filter factor is 20 to 40.

Infrared Filter 093 (=87 C)

This Infrared Filter blocks the entire visible spectrum, so to our eyes it looks completely opaque. Unlike the infrared filter described above, it makes pure infrared photographs possible without the visible red component. Its transmission only begins to exceed 1% at 800 nm, rising to 88% at 900 nm, and remains that high far beyond the upper limit of sensitization covered by infrared films. This filter is used less frequently in pictorial photography because of the dramatic loss of effective ISO. But in the scientific field, materials research and forensics, the limitation to a strictly infrared range is often important. The filter factor is very dependent on the illumination and on the characteristics of the film.

Infrared Filter 099 (=16)

The orange-colored 099 is the ideal filter for photography with infrared color film, which is also referred to as "False Color Film" because of its charming abstract color reproduction. It blocks large portions of short-wave radiation, up to 520 nm (blue, blue-green) and reaches its full transmission near 600 nm, which it retains far beyond the sensitization range of these films. This avoids the blue cast that is caused by the heightened sensitivity in this spectral range, and it leads to a better differentiation of colors. The charm of these infrared color photographs is partly due to the orange to red rendition of green vegetation, which is due in turn to the high infrared reflectivity of the chlorophyll in plants. The filter factor is highly dependent on the film and on the degree of infrared reflection of the subject.



BLACK & WHITE FILTERS

Because early black-and-white films did not render colors in the gray tones that corresponded to the brightness perception of human eyes, the use of yellow- and yellow-green filters was simply indispensable.

Today's panchromatically sensitized black-and-white films no longer require such a correction, at least not in daylight. In artificial light, however, the increased red component can distort the rendition in gray tones in critical cases by rendering blue tones too darkly and red tones too brightly. This can be remedied by the use of a light blue filter with halogen light or a medium blue filter with incandescent illumination. Yellow and yellow-green filters can bring more brilliance to landscape photographs and create better differentiation of green tones in vegetation. Yellow- and orange filters can magically transform cloudlets into clouds and cloud formations, and red filters can even raise them to dramatic thunderstorm strength or create moonlight effects. A very simple rule can be used to determine which filter should be used: To lighten a subject color, use a filter of the same color. To darken a subject color, use a filter of a complementary color. When two objects with different colors but with the same effective brightness are to be better differentiated in a black-and-white photograph, use the filter of the same color as the color that is to be rendered lighter in the photograph.



Light Yellow Filter 021

This filter suppresses violet and attenuates blue. On the other hand, green, yellow, orange and red are reproduced in lighter shades. It is ideal for landscape photographs, since white clouds will contrast more against the darker blue sky, and the shades of green on plants are more differentiated. Freckles and skin blemishes in portraits can be attenuated, tans can be rendered lighter. Filter factor is approximately 1.5.

Medium Yellow Filter 022

With stronger blue suppression, which extends into the blue-green, the effects described above are slightly stronger in the same types of applications. Clouds in the sky look very natural, but not yet dramatic. Distant views with light haze become clearer. An ideal filter, especially for landscape- and plant photographs. Filter factor is approximately 2.

Dark Yellow Filter 023

Even greater blue suppression and the attenuation into the blue-green range for a further increase in the effects as 022. Interesting for snow scenes under a blue sky, because the darkened blue shadows in the snow make the shapes of the landscape look more dimensional. Freckles and skin blemishes are diminished but lips are rendered more pale (to compensate use a dark lipstick!) Filter factor is approximately 3.

Yellow-Orange Filter 040

The effect of this filter is quite powerful. It darkens violet and blue very strongly, green strongly, it even darkens yellow-green a bit. Landscape- and architectural photographs have an increased, virtually "graphic" contrast, clouds in the sky already look dramatic. Because skin tones are strongly lightened in relation to the green tones of plants, this is a favored filter for nude photography outdoors. Filter factor is 4.

Red-Orange Filter 041

The intensified effect of this filter borders on the abstract. It darkens a blue sky with clouds to resemble the mood of an impending thunderstorm. Architectural photographs gain clarity and drama. Also interesting for b&w close-up photographs of flowers, when dark yellow, orange or red blossoms have almost the same brightness as the surrounding greenery. Depending on the subject, filter factor is 4 to 5.



Yellow-Green 060

Ideal for scenes where it is important to differentiate the green tonal values. The application is especially suited to landscape photography in the springtime because it enhances the light green color of the leaves. Due to its favorable effect on red tones, this filter is also suitable for portraits or group pictures taken in natural light. Filter factor is approx. 2.

Green 061

This dark green filter creates distinct differentiations of green tones in late spring and summer. It is also recommended for floral pictures that are used graphically, for tonal separations in still-life photography, and for the correction of red tones in portraits with high-speed film. Filter factor is approx. 3.

BLACK & WHITE FILTERS

Contrast without filter



B&W without filter



B&W with Green 060



B&W with Red 090



Colors and Gray Shades

Black-and-white film should render all colors in shades of gray in such a way that their brightness values look natural. Older photographers remember the days when yellow filters were a must for landscape photographs and portraits. Even films that were sensitized “panchromatically”, ostensibly to match human brightness perception, rendered blues too lightly and reds too darkly. And though b&w film no longer has that shortcoming, filters are still necessary for controlling the photographer’s translation of colors into shades of gray.

B&W photographs often lack impact because colors that are well differentiated in nature be equivalently luminous in shades of gray. For example, the red tiles on a roof and the green of nearby vegetation. But this can be managed. The color of the filter and its related colors are transmitted virtually undiminished, whereas their complementary colors are attenuated, so that they appear darker in the photo. When that loss of brightness is compensated in accordance with the filter factor, the result is a correct exposure that shows the colors related to the color of the filter as lighter shades of gray. Complementary colors will appear as darker tones.

Filters and TTL Metering

Today nearly all SLR cameras feature TTL metering, which means through an attached filter as well. This metering method takes into account the loss of light absorbed by the filter, so that filter factors usually need not be applied. However, when the exposure is measured with a separate exposure meter, then the filter factor has to be taken into consideration. Still, with darker filters (very dense colors), exposure bracketing of $\pm 1/2$ to ± 1 aperture stops is recommended, even with TTL exposure metering, because the spectral sensitivity of the metering cell can be significantly different from that of the film.

Brightness vs. Color Contrast

Unlike color, b&w photographs only have brightness contrast, no color contrast. That is why in the photography of objects, for example, things that have different colors but the same brightness will have similar gray values. For instance, when there is a blue toy in the foreground and red dress with the same brightness in the background, they will be reproduced with the same gray values. This is referred to as insufficient tonal separation. Colored filters are helpful in such situations. First decide which object is to be rendered lighter and which one darker. Then select a filter color that 1) is similar to the color of the object that is to be shown lighter and that 2) is as complementary as possible to the object that is to be rendered darker. If the two colors are already complementary, like blue and orange, select a filter that is similar to that of the object that is to be rendered lighter. If the two main colors are not complementary, like blue and red, a compromise can be used. Blue filters lighten the blue color, but it also darkens red a little. But a green filter can also be used. While it would only lighten the related blue color a little, it would darken the red color more strongly than the blue would. You would have then achieved a good tonal separation with the lighter gray of the toy and a darker gray for the dress.

Light Blue 080

Recommended for the correction of artificial light with overtones of yellow-red such as with older photo lamps or normal household bulb illumination. It is also used to darken skin tones for portrait or nude photography under natural light. Filter factor is 1.5.

Medium Blue 081

Enhances the tonal rendition of the sky by emphasizing mist in valleys and transmitting light rays over water, fog, and haze. In addition, this filter is used for the tonal separation in still-life photography and the correction of the light spectrum from artificial light sources. Filter factor is 2.

Light Red 090 [25]

Ideal for enhancing contrast. In landscape and architectural photography, for example, it lets clouds stand out clearly against a darkened sky and drastically reducing distant haze. Also used for tonal separation in still-life photography. Filter factor is 5.

Red 091 [29]

This filter gives a surrealistic effect in landscape and architectural photography by producing a “storm-like” cloud effect, “moonlight” effect, and “wood” effect. It is indispensable for tonal separation in still-life photography and for the reproduction of documents which have become illegible. Filter factor is 8.

SPECIAL FILTERS

FILTERS

338

499/403/415/420/080/099 SPECIAL FILTERS

Filter Size (mm)	30.5	35.5	37	39	40.5	43	46	48	49	52	55
499 F-Day #BWFLD()	46.95	46.95	46.95	46.95	46.95	46.95	46.95	46.95	35.95	36.95	43.95
499 F-Day-W/A #BWFLD()EW	—	—	—	—	—	—	—	—	82.95	82.95	92.95
499 F-Day-SLIM #BWFLDS()	—	—	—	—	—	—	—	—	64.95	64.95	74.95
403 UV Black #BW403()	46.95	46.95	46.95	46.95	46.95	46.95	46.95	46.95	26.50	26.50	29.50
403 UV Black-W/A #BW403()EW	—	—	—	—	—	—	—	—	82.95	82.95	93.95
403 UV Black-SLIM #BW403S()	—	—	—	—	—	—	—	—	64.95	64.95	74.95
415 UV Blocking #BW415()	46.95	46.95	46.95	46.95	46.95	46.95	46.95	46.95	35.95	36.95	43.95
415 UV Blocking-W/A #BW415()EW	—	—	—	—	—	—	—	—	82.95	82.95	92.95
415 UV Blocking-SLIM #BW415S()	—	—	—	—	—	—	—	—	64.95	64.95	74.95
420 UV Blocking #BW420()	46.95	46.95	46.95	46.95	46.95	46.95	46.95	46.95	35.95	36.95	43.95
420 UV Blocking-W/A #BW420()EW	—	—	—	—	—	—	—	—	82.95	82.95	92.95
420 UV Blocking-SLIM #BW420S()	—	—	—	—	—	—	—	—	64.95	64.95	74.95
080 Light Blue #BW080()	46.95	46.95	46.95	46.95	46.95	46.95	46.95	46.95	35.95	36.95	43.95
080 Light Blue-W/A #BW080()EW	—	—	—	—	—	—	—	—	82.95	82.95	92.95
080 Light Blue-SLIM #BW080S()	—	—	—	—	—	—	—	—	64.95	64.95	74.95
099 Infrared #BW099()	24.95	24.95	24.95	24.95	24.95	24.95	24.95	24.95	19.95	19.95	22.95
099 Infrared-W/A #BW099()EW	—	—	—	—	—	—	—	—	49.95	49.95	56.95
099 Infrared-SLIM #BW099S()	—	—	—	—	—	—	—	—	19.95	44.95	49.95
Filter Size (mm)	58	60	62	67	72	77	82	86	95	105	112
499 F-Day #BWFLD()	45.95	74.95	72.95	74.95	94.95	104.95	129.95	146.95	194.95	219.95	299.95
499 F-Day-W/A #BWFLD()EW	109.95	—	124.95	128.95	149.95	154.95	179.95	199.95	234.95	279.95	—
499 F-Day-SLIM #BWFLDS()	94.95	134.95	102.95	106.95	129.95	137.95	149.95	164.95	—	234.95	—
403 UV Black #BW403()	45.95	74.95	72.95	79.95	94.95	104.95	129.95	146.95	194.95	219.95	299.95
403 UV Black-W/A #BW403()EW	109.95	—	124.95	128.95	149.95	154.95	179.95	199.95	234.95	279.95	—
403 UV Black-SLIM #BW403S()	94.95	134.95	102.95	106.95	129.95	137.95	149.95	164.95	206.95	219.95	—
415 UV Blocking #BW415()	45.95	74.95	72.95	74.95	94.95	104.95	—	—	194.95	—	—
415 UV Blocking-W/A #BW415()EW	109.95	—	124.95	128.95	149.95	154.95	179.95	199.95	234.95	279.95	—
415 UV Blocking-SLIM #BW415S()	94.95	134.95	102.95	106.95	129.95	—	—	164.95	206.95	214.95	—
420 UV Blocking #BW420()	45.95	74.95	72.95	74.95	94.95	104.95	129.95	146.95	194.95	219.95	299.95
420 UV Blocking-W/A #BW420()EW	109.95	—	124.95	128.95	149.95	154.95	179.95	199.95	234.95	279.95	—
420 UV Blocking-SLIM #BW420S()	94.95	134.95	102.95	106.95	129.95	137.95	149.95	164.95	206.95	234.95	—
080 Light Blue #BW080()	45.95	74.95	72.95	74.95	94.95	104.95	—	—	—	—	—
080 Light Blue-W/A #BW080()EW	109.95	—	124.95	128.95	149.95	154.95	179.95	199.95	234.95	—	—
080 Light Blue-SLIM #BW080S()	99.95	134.95	102.95	106.95	129.95	137.95	149.95	164.95	234.95	—	—
099 Infrared #BW099()	24.95	39.95	29.95	38.95	46.95	52.95	72.95	79.95	109.95	134.95	174.95
099 Infrared-W/A #BW099()EW	67.95	—	76.95	79.95	92.95	94.95	112.95	119.95	139.95	169.95	—
099 Infrared-SLIM #BW099S()	67.95	82.95	69.95	69.95	79.95	84.95	97.95	106.95	142.95	164.95	—

092/093/486/489 SPECIAL FILTERS

Filter Size (mm)	30.5	35.5	37	39	40.5	43	46	48	49	52	55
Standard #BW()()	59.95	59.95	59.95	59.95	59.95	59.95	59.95	59.95	84.95	54.95	104.95
Standard-W/A #BW()()EW	—	—	—	—	—	—	—	—	49.95	49.95	56.95
Standard-SLIM #BW()S()	—	—	—	—	—	—	—	—	102.95	102.95	122.95
Filter Size (mm)	58	60	62	67	72	77	82	86	95	105	112
Standard #BW()()	107.95	112.95	112.95	124.95	149.95	174.95	194.95	214.95	299.95	324.95	379.95
Standard-W/A #BW()()EW	67.95	—	76.95	79.95	92.95	94.95	112.95	119.95	139.95	169.95	—
Standard-SLIM #BW()S()	134.95	144.95	139.95	149.95	179.95	199.95	214.95	229.95	294.95	334.95	—



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BLACK & WHITE FILTERS

YELLOW, ORANGE, GREEN, BLUE, RED FILTERS

Filter Size (mm)	30.5	35.5	37	39	40.5	43	46	48	49	52	55
Standard #BW()()	24.95	24.95	24.95	24.95	24.95	24.95	24.95	24.95	19.95	19.95	22.95
Standard-SLIM #BW()S()	—	—	—	—	—	—	—	—	44.95	44.95	49.95
Standard- W/A #BW()()EW	—	—	—	—	—	—	—	—	49.95	49.95	56.95
MRC #BW()MC ()	39.95	39.95	39.95	39.95	39.95	39.95	39.95	39.95	29.95	29.95	32.95
MRC-SLIM #BW()MCS()	—	—	—	—	—	—	—	—	52.95	52.95	69.95
MRC-W/A #BW()MC()EW	—	—	—	—	—	—	—	—	59.95	59.95	77.95

YELLOW, ORANGE, GREEN, BLUE, RED FILTERS

Filter Size (mm)	58	60	62	67	72	77	82	86	95	105	112
Standard #BW()()	24.95	39.95	29.95	36.95	46.95	52.95	72.95	79.95	109.95	134.95	174.95
Standard-SLIM #BW()S()	64.95	82.95	69.95	69.95	74.95	84.95	97.95	106.95	142.95	164.95	—
Standard- W/A #BW()()EW	67.95	—	76.95	79.95	93.95	94.95	112.95	119.95	139.95	169.95	—
MRC #BW()MC ()	34.95	59.95	42.95	49.95	62.95	79.95	104.95	109.95	154.95	179.95	—
MRC-SLIM #BW()MCS()	79.95	99.95	89.95	96.95	107.95	112.95	124.95	142.95	159.95	192.95	—
MRC-W/A #BW()MC()EW	89.95	—	99.95	109.95	124.95	124.95	144.95	159.95	179.95	219.95	—

YELLOW, ORANGE, GREEN, BLUE, RED FILTERS

Filter Size (mm)	122	Bay 1	Bay 2	Bay 3	Bay 6	Bay 50	Bay 60	Bay 70	Bay 104	Series 7	Series 93
Standard #BW()()	179.95	32.95	37.95	42.95	154.95	—	132.95	149.95	—	27.95	84.95
Standard-SLIM #BW()S()	—	—	—	—	—	—	—	—	—	—	—
Standard- W/A #BW()()EW	—	—	—	—	—	—	—	—	—	—	—
MRC #BW()MC ()	—	42.95	49.95	56.95	194.95	—	144.95	174.95	—	42.95	119.95
MRC-SLIM #BW()MCS()	—	—	—	—	—	—	—	—	—	—	—
MRC-W/A #BW()MC()EW	—	—	—	—	—	—	—	—	—	—	—

1. In the first parenthesis insert the color filter type. For Light Yellow insert 021, Medium Yellow (022), Dark Yellow (023), Yellow-Orange (040), Red Orange (041), Yellow-Green (060), Green (061), Medium Blue (081), Light Red (090) or Red (091). In the second parenthesis insert the filter size.

For example, a 72mm Medium Yellow MRC-Slim filter would be BW022MCS37.

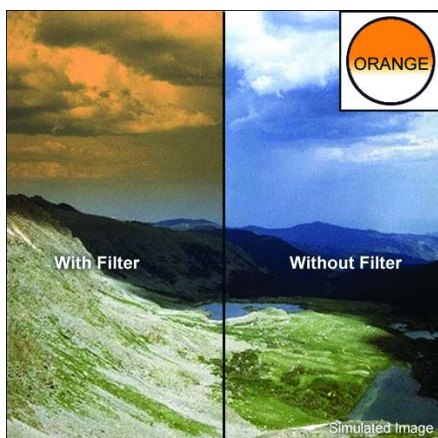
2. For Bay sizes insert just the letter B and the number. For example, a Bay 6 Standard Green filter would be BW061B6.

3. For Series 7 and 93, insert just the letter S and the number. For example, Series 7 MRC Yellow-Orange filter is BW040MCS7.

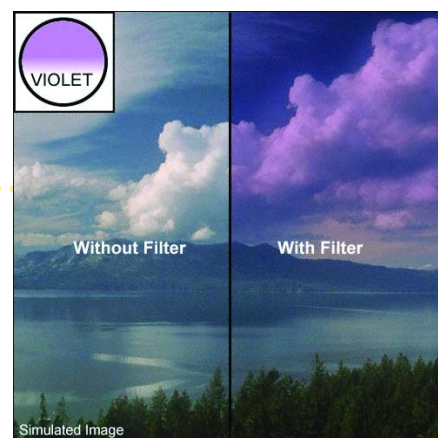
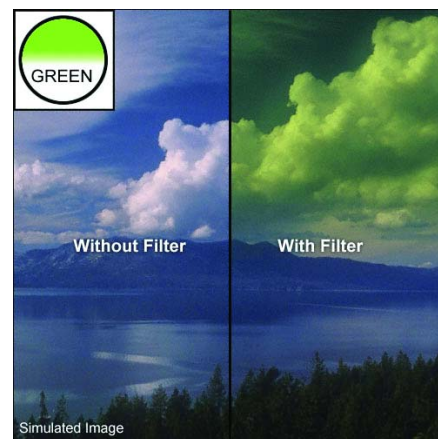
4. Series 5.5, Series 6, Series 8 and Series 9 are also available special order.

GRADUATED FILTERS

B+W graduated color filters are primarily intended for color photography and are used mostly for photography on color transparency film. When color negative films are used, the lab should be informed, so it won't "correct" the effects from the image. Of course they can also be used with black & white films, often with very interest effects. Fabricated from high-quality CR-39 acrylic, these filters are color toned in one half of the filter which is smoothly graduated into the clear portion. Colored and clear filter portions can be brought into the desired position by rotating the mount. They can also be combined with other filters or other color graduated filters.



Two color graduated filters rotated by 180° to each other allow a picture composition of colors to fade into each other.



180° to each other allow a picture composition of colors to fade into each other.

Graduated Gray 501

The neutral gray half of this filter transmits 50% of the incoming light, so that it darkens the respective portion of the subject by one f-stop without altering its colors. For example, when the sky is too bright in relation to the landscape, this is an ideal amount for good detail rendition in the clouds and for preventing the sky from being "washed out" by over-exposure.

Graduated Dark Gray 502

Because it attenuates the light twice as much as the Graduated Gray 501, by two aperture stops (it transmits 25% of the light), this graduated filter already produces quite dramatic effects. Because of the increased differences in brightness, it is even more important for the horizon line not be positioned too far from the center of the image.

Graduated Orange 524

The somewhat more delicate coloring of this graduated filter is recommended when the correction of the sunset mood is not to be pronounced, or when a certain amount of red coloring is already present, so that only a small enhancement would be sufficient. With heavy gray thunderstorm clouds it can produce a nearly awesome storm mood.

Graduated Violet 543

With grazing light and a sparse exposure, this graduated filter with its somewhat unnatural color can produce a ghostly, macabre moonlight effect. So it is more suitable for abstractions rather than enhancements of natural moods. An interesting effect can be achieved by using it in combination with Graduated Green 561 for the lower half of the image.

Graduated Tobacco 550

Those who have experienced a sandstorm in the desert will never forget that mood. With this graduated filter, one can approximate that mood: slightly threatening, yet still pleasantly "warm". The tobacco color is discreet, not overly colorful, so that it never appears gross nor overlay the existing colors as much as more intense graduated colors.

Graduated Green 561

Because of its vegetation color, this graduated filter is especially suitable for the lower half of an image when used in combination with other graduated filters that are being used to darken or to alter the color of the sky. With such filter combinations, the TTL exposure metering should be performed with filters in position on the lens.

Graduated Blue 581

This is an excellent solution when the sky isn't blue enough. It can be used effectively in combination with another graduated filter for the lower half of the image, so that in combination the sky will not be rendered too brightly or too pale. Example: sand dunes by the sea; using a Graduated Tobacco 550 for the lower half and a Graduated Blue 581 for the upper half of the image.

Graduated Red 590

This graduated filter is often referred to as the "sunset filter", because it can simulate a missing red sky in the evening or in the morning, or to enhance one that is too pale when the line of sight is towards the sun. By the sea or by a lake, the horizon line should be positioned high enough for the red portion of the filter also to cover the reflection of the water.

GRADUATED FILTERS



with Graduated Gray 501

with Graduated Blue 581

with Blue 581 and Tabac 550

GRADUATED FILTERS

Filter Size (mm)	49	52	55	58	60	62	67	72	77	82	86
Graduated Gray 501 #BW501()	45.95	48.95	52.95	54.95	64.95	57.95	64.95	74.95	92.95	119.95	136.95
Grad. Dark Gray 502 #BW502()	45.95	48.95	52.95	54.95	64.95	57.95	64.95	74.95	92.95	119.95	136.95
Graduated Orange 524 #BWGO()	45.95	48.95	52.95	54.95	64.95	57.95	64.95	74.95	92.95	119.95	136.95
Graduated Violet 543 #BWGV()	45.95	48.95	52.95	54.95	64.95	57.95	64.95	74.95	92.95	119.95	136.95
Graduated Tobacco 550 #BWGTO()	45.95	48.95	52.95	54.95	64.95	57.95	64.95	74.95	92.95	119.95	136.95
Grad. Yellow-Green 560 #BWGYG()	45.95	48.95	52.95	54.95	64.95	57.95	64.95	74.95	92.95	119.95	136.95
Graduated Green 561 #BWGGR()	45.95	48.95	52.95	54.95	64.95	57.95	64.95	74.95	92.95	119.95	136.95
Graduated Blue 581 #BWGBL()	45.95	48.95	52.95	54.95	64.95	57.95	64.95	74.95	92.95	119.95	136.95
Graduated Lilac 585 #BWGL()	45.95	48.95	52.95	54.95	64.95	57.95	64.95	74.95	92.95	119.95	136.95
Graduated Red 590 #BWGR()	45.95	48.95	52.95	54.95	64.95	57.95	64.95	74.95	92.95	119.95	136.95

B+W FILTERS ACCESSORIES

Plastic Filter Cases

Thanks to their transparent lids, these handy flat filter cases, made of impact-resistant plastic material, let you see right away which filter is stored inside. A foam rubber insert keeps filters from rattling. A filter contained in such a case can be carried in a pocket without any problems.

Plastic Filter Case (BWFC52)

For 49mm and 52mm filters5.95

Plastic Filter Case (BWFC77)

For 55, 58, 62, 67, 72 and 77mm filters5.95

Plastic Filter Case (BWFC105)

For 82, 86, 95 and 105mm filters5.95

4-Filter Plastic Case

The same case as above, except this case has an insert that holds four filters. Recesses keep the filters from touching each other. Finger indentations permit the easy removal of filters from their recesses. Available with a choice of insert for 49, 52, 55 and 58mm filtersCALL

B6 Filter Pouch (BWFPB6)

This folding padded filter pouch is made of a flexible plastic material with snap fasteners. Its see-through pockets hold six filters or close-up lenses in sizes up to 62mm. The pouch easily fits in any gadget bag, for instance readily accessible in a front compartment14.95

Nylon Fabric Filter Pouches



These nylon fabric filter pouches are made of padded, water-and-abrasion-resisting Nylon fabric with practical Velcro closures and a

white space for identification.

E1 Filter Pouch (BWFE1)

Holds one filter up to 77mm9.95

E2 Filter Pouch (BWFE2)

Holds one filter up to 112mm9.95

SOFT FOCUS FILTERS

Soft focus filters are popular lens attachments. Although they have a wide variety of applications, there is a tendency to use them to achieve a stronger or lower contrast level. However, images created with soft focus filters with lens shaped structures in its surface retain their sharpness while softening contours and causing a pleasing halo effect around the highlights. This effect remains unchanged from the lens aperture opening with these types of filters.

Special-effect filters which are slightly colored or have concentric rings in the glass create a look that is similar to a slightly-out-of-focus effect. This increases with wider lens aperture openings and diminishes by stopping down.

Soft-focus and fog filters are not only useful for still-life and romantic portrait photography, they can produce a surrealistic atmosphere for everyday subjects too. Partial soft focus via a filter with a clear center can help concentrate the attention of the viewer to a specific picture subject. In this case, using larger lens openings to create a nice flow between the sharp and less sharp portions of the image is recommended. Black and white pictures taken with soft focus or fog filters appear slightly dull. Underexposing can help remedy this.

**Zeiss Softar 1 and 2**

Despite softening of the highlights, the basic focus remains sharp up to the edges with this classic soft focus accessory — an advantage which makes focusing easy. The degree of softening is not affected by the aperture setting. Tiny lens-shaped structures in the glass of the Softar create this pleasing effect.

Fog Filters 1 and 2

Pictures taken with the fog filter appear to have been taken in a fine, bright mist. Whitening colors and soft lights create a romantic atmosphere which can enhance the tone of the image in an unusual way. In backlit situations, there is an even stronger effect. The three densities allow for variations.

Soft Image 655

Subject contours “flow” markedly soft with the Soft Image filter. Prominent halos form around light sources and reflections, and bright parts of the subject acquire a noticeable veil of light. This effect is maintained even when the lens is stopped down. Recommended for portraits and for backlit situations.



without Softar

with Softar 1

with Softar 2

with Soft Image 655

ZEISS SOFTAR/FOG/SOFT IMAGE FILTERS

Filter Size (mm)	43	46	49	52	55	58	B60	62	67
Zeiss Softar 1 #BWZS1()	—	—	184.95	184.95	199.95	199.95	—	199.95	214.95
Zeiss Softar 2 #BWZS2()	—	—	184.95	184.95	199.95	199.95	—	199.95	214.95
Fog 1 #BWF1()	24.95	24.95	24.95	26.95	29.95	32.95	—	36.95	37.95
Fog 2 #BWF2()	24.95	24.95	24.95	26.95	29.95	32.95	—	36.95	37.95
Soft Image 655	22.95	22.00	22.95	23.95	23.95	25.95	—	31.95	35.95

In the parenthesis insert the filter size. For example, a 39mm Zeiss Softar 1 filter would be BWZS139.

CROSS SCREEN & PRISM FILTERS

3x Multi-Image Prism

The three wedges of equal size that meet at the center of this prism attachment are made of high-grade optical glass, and they deflect the light in such a way that the lens looks at the same subject in three directions. The lens should have an approximately normal focal length (50mm). The result will be a triple image with pleasingly merging contours. The positioning of the images can be varied by rotating the mount of the attachment.

5x Multi-Image Prism

Four prism wedges around a square plano-parallel center correspondingly generate five nearly identical images: one in the center and four around the periphery, all with softly merging contours. The most suitable lens is one with a normal focal length, in order for the outer four repeated images to be the same as the central one. The filter can also be rotated for the best arrangement of the outer images, and is very popular for use on video camcorders.

6x Multi-Image Prism

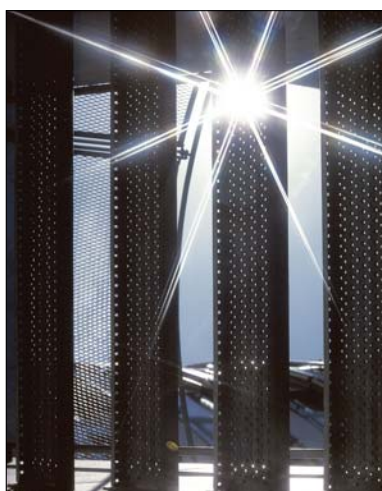
In this prism attachment, the central plano-parallel section is surrounded by 5 wedges, so that the final picture will consist of a central image repeated five times around the perimeter; a total of six images with softly merging edges. Like the other attachments, it should be used on a lens of approximately normal length, and can be rotated.



CROSS SCREEN & MULTI-IMAGE FILTERS

Filter Size (mm)	39	40.5	43	46	49	52	55	58	60	62	67	72	77
4x Cross Screen #BWCS4()	32.95	33.00	33.00	33.00	33.00	32.95	34.95	37.95	47.95	42.95	44.95	52.95	59.95
6x Cross Screen #BWCS6()	32.95	33.00	33.00	33.00	33.00	32.95	34.95	37.95	47.95	42.95	44.95	52.95	59.95
8x Cross Screen #BWCS6()	32.95	33.00	33.00	33.00	33.00	32.95	34.95	37.95	47.95	42.95	44.95	52.95	59.95
3x Multi-Image Prism #BWP3()	—	—	—	—	44.95	44.95	49.95	52.95	—	64.95	69.95	74.95	79.95
5x Multi-Image Prism #BWP5()	—	—	—	—	44.95	44.95	49.95	52.95	—	64.95	69.95	74.95	79.95
6x Multi-Image Prism #BWP6()	—	—	—	—	44.95	44.95	49.95	52.95	—	64.95	69.95	74.95	79.95

In the parenthesis insert the filter size. For example, a 55mm 5x Multi-Image Prism would be BWP555.



4x Cross Screen

The star patterns created around light sources by star screens are not spread out as colorfully as those created by the Spectra series. Instead, their colors are less pronounced. The rays begin right at the light sources, they are very long and they are most effective when they are not vertical and horizontal, but at an angle of approximately 45° to the vertical axis.

6x Cross Screen

The star pattern produced by this screen is similar to that of the 4x except that it generates 6 beams from light sources and reflections at an angle of 60° to one another. Here too the light rays emanate right at the light sources, whereas there is a small separation when Spectra filters are used.

8x Cross Screen

Like two 4-beam star screens superimposed at a rotational angle of 45°, this star screen generates eight star beams. Therefore, as is the case with multi-beam Spectra filters, there should only be a few light sources within the image area and the background should have large dark areas in order for the star beams to remain recognizable.

PRISM FILTERS

To explore certain domains photographically, to make things become visible in a way and with a richness in details that is almost imperceptible to our bare eyes can be incredibly exciting. Using inexpensive close-up lenses that take up hardly any space in the gadget bag, the range of applications, especially of lensed with normal or short telephoto focal lengths, can be expanded dramatically.

Compared to extension tubes, close-up lenses can be more desirable, not only because of their lower price, weight, and size, but also because of the clearly better image quality that can be achieved at reproduction ratios of up to 1:2.5. The extremely strong Macro Lens can even be used to reproduce subjects in the macro range at nearly 1:1, if a small reduction of sharpness in the corners of the frame is acceptable (because of the very shallow depth of field, the background in most macro photographs is completely unsharp anyway).

Close-Up #1

With +1 diopter, it is ideal for telephoto and zoom lenses with a near focusing distance of approximately 3¼', resulting in a focusing range without a gap. Ideal for lenses with focal lengths between 85mm (up to approximately 1:5) and 200mm (up to approximately 1:3).

Close-Up #2

The +2 diopter of this close-up lens focus at a distance of 1½' with the lens focused at infinity. For the normal lens it is a stepless extension of its close-up range up to approximately 1:4.5. On short to medium telephoto lenses it seamlessly extends the Close-Up #1 range (with an 85mm lens to approximately 1:3.5 and with a 135mm lens to 1:2.5).

Close-Up #3

With +1 diopter, it is ideal for telephoto and zoom lenses with a near focusing distance of approximately 3¼', resulting in a focusing range without a gap. Ideal for lenses with focal lengths between 85mm (up to approximately 1:5) and 200mm (up to approximately 1:3).

Close-Up #4

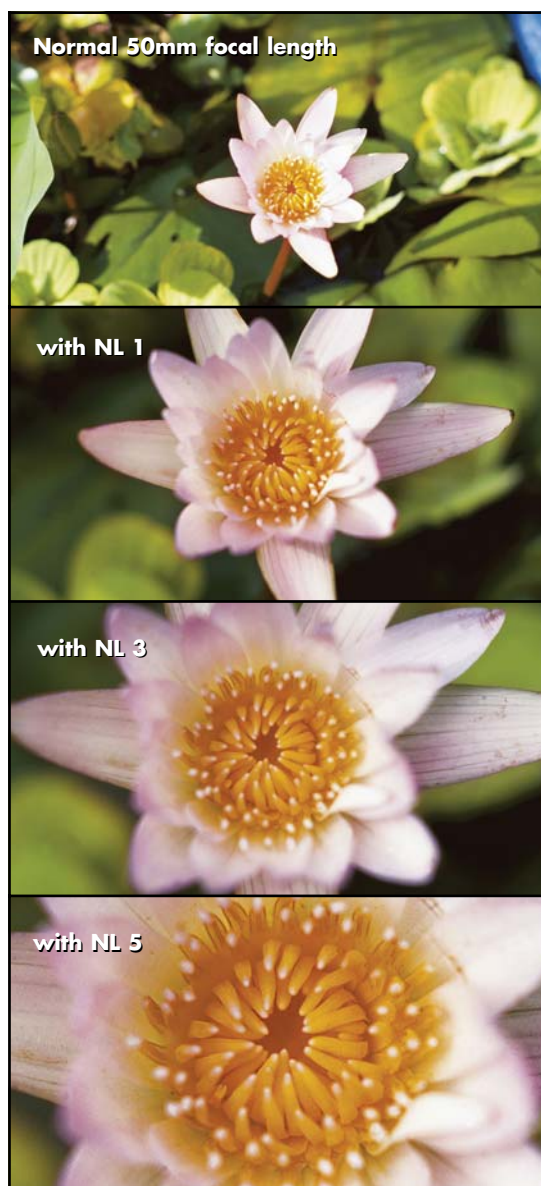
The +4 diopters of this close-up lens are the right power for closer focusing with a 50mm lens (up to 1:3) when you have reached the limit with Close-Up #2. With 85mm (up to approx. 1:2.1) and 100mm (up to 1:1.9) telephoto lenses, it is the highest power, and it should be used with the main lens stopped down to at least f/8.

Close-Up #5

With +5 diopters, this filter serves for the seamless extension of the range provided by the #3 close-up lens on a 35mm main lens (up to 1:3.5). If you can tolerate a small gap after the #2 close-up lens on a 50mm main lens (1:4), then you enter a little further into the macro range with the #5 instead of the #4 (up to 1:2.6).

Macro Lens

The +10 diopter power makes it possible to explore true macro ranges without the need for an expensive special lens, in order to reproduce tiny subjects at enormous proportions (approx. 1:2 to 1:1.5). Apertures of f/8 or f/11 are recommended for good corner-to-corner sharpness. Because of its great power, it is also suitable for use with digital cameras.



CLOSE-UP FILTERS

#1/#2/#3/#4 CLOSE-UP FILTERS											
Filter Size (mm)	30.5	35.5	37	39	40.5	43	46	48	49	52	55
Standard #BW() ()	—	—	—	—	—	24.95	24.95	24.95	19.95	19.95	22.95
Standard-W/A #BW() ()EW	—	—	—	—	—	—	—	—	—	—	—
MRC #BW()MC()	—	—	—	—	—	—	—	—	—	—	—
MRC-W/A #BW()MC()EW	—	—	—	—	—	—	—	—	—	—	—
Filter Size (mm)	58	60	62	67	72	77	82	86	95	105	112
Standard #BW() ()	24.95	39.95	29.95	36.95	46.95	52.95	—	—	—	—	—
Standard-W/A #BW() ()EW	—	—	—	—	—	—	—	—	—	—	—
MRC #BW()MC()	—	—	—	—	—	—	—	—	—	—	—
MRC-W/A #BW()MC()EW	—	—	—	—	—	—	—	—	—	—	—
Filter Size (mm)	122	Bay 1	Bay 2	Bay 3	Bay 6	Bay 50	Bay 60	Bay 70	Bay 104	Series 7	Series 93
Standard #BW() ()	—	—	—	—	—	—	—	—	—	27.95	—
Standard-W/A #BW() ()EW	—	—	—	—	—	—	—	—	—	—	—
MRC #BW()MC()	—	—	—	—	—	—	—	—	—	—	—
MRC-W/A #BW()MC()EW	—	—	—	—	—	—	—	—	—	—	—

1. In the first parenthesis insert close-up power (CU1, CU2, CU3 or CU4). In the second parenthesis insert the filter size.

For example, a standard 46mm #2 Close-up filter would be BWCUCU246.

2. For Bay sizes insert the close-up power (CU1, CU2, CU3, CU4), the letter B and the number. For example, a Bay 1 Close-Up #2 would be BWCUCU2B1.

3. For Series 7 and 93, insert close-up power (CU1, CU2, CU3, CU4), the letter S and the number. For example, a Close-Up #3 in Series 7 is BWCUCU3S7.

#5 CLOSE-UP & MACRO LENS (10X)											
Filter Size (mm)	30.5	35.5	37	39	40.5	43	46	48	49	52	55
Close-Up #5 #BWCUC5()	—	—	—	—	—	24.95	24.95	32.95	27.95	27.95	29.95
Close-Up #5 WA #BWCUC5()EW	—	—	—	—	—	—	—	—	—	—	—
Macro Lens #BWML()	—	—	—	—	—	—	—	—	35.95	36.95	43.95
Macro Lens WA #BWML()EW	—	—	—	—	—	—	—	—	—	—	—
Filter Size (mm)	58	60	62	67	72	77	82	86	95	105	112
Close-Up #5 #BWCUC5()	34.95	47.95	39.95	44.95	49.95	59.95	—	—	—	—	—
Close-Up #5 WA #BWCUC5()EW	—	—	—	—	—	—	—	—	—	—	—
Macro Lens #BWML()	45.95	—	—	—	—	—	—	—	—	—	—
Macro Lens WA #BWML()EW	—	—	—	—	—	—	—	—	—	—	—
Filter Size (mm)	122	Bay 1	Bay 2	Bay 3	Bay 6	Bay 50	Bay 60	Bay 70	Bay 104	Series 7	Series 93
Close-Up #5 #BWCUC5()	—	—	—	—	—	—	—	—	—	—	—
Close-Up #5 WA #BWCUC5()EW	—	—	—	—	—	—	—	—	—	—	—
Macro Lens #BWML()	—	—	—	—	—	—	—	—	—	—	—
Macro Lens WA #BWML()EW	—	—	—	—	—	—	—	—	—	—	—

In the parenthesis insert the filter size. For example, a 72mm Macro lens filter would be BWML72.