

# Rodenstock Quality Filters and Aspherical Magnifiers



Optically and mechanically perfect  
for better photos  
with analog and digital cameras



### **Filters may solve many problems**

High-quality taking lenses create sharp, high-contrast images which are free from distortion. But what happens if it is too bright or if the light is not a neutral white, if it contains too much UV radiation or if unwanted reflections occur on glossy surfaces? Or if black and white film does not convert the object colors into the gray values the photographer really wants? Then Rodenstock quality filters can help.

Filters should never impair the lens quality. Nobody is willing to obtain the desired effects at the cost of blur, flare or ghost images. But LINOS guarantees that Rodenstock quality filters made from high-grade optical glass maintain sharpness, contrast and color faithfulness even with the best lenses and that their excellent single or multi-coating (see above diagram and chart on pages 11/12) prevents ghost images and flare.

### **Filters adapt the light to the film so that it "sees" like the eye**

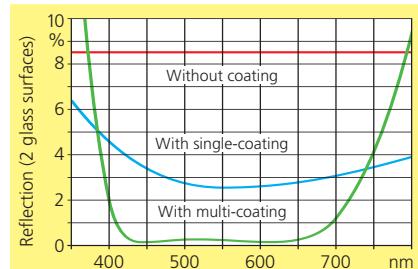
The human eye can adapt easily to the varying conditions of brightness, contrast and color hue and eliminate effects which create falsification for the film or the digital sensor and which can lead to overexposure or discoloring.

However, filters can frequently completely eliminate such errors, or at least can reduce them to a negligible level.

But filters can do more than just remedy defects. Sometimes the photographer will want to produce a creative shot and so will deliberately use a filter to achieve a better effect by deviating from the natural image. In these cases, too, the photographer wants to enhance the result so that once again only the best filters are good enough.

### **Slimline filter mounts may prevent vignetting in wide-angle shots**

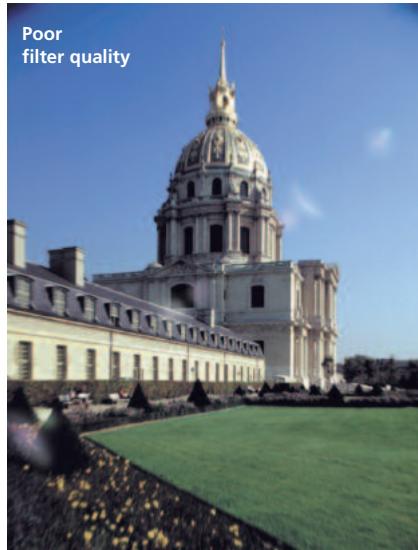
Recently, lenses and zooms with very short focal lengths have become popular. For this reason, LINOS has introduced Slimline mounts for filter sizes from 28 to 95 mm. These mounts can practically prevent vignetting (= shading of the picture corners) even if the lens manufacturer has actually designed the front thread so that it is too small for the use of filters. The Rodenstock Slim-



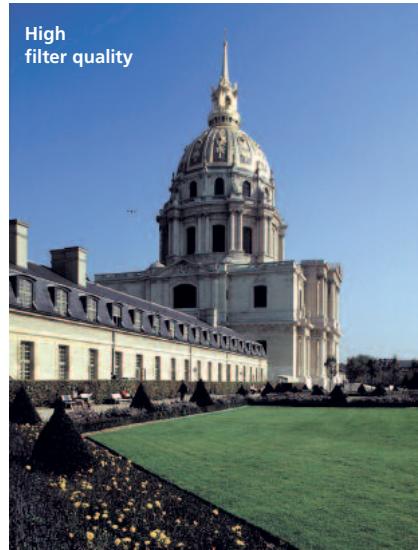
**Reflection reducing effects by coating.**

line mounts add only 4 mm (circular polarizers 5 mm) to the front of the lens.

See page 11/12 for a filter overview chart.



**Low-quality filters reduce sharpness, generate reflections and contrast-reducing flare when shooting against the sun and they can cause vignetting.**



**Rodenstock filters are manufactured just as carefully as precision lenses to ensure sharp and brilliant photos and digital or video recordings.**

## UV absorbing filters

**O** These glass filters are practically neutral in color effect. They transmit visible light without hindrance while cutting out ultraviolet radiation. Due to the very short wavelength, UV is highly scattered and has a high intensity especially in hazy conditions as diffuse radiation. Color films react with a blue-violet veil, while b&w films give the sky a brighter look, which reduces contrast in the clouds, and with both kinds of films UV radiation makes distance views pale. Rodenstock UV absorbing filters prevent this: the colors remain pure and distance views become clearer and crisper. You do not need to extend the exposure time. A UV filter can also be used as a lens protection, e.g. against water splashes, sand, etc.



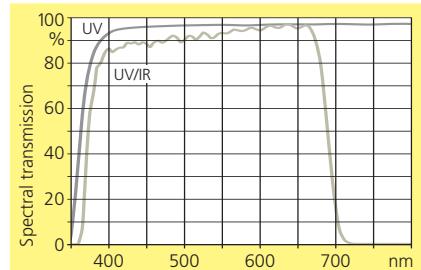
UV causes the distance to fade.



The UV absorbing filter restores clarity.

## UV/IR blocking filters

**O** These filters for digital or video cameras effectively block UV and infrared (IR) radiation which, due to the high IR sensitivity of the CCD/CMOS sensors of digital cameras can lead to blur, color shift and fogging.



## ND filters



These glass filters have a neutral gray tint and reduce all visible colors equally, e.g. by two f-stops. This allows motion blur (smear effect with panning camera) to be achieved with a longer exposure time than would otherwise be permitted by the given film speed. Alternatively it allows less depth of field with a larger aperture. ND filters are available in different densities for an extension of exposure time by a factor of 2, 4 or 8 or for an opening of the diaphragm by 1, 2 or 3 f-stops.

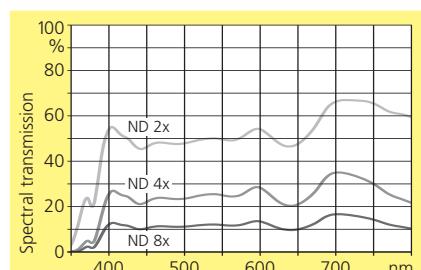


Without filter



With ND filter 8x

With an ND filter 8x at aperture 16 and the same brightness and film speed, the time is 1/8 s for "flowing" water.



## Center filters

These filters for wide-angle lenses of technical cameras are described in the brochures for the Rodenstock lenses Grandagon-N and Apo-Grandagon.

The "clear vision effect" of the UV blocking filter and the light absorption of the ND filter required for a high speed or long exposure time cannot be simulated later on the PC.

# Polarizing filters

## How polarizing filters work

In a rotatable mount, these filters contain a micro-thin polarizing film sandwiched between two protective lens plates. This film transmits light only in one polarization plane. Normal non-polarized light is reduced by half without any further visible effect, roughly like an ND filter 2x. In contrast, polarized light is either transmitted without hindrance, more or less reduced or even totally rejected by the polarizer, depending on its setting (angle of rotation).

Polarized light is created when slanted incident light is reflected from an electrically non-conducting surface. Non-conductive surfaces include glass, varnish and plastics. However, water also has a very low conductivity (in comparison with metal) so that water reflections are polarized. Even reflections on aluminum fronts are polarized and so can be influenced by a polarizing filter, because aluminum forms a non-conductive surface film of aluminum oxide and aluminum carbonate in air after some time.

## Polarizers can reduce reflections

By turning the polarizing filter in its rotatable mount in front of the lens, it is therefore possible to effectively control the intensity of reflections on these materials according to the following rules:

- If the transmission direction of the polarizing filter runs parallel to the polarization plane, the reflection appears twice as bright in the image, because the polarized reflected light is transmitted fully without hindrance while the remaining light is reduced by about 50%.

- If the direction of vibration of the polarized light and the transmission direction of the polarizing filter are crossed, the reflection is reduced or even suppressed. At an incident/reflection angle

of 55°...60°, the effect is strongest and the suppression practically complete.

## Polarizers provide saturated colors

As the blue sky light is also polarized (most strongly in a direction of around 90° to the sun), the sky can be darkened with a polarizer to emphasize the clouds. In addition, the blue sky light scattered by grass, leaves, roofs, etc. can also be eliminated in order to enhance the purity of the object colors.

Rodenstock polarizing filters contain a high-grade polarizing film which is cemented between thin protective glass plates in order to minimize flare and reflection loss. An edge seal protects the film from environmental influences.

## There are linear as well as circular Rodenstock polarizing filters

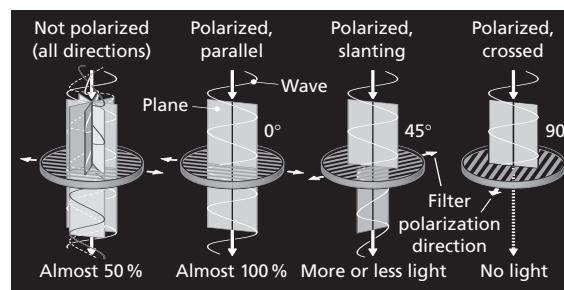
Normal polarizers use linear polarizing filters. As their light may falsify the TTL light metering of cameras with a beam splitter in front of the photo sensor (see camera's instructions for use) and can also have an effect on the autofocus facility of AF reflex cameras, alternatively so-called circular polarizing filters are also available with an additional optically effective film. Their polarized light exits on the lens side in a fashion that behaves like non-polarized light for the beam splitter. Cameras without autofocus and without a beam splitter in front of the photo cell of the exposure meter can be used with linear polarizers which are equal to circular polarizers in quality, but which are cheaper.

Because polarizing filters have a sandwich design (glass / plastic sheet / glass) and have to have a rotatable mount for the alignment of the polarization plane, they are relatively thick and can cause vignetting in combination with a wide-angle lens or zoom. For this reason,

LINOS can offer the circular polarizing filters from 39 to 86 mm in a rotatable Slimline mount without a front thread. These polarizers add only 5 mm to the front of the lens.

In contrast, the linear polarizing filters of all thread sizes have a conventional rotatable normal mount with a front thread which can be used to fit a lens hood or another filter, e.g. a conversion filter to match the color temperature.

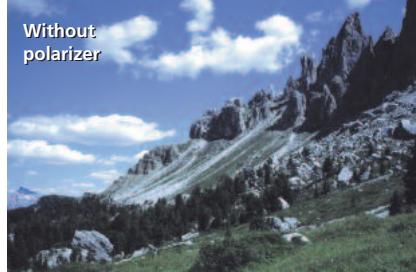
However, polarizing filters should generally not be used in conjunction with super wide-angle lenses because the filter effect is greatly dependent on the angle of incident light so that with an extremely large image angle completely different effects can occur in the left and right sides, e.g. with landscape shots a dark violet sky on the left and a delicate blue sky on the right.



The high-quality polarization foil of these polarization filters has been cemented for the best optical quality and the edge sealed for protection against external influences.

## Polarizers (linear)

 The low-cost linear polarization filters are the ideal polarization filters (because they do not require any additional foil for the subsequent circular polarization). However, they are only suitable for cameras which have no beam splitters in the autofocus beam path or the light meter beam path. They can therefore above all be used for viewfinder cameras and those digital cameras which are not SLR cameras. With SLR cameras, it is necessary to consult the manual to clarify whether linear polarization filters can be used without problem or whether circular polarization filters are necessary.



The diffuse blue sky light is reflected more or less strongly from the surfaces of almost all objects. This is the reason why a bluish gray fog is usually superimposed on the actual colors outdoors.



The polarizing filter darkens the sky so that the clouds have more "depth" and it eliminates the polarized bluish fog to provide maximum color saturation for a more impressive image.

## Polarizers (circular)

 Circular polarization filters are a little more expensive due to an additional foil to achieve the circular polarization which is necessary for some cameras to prevent an irritating interaction with beam splitters. They provide the same effects as linear polarizers and are used in the same way.



A polarizer orientation for eliminating reflections on vertical surfaces enhances reflections on horizontal surfaces.



The polarizer has been rotated 90° for a much better result without the blue cast from the sky on the motor hood.

**Mirror effects of polarizing filters promote creative experimentation**  
In this comparison, both shots were taken with polarizing filters: In the left-hand photo, the polarizing filter was turned while monitoring the reflex camera's viewfinder image (this camera type shows the effect correctly in the viewfinder) so that the maximum reflection elimination is performed on the vertical side surface of the car body. The front fender area also shows lower reflections and appears very dark. The hood, windshield and roof edge, however, show in-

creased reflections and a clear blue discoloration (blue sky!).

For the second shot, the polarizer was turned through 90° so that maximum reflection elimination now occurs on the hood, on the windshield and on the roof edge. The blue discoloration in the black paintwork has now been fully

eliminated. Now the left side area and the fender with the front spoiler to the right of the license plate show clearer reflections, which in this case, however, create a dynamic effect. The reflections on the showroom window in the background never change because the direction of gaze is perpendicular to the glass surface.

**Rodenstock polarization filters help create brilliant images with rich colors without blue discoloration due to a blue sky and allow a perfect control of reflecting surfaces.**

# Skylight filter · Fluorescent lamp filter (FLD filter)

## Skylight filter

 These filters have a pale pink tint and act like a UV absorbing filter to cut out ultraviolet radiation.

In addition, they eliminate the false colors in shadow due to indirect light from the blue sky and the green landscape. This blue green color distortion is particularly unpleasant on skin.

A skylight filter should only be used if the entire motif is in the shade. For the areas lit by direct sunlight will also be subject to the pink filter even though they do not have any blue-green color distortion – they then turn pink. For this reason, a skylight filter should never be used for front-lens protection (use an almost neutral UV blocking filter instead).



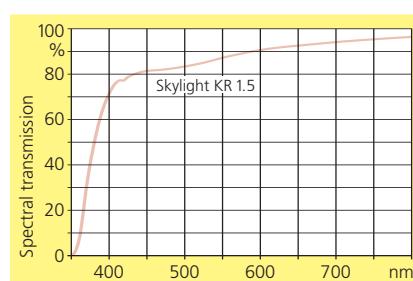
**Without filter**



**With skylight filter**

**The skylight filter helps neutralizing.**

Although a skylight filter can substantially enhance the color quality on slide film, it does not provide any advantages for color negative film or digital or video cameras. This is because its effect is very subdued and easily replaced without any visible difference by filtering during printing or by an electronic white balance if the UV radiation is not too high (and then a UV filter would be better).



## FLD filter

 This pale magenta filter provides a higher absorption of the green range of the spectrum and therefore prevents the typical and frequently irritating greenish hue on daylight film under most fluorescent lighting. Since this hue can hardly be recognized by the eye, it is generally underestimated. However, color slide film is very sensitive to it. Unfortunately the intensity of the green light is not the same for all common fluorescent tubes. The Rodenstock FLD filter (FL = fluorescent lamp; D = daylight) is designed for the very frequently used type of "daylight" fluorescent lamps.

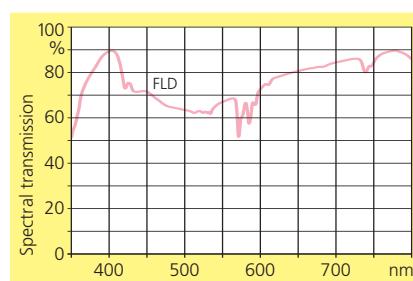


**Without filter**



**With FLD filter**

**The light purple FLD filter renders the colors perfectly naturally again.**



**Whether the problem is blue discoloration in the shade or green discoloration with neon lights – the right Rodenstock filter will always restore natural colors.**

# Conversion filters (LB filters)

## Conversion filters (LB)

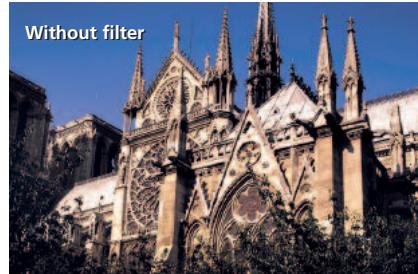


With these relatively pale blue and amber tint filters, you can raise or lower the color temperature of the light

(LB filter = light balancing filter). Daylight is reddish in the morning, white at noon and reddish again in the evening. And from the 60 W household tungsten to the 1000 W halogen bulb each of them has a different coloration. Unfortunately, unlike the human eye, color slide film does not adapt to this change, but reacts with a color shift. Daylight films only render colors correctly around mid-day with direct sunlight and light cloud (at a color temperature around 5600 K). Tungsten films, in contrast, are balanced for the light of halogen lamps (3200 K) with a very high red content. Therefore, conversion filters are a must for every discriminating photographer.

As a measure of corrective power, the filter strength is given in "mired" (micro reciprocal degree) or in "decamired" (= 10 mired). The Kodak filter codes are also often used, but their numbers bear no logical relation to the filter power. The following chart shows both the Kodak codes and the mired values:

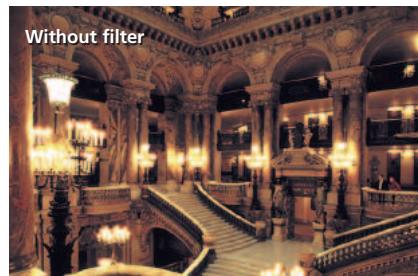
Kodak Color Code	Color	Usual name	Mired value
82 A	Very pale bluish	KB 2	- 15
82 B	Very pale bluish	KB 3	- 30
82 C	Bluish	KB 6	- 60
80 A	Blue	KB 12	-120
81 B	Pale amber	KR 3	+ 30
85	Amber	KR 6	+ 60
85 B	Amber	KR 13	+120



Without filter  
The low afternoon sun has given all colors a strong amber discoloration.



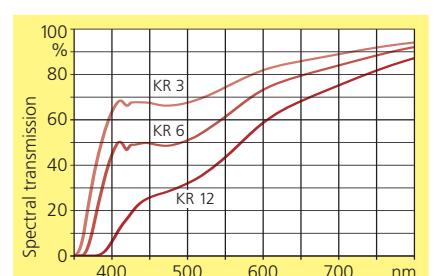
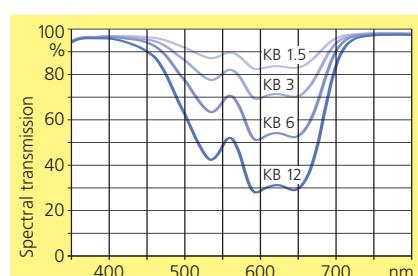
With conversion filter KB 3  
The pale bluish conversion filter KB 3 (82 B) corrects this in a discreet manner.



Without filter  
High red and low blue content of the tungsten light shift colors to orange.



With conversion filter KB 13 (80 A)  
The blue conversion filter KB 13 (80 A) reduces red and yellow correctly.



Conversion filters allow perfect white balance for shots on color reversal film as with digital cameras.

# Color filters for black & white

## Filters for enhancing gray contrast

These tinted glass filters in deep yellow, green, orange or red colors are used with b&w film to convert the filter color into lighter and its complementary color into darker gray tones. This may be to correct unfavorable tones (e.g. if the gray contrast would be too low despite a high color contrast) or as a deliberate manipulation to obtain a more impressive representation. Although these filters are not intended for use with color films, they may occasionally provide interesting special effects.

## Green filters

 Green filters make greens lighter and reds (and to a lesser extent blue) darker. So they render leaves, for example, as lighter and red blossoms or tiled roofs as darker. This is often an advantage for landscapes or for close-ups of flowers or other plants. Green filters also give greater expression to portraits (do not use if subject has skin blemishes) and provide the correct gamut conversion of the colors to gray under tungsten light with a high amber content.

## Yellow filters

 Yellow filters are the most popular type of filter for b&w shots, particularly for landscape photography. They darken a blue sky so that the white clouds (or the snow in the winter time) appear with greater brilliance. As the effect of bright yellow filters is very discreet, medium to dark yellow filters are preferred in most applications.

## Orange filters

 Orange filters darken blue even more than yellow filters and also bluish-green and some green to create a very dramatic (cloud) atmosphere in landscape shots. With infrared b&w or color film, they are the most popular filters for magical effects.

## Red filters

 Red filters have an even more dramatic effect than yellow or orange filters. They are ideal for "moonlight shots" during the day (underexpose slightly!) and for the cloud towers of an impending storm. Dark red filters with infrared film serve to suppress the shortwave portion of the visible spectrum and so to achieve spectacular color distortion: because plants which contain chlorophyll reflect a lot of IR, they appear red on IR color film and almost white (like snow) on IR b&w film.



Clouds contrast strongly with the sky.



High contrast of red/pink against blue.



The eye sees a high color contrast.

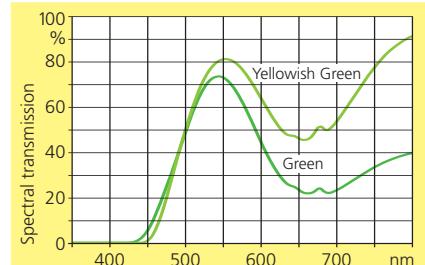
Objects of different color can be distinguished easily in color images due to their color contrast even with the same brightness.



Pale sky, low contrast (roofs, flowers)



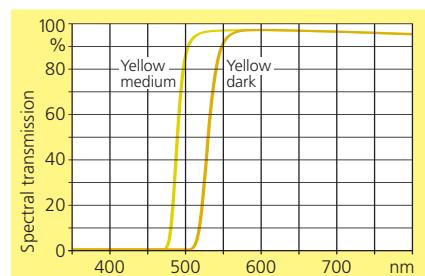
Emphasized clouds, lightened flowers.



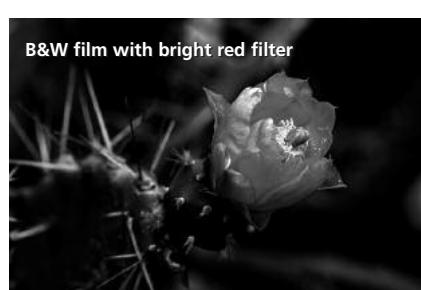
Bright sky, transparent sails, dark sea.



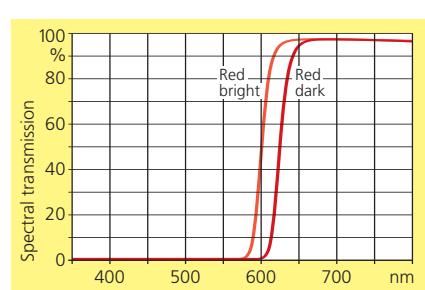
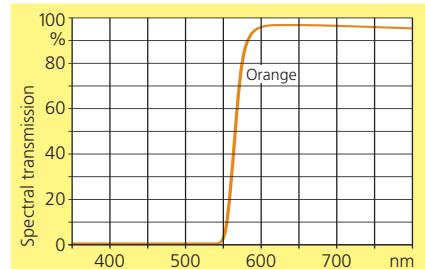
Enhanced contrast and better fidelity.



Almost indistinguishable gray values.



Red appears brighter and green darker.



Color filters help the photographer to control the gray conversion of the colors such that there is always adequate contrast.

# Soft focus · Adapter rings

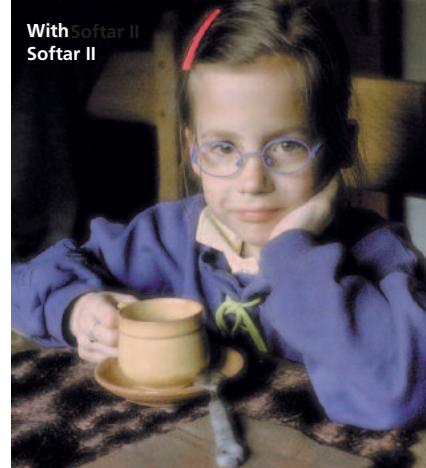
## Softar I and II

**O**n the left, the famous professional lens Rodenstock Imagon soft-focus produces beautifully softened portraits – but at the price of a whole lens. But for those photographers who only occasionally want to “soften” their shots and do not want to spend quite so much, the Rodenstock filter program also includes the high-grade Softar softeners from CARL ZEISS in the powers I and II. These soft focus filters are most effective with a short telephoto-lens (e.g. with a 35 mm camera with a focal length of around 85 or 105 mm) and with a larger aperture, from around f/2.8 to f/5.6.

Although softeners have become very popular as “de-wrinklers”, their use is by no means limited to this application, as the pictures on the right hand side show. The diffusion created at the edge of highlights or other very bright parts spreading into the shadows can, for example, give even bouquets a touch of romance or emphasize the dream-like gaze of a little sweet girl.



A good lens provides a sharp image; however, for portraits of a little girl this may produce too harsh an effect.



With the Zeiss Softar II, the sharp core picture remains unchanged up to the details, but it is covered by a light veil.

The most effective diffusion is achieved when a slanted backlighting generates haloes at the edges which then light up against a dark background (blonde hair is the classical example).

## Adapter rings

**O**n the left, adapter rings allow a filter to be fitted to a lens with a smaller connecting thread. In the opposite case, that is when a smaller filter is adapted to a bigger lens with a larger thread, there is a strong possibility of vignetting, particularly with wide-angle lenses. If you have lenses with different thread sizes, we strongly recommend that you purchase the filters with

the larger diameters and then use adapter rings to fit these to the smaller lens diameters rather than vice versa.

When ordering, you should always give the lens thread and the filter thread and state which is which.

**Soft-focus lenses produce magically appealing portraits without blur.**

**Adapter rings save money for an additional (smaller) filter set.**

# Rodenstock filters overview

All Rodenstock filters are high-grade coated, filters marked with a pink bar are multi-coated

Normal mount = gray bold numbers, e.g. "52"  
Slim mount = light-faced numbers, e.g. "52"

				M 27x0.5	M 28x0.75	M 30x0.75	M 30.5x0.5	M 37x0.75	M 39x0.5	M 40.5x0.5
Filter name	Exp. factor	Page	Filter type No.							
UV blocking filter	1x	3	1095.0030....	<b>027</b>	028	030	031	037	039	040
UV blocking filter multi-coated	1x	3	1095.0032....				031	037	039	040
UV/IR blocking filter	1x	3	1095.0031....	<b>027</b>	<b>028</b>		<b>031</b>	<b>037</b>		<b>040</b>
ND filter 2x	2x	3	1095.2030....							
ND filter 4x	4x	3	1095.2060....							
ND filter 8x	8x	3	1095.2090....							
Center filter (for Apo-Grandagon)	5x	<sup>1)</sup>	1094.2403....							
Center filter (for Grandagon-N)	3x	<sup>1)</sup>	1094.2403....							
Polarizing filter linear	2x...3x	4/5	1095.0087....						<b>039</b>	<b>040</b>
Polarizing filter circular	2x...3x	4/5	1095.0088....	<b>027</b>	<b>028</b>	<b>030</b>	<b>031</b>	<b>037</b>	039	040
Polarizing filter circular multi-coated	2x...3x	4/5	1095.0089....				031	037	039	040
Skylight filter 1A	1x	6	1095.0040....	<b>027</b>	<b>028</b>	<b>030</b>	<b>031</b>	<b>037</b>	039	040
Skylight filter 1A multi-coated	1x	6	1095.0039....				031	037	039	040
Conversion filter 81B	KR 2.5	1.2x	1095.0041....							
Conversion filter 85	KR 11	2x	1095.0043....							
Conversion filter 85B	KR 13	2x	1095.0044....							
Conversion filter 82A	KB 2	1.2x	1095.0045....							
Conversion filter 82B	KB 3	1.5x	1095.0046....							
Conversion filter 82C	KB 4.5	2x	1095.0047....							
Conversion filter 80A	KB 13	4x	1095.0049....							
Fluorescent light filter FLD		2x	1095.0050....							
Medium yellow filter (8)	2.5x...3x	8	1095.1008....	<b>027</b>	<b>028</b>		031	037	039	040
Dark yellow filter (15)	4x	8	1095.1015....	<b>027</b>	<b>028</b>		031	037	039	040
Yellowish green filter (11)	2x	8	1095.1011....	<b>027</b>	<b>028</b>		031	037	039	040
Green filter (13)	3x	8	1095.1013....	<b>027</b>	<b>028</b>		031	037	039	040
Orange filter (22)	4x	8	1095.1022....	<b>027</b>	<b>028</b>		031	037	039	040
Bright red filter (25)	8x	8	1095.1025....	<b>027</b>	<b>028</b>		031	037	039	040
Dark red filter (29)	8x...12x	8	1095.1029....	<b>027</b>	<b>028</b>		031	037	039	040
Softener Zeiss Softar I	1x	10	1095.0071....							
Softener Zeiss Softar II	1x	10	1095.0072....							

<sup>1)</sup> Center filter are special filters for reducing the light fall-off of large format lenses with an extremely large image angle. They are included in this overview only because of completeness. Center filters are described in great detail in the brochure "Rodenstock Lenses for Professional Photography" on the pages with the lenses Apo-Grandagon and Grandagon-N.

Color falsification and unfavorable gray value conversions can be prevented and the color and gray values can be controlled with the right Rodenstock filters.

When ordering, please quote both the filter name and the filter type number. The filter type number is the 8-digit figure in the fourth column with the thread size number, e.g. for a conversion filter 81B with thread M 77×0.75:

Conversion filter 81B # 1095.0041.077

# Aspherical magnifiers

## Our loupes are precision instruments

All aspherical Rodenstock magnifiers excel by highest optical performance, provide a comfortable, fatigue-free view even for eyeglass wearers and during long-term observation. They provide a stable image, too, even if the eye does not rest in a fixed position above the eyepiece. They convince with a pure design without frills and with very practical details.

Their multi-element optical design is optimized for the special demands of visual usage and comprises different glass types for eliminating color fringes as well as aspherical lens surfaces for achieving uniform sharpness up to the margin, freedom from distortion and good flatness of field. So these magnifiers are real precision instruments of an extraordinary quality level.

## Multi-coating for a brilliant image

Multicoating enhances light transmission for a bright and brilliant image and eliminates contrast-reducing flare and reflections. An efficient reflection reducing coating is important because magnifiers are often used (especially by photographers) for evaluating transparencies or negatives on a light table. In this application the extremely bright back light could generate nebulous flare, irritating reflections and ghost images.

All three magnifiers can be adapted to frontal illuminated or backlit subjects: Both magnifiers 3x and 6x have a half black and half transparent base that can be turned, and the magnifier 4x has a sliding skirt that shades frontal light in its lower position for viewing transparencies and allows diffused light to fall through a translucent tube in its upper position for viewing opaque subjects in almost shadow-free illumination.

## Perfect look – even with eyeglasses

All magnifiers can be adjusted for diopter compensation. Eyeglass wearers can fold down the rubber eyecups; eyeglasses cannot be scratched. The very long eye relief, a large lens and exit pupil diameter provide a very comfortable viewing, allow the eye to move without cropping the large field of view.

With the detachable neck strap the magnifiers can be taken along permanently, will be available and can be used instantly whenever they are needed, e.g. in a graphics studio or photo studio.



The 3x loupe (top) shows a large image field of 6x6 cm; the 4x loupe (on the right) shows the full 35 mm format or a circle of 41 mm; the 6x loupe (left) shows much more than a 35 mm film or a circle of 57 mm.



For viewing with reflected light, the tube is pushed upwardly with the 4x loupe (left); with the 6x loupe (right) and the 3x loupe, the removable lower tube is inserted with the translucent part downwards.

Model	Field of view	Diopter adjustment	Weight
Aspherical loupe 3x	60 x 60 mm	±0 D ... -1.5 D	210 g
Aspherical loupe 4x	41 mm Ø	+0.5 D ... -2.5 D	83 g
Aspherical loupe 6x	57 mm Ø	+1 D ... -2.0 D	210 g

With a good Rodenstock loupe, you will never lose sight of even the smallest details at work or at home which are often so very important.

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