PENTAX®

偏光フィルターの使い方

ZING FILTERS

RS 使用説明書

OPERATING MANUAL

New

円偏光フィルター、偏光フィルター

円偏光フィルターおよび一般の偏光フィルターは、反射光〔偏光〕を吸収したり、逆に強調したり、同様な使い方ができます。なお、ペンタックスLX・SFX系・SF7には、必ず円偏光フィルターをご使用ください。〔円偏光フィルターは一般の偏光フィルターとしても使用できます〕この説明書は、円偏光フィルター・偏光フィルター共通になっています。

種類	サイズ〔mm〕
円偏光フィルター	49、52、58、67、77
偏光フィルター	49、52、58

使い方

偏光フィルターを一眼レフカメラのレンズ前枠にねじ込んでから回転枠を回すと、偏光を最もよく吸収する角度や、偏光を最もよく透過する角度がファインダーで確かめられます。効果の出たところに止めて撮影してください。

光は、進行方向に直角のあらゆる方向に振動しながら進みます。これが金属面以外の物質に下表のような入射角で当たると、ある方向にだけ振動する光になって反射します。こういう光を偏光といいます。

ショーウインドーのガラスを外から斜めに見たとき、外景が反射して中にある物が見えにくいのは偏光のためです。

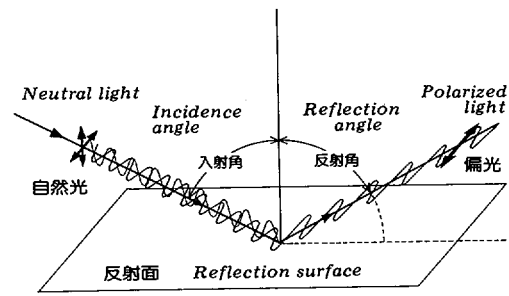
物質 Substance	入射角・反射角 Polarizing Reflection Angle
ガラス、陶磁器の表面 Surface of glass or ceramic ware	約 57 度 about 57°
水の表面 Water surface	約 53 度 about 53°
光沢のある紙の表面 Surface of glossy paper	約 58 度 about 58°
光沢のある木材の表面 Surface of polished wood	約 55 度 about 55°

Both circular and ordinary polarizing filters can be used in the same way, absorbing or on the contrary, emphasizing the reflected light (polarized light). With the Pentax LX or the KAF mount cameras, use the circular polarizing filter. (The circular polarizing filter can also serve as the ordinary polarizing filter.)

Type	Size [mm]
Circular polarizing filter	49, 52, 58, 67, 77
Polarizing filter	49, 52, 58

How To Use

With an SLR camera, the image you can see in the viewfinder is the same as that on the film. Therefore, it is possible to check the angle for the best absorption and penetration of polarized light by rotating the frame after setting the polarizing filter onto the front lens frame. Just stop it at the optimum position for photography. Light travels in waves, while vibrating at right angles to the direction in which the wave is travelling as illustrated. When the light hits a surface other than a metallic surface, at the angle of incidence as shown in the table below, it is reflected from the surface while vibrating, at a certain angle. This kind of light is called polarized light. Polarized light is what obscures your vision when you try to see something in a display window and cannot see beyond the surface of the glass.



円偏光フィルターについて

LXやSFX系・SF7カメラに円偏光フィルターを使用すると、偏光による測光誤差やSFX系・SF7の合焦表示誤差が生じません。LXやSFX系・SF7のハーフミラーは多層膜コーティングであるため、一種の偏光フィルターの働きをします。一般の偏光フィルターを使うと、偏光フィルターを2枚重ねたのと同じようになり、偏光が交差したときは光が透過しにくくなります。LXの自動露出はミラーが上がったあとダイレクト測光するので関係ありませんが、マニュアル露出のときは測光表示に合わせて撮影するので影響を受けます。

効果

1. 偏光になる率が最も多い反射角〔入射角と同じ〕で使用すること。反射でも、ショーウインドーを正面から見て反射する光は偏光ではなく、効果がありません。
2. 物質としては、ガラス、陶磁器、水、プラスチック、油、塗料を塗布した面、つやのある木材面、つやのある紙、つやのある葉、磨いた石やコンクリート面などがあります。
3. カラー写真で青空を濃くできるのは、太陽光とほぼ直角方向の空に限られます。
4. 水面やメガネレンズのように、凹凸があったり、球面になっていると、入射角がまちまちですから、完全には偏光を吸収できません。

レンズに偏光フィルターや一般フィルター、フードを組合わせると撮影条件によって画面の四隅にケラレが出るものがあります。右表はケラレが発生するレンズと条件を示したものです。

○印は使用可能。△印は画面の四隅がわずかに暗くなる程度。×印は画面の四隅にケラレが発生。－印はフード使用不可。
右表のズームレンズは短焦点距離のときで、長焦点距離に近づくほどケラレは少なくなります。

Circular Polarizing Filter

The half mirror in the LX or the KAF mount cameras has a multilayer coating and serves as a kind of polarizing filter. Therefore, when an ordinary polarizing filter is used, it produces the same effect as when using two sheets of polarizing filters; it hinders the penetration of light when the rays of polarized light intersect each other. Auto exposure has nothing to do with this since direct light-metering takes place after the mirror is raised. In manual mode, however, it has an influence since it is set to the metering index for photography. Using the circular polarizing filter prevents the shutter speed indication error from occurring before shutter release.

Effects

1. It should be used at the angle of reflection (or incidence) at which the rate of polarization is highest. However, light reflected from a showcase, when viewed from the front, is not polarized light and produces no effect.
2. Substances include glass, porcelain, water, plastics, oil, painted surfaces, lustrous wood surfaces, shiny paper, shiny leaves, polished stones and concrete surfaces.
3. Increase in concentration of blue sky in color photography is possible only in that part of the sky at approximately right angles to the sunlight.
4. Irregular or spherical surfaces such as water or spectacle lenses cause the angle of incidence to vary, making it impossible to absorb the polarized light over the entire surface.

When a lens is combined with a polarizing filter, an ordinary filter or a hood, "vignetting" may be caused, depending on picture-taking situations. Refer to the table at right for details.

○-mark means OK. △-mark means the picture's four corners slightly darken. x-mark means "vignetting" is caused. "—" means the combination is not possible. The zoom lenses in the table are in the condition they are set to shorter focal lengths. The longer the focal length, the less "vignetting."

円偏光フィルター（偏光フィルター）との組合せ Combination with circular polarizing filter (Combination with polarizing filter)		円偏光フィルター（偏光フィルター）のみ Circular polarizing filter (Polarizing filter)	一般フィルター＋円偏光フィルター（偏光フィルター） Ordinary filter	円偏光フィルター（偏光フィルター）＋レンズフード Lens hood	一般フィルター＋円偏光フィルター（偏光フィルター）＋レンズフード Ordinary filter + Lens hood
種類 Type	レンズ名 Lens				
49mm	SMC PENTAX-M 20mmF4	× (×)	× (×)	× (×)	× (×)
	SMC PENTAX-A&M 28mmF2	○ (○)	△ (△)	△ (△)	△ (△)
	SMC PENTAX-F&A 28mmF2.8	○ (○)	△ (△)	× (×)	× (×)
	SMC PENTAX-M 28mmF2.8	○ (○)	○ (△)	○ (×)	× (×)
	SMC PENTAX-F&A 50mmF1.4	○ (○)	× (×)	○ (○)	× (×)
	SMC PENTAX-F&A 50mmF1.7	○ (○)	△ (△)	○ (○)	× (×)
	SMC PENTAX-A MACRO 50mmF2.8	△ (△)	× (×)	— (—)	— (—)
	SMC PENTAX-F&A ZOOM 35–70mm	× (×)	× (×)	× (×)	× (×)
	SMC PENTAX-M ZOOM 40–80mm	× (×)	× (×)	× (×)	× (×)
	SMC PENTAX-M ZOOM 75–150mm	× (△)	× (×)	× (△)	× (×)
52mm	SMC PENTAX-A 24mmF2.8	× (×)	× (×)	× (×)	× (×)
	SMC PENTAX-A 50mmF1.2	○ (○)	△ (△)	△ (△)	△ (△)
	SMC PENTAX-F MACRO 50mmF2.8	○ (○)	× (×)	△ (△)	× (×)
	SMC PENTAX-M ZOOM 28–50mm	× (×)	× (×)	× (×)	× (×)
	SMC PENTAX-M ZOOM 80–200mm	△ (△)	△ (△)	△ (△)	△ (△)
58mm	SMC PENTAX-A20mmF2.8	△ (△)	× (×)	× (×)	× (×)
	SMC PENTAX-M ZOOM 24–35mm	× (×)	× (×)	× (×)	× (×)
	SMC PENTAX-F&A&M ZOOM 24–50mm	× (×)	× (×)	— (—)	— (—)
	SMC PENTAX-F&A ZOOM 28–80mm	× (×)	× (×)	— (—)	— (—)
	SMC PENTAX-M ZOOM 35–70mm	× (×)	× (×)	× (×)	× (×)
	SMC PENTAX-A ZOOM 35–70mm	○ (○)	× (○)	— (—)	— (—)
	SMC PENTAX-F ZOOM 35–105mm	× (×)	× (×)	— (—)	— (—)
	SMC PENTAX-F&A ZOOM 35–135mm	× (×)	× (×)	— (—)	— (—)
	SMC PENTAX-A ZOOM 70-210mm	○ (×)	△ (×)	○ (—)	△ (—)
	SMC PENTAX-A645 55mmF2.8	○ (○)	△ (○)	△ (○)	× (○)
67mm	SMC PENTAX-A ZOOM 35–105mm	△	×	—	—
	SMC PENTAX-A ZOOM 35–210mm	△	×	—	—
	SMC PENTAX-A645 45mmF2.8	△	×	△	×
	SMC TAKUMAR 67 90mmF2.8(LS)	△	△	△	△
77mm	SMC PENTAX-A ZOOM 28-135mm	△	×	×	×
	SMC PENTAX-A645 35mmF3.5	△	×	×	×
	SMC PENTAX-A645 ZOOM 80–160mm	○	×	×	×
	SMC PENTAX 67 55mmF4	△	×	×	×

● 表中( )内は、偏光フィルターの適合を示します。

● Marks in brackets are for ordinary polarizing filters.

● 上表以外のレンズではケラレを生じません。

● The lenses not in the table cause no "vignetting."

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7 / 90 Printed in Japan

使用上の注意

一般フィルターやレンズフードと組合わせるときは、写真のように、一般フィルターを先にレンズに取りつけ、その上に偏光フィルターを取りつけます。偏光フィルターは紫外線を吸収しますから、UVフィルターの併用は意味がありません。レンズフードは偏光フィルター上に取りつけます。角型レンズフードの場合は、フィルム画面に対して、フードの角度が傾くとケラレを生じますから、偏光フィルターの回転をしたときは充分注意してください。
なお、ズームレンズはピント合わせによって前枠が回転するので、ピントを合わせてから偏光フィルターの調整をしてください。

露出倍数

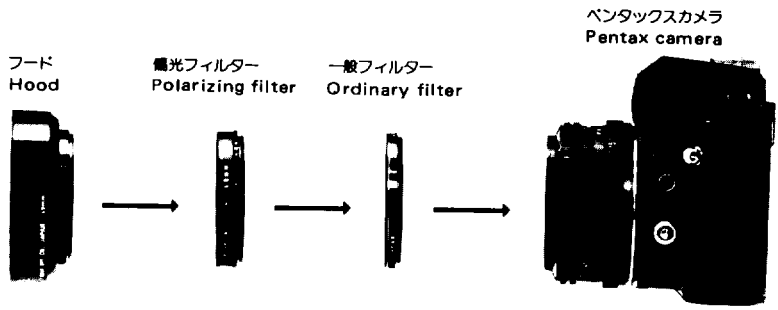
偏光フィルターは中性の灰色で偏光を含まない光の透過率は約40%です。偏光の量と偏光を吸収する割合によって、実際の露出倍数は変化しますが平均して約3倍です。
TTL露出計内蔵の一眼レフカメラでは、露出倍数の補正は必要ありません。

Operational Precautions

When using with the ordinary filter or the lens hood, first attach the ordinary filter to the lens and then the polarizing filter, as shown below. Since the polarizing filter absorbs ultraviolet rays, its combination with a UV filter will be detrimental.
The lens hood is to be mounted over the polarizing filter. In the case of a square lens hood, shading will be generated if the angle of the hood is deflected from the film surface plane; therefore, special care must be taken when rotating the polarizing filter.
The front frame of the zoom lens rotates as you focus, so you should adjust the polarizing filter after focusing.

Exposure Factor

The polarizing filter is neutral gray and its transmission factor for light, not including polarized light, is 40%. The actual exposure factor varies according to the amount of polarized light and the rate of absorption, but on the average, it is 3. With current Pentax cameras which have a TTL-metering system, however, there is no need for exposure compensation with this factor.



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※日曜・祝日および土曜日は窓口として休みます。ただし、年末年始を除きペンタックスフォーラム(新宿)は年中無休、ペンタックスフォーラム・大阪は日曜・祝日を休みます。

57005

PENTAX®

PENTAX FILTERS

Pentax Colored, UV and Polarizing Filters

The purpose of any lens filter—colored, UV or polarizing—is to give the photographer greater control by determining the kind of light which enters his lens. Colored filters affect the picture by absorbing certain light wavelengths—or color values—and heightening the importance of others. (See Wavelength Transmission Graph)

Ultra-violet filters absorb the ultra-violet wavelengths. Almost all light sources produce UV rays—the sun, fluorescent lights, flash bulbs or electronic flashes, etc. Though the human eye cannot actually see UV rays, if they are not absorbed, they will create a haze affect over the photograph. (Most colored filters are also treated to absorb UV rays.)

Polarizing filters cut through reflections by absorbing certain right angle light ray vibrations.

For detailed information on matching filters to specific lenses, see the accessory booklet which comes with every Pentax camera.

Sizes & Types

• Now Available

Type		Black & White Use Filters						Color Use Filters					
		UV	Y1	Y2	O2	R2	YG	Sky-light	Cloudy	Morn & Eve	Flash	Flood	Flour-escent
Size	**Coating**	(L39)	(Y44)	(Y48)	(O56)	(R60)							
49mm	St'd	•	•	•	•	•	•	•	•	•	•	•	•
	SMC	•		•	•	•		•	•				
52mm	St'd	•	•	•	•	•	•	•	•	•	•	•	•
	SMC	•		•	•	•		•	•				
58mm	St'd	•		•	•			•					
	SMC	•		•	•	•		•	•				
67mm	St'd												
	SMC	•		•	•	•		•	•				
77mm	St'd												
	SMC	•		•	•	•		•	•				

*Note: St'd is an abbreviation of standard.

Exposure Factor Correction

Because Pentax cameras are SLR cameras with TTL exposure meters built in, they automatically adjust for the change in light produced by the filter. With other types of cameras, however, you often must consider a filter exposure factor when you are determining the proper exposure. For a full understanding of the effects of a filter, you should be aware of these filter exposure factors. (See the chart below)

Type	Used with Monochrome Films						Used with Color Films					
	UV	Y1	Y2	O2	R2	YG	Sky-light	Cloudy	Morn & Eve	Flash	Flood	Flour-escent
Appearance	Nearly colorless	Light yellow	Yellow	Orange	Red	Yellow-gree	Light pink	Light brown	Light blue	Blue	Dark blue	Light pink
Exposure factor	Almost 1x	1.5x	2x	3x	6x	2x	1x(+)	1.5x	1.5x	2x	3x	1x(+)

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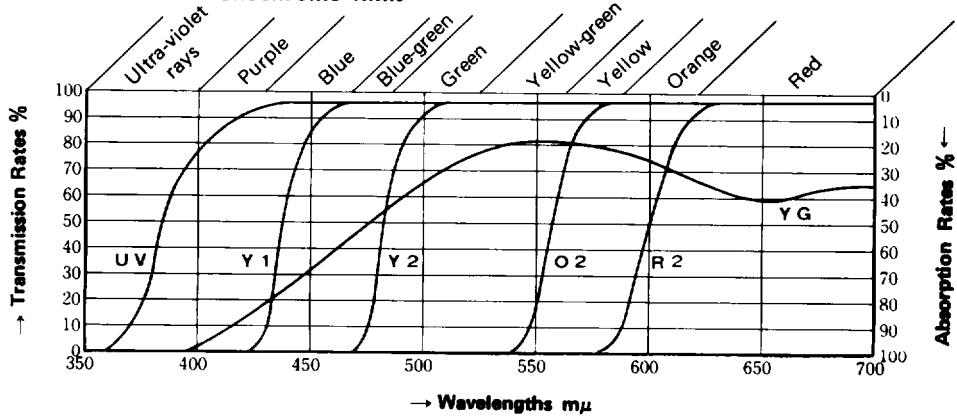
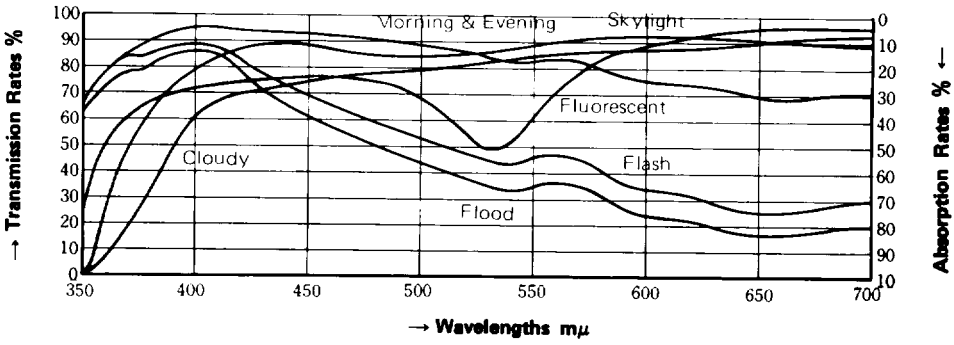
Wavelength Transmission Graph for Pentax Filters

Filters for use with monochrome films



Filters for use with color films



Hints on Using Pentax Filters

- Pentax filters are designed to be used only one at a time.
- There is no need to screw your Pentax Filter on super-tight. As long as it is secure – so it won't drop off – its exact positioning won't affect its function in any way. And very tightly attached filters are often difficult to remove.
- When a 49–52mm adaptor is fitted, the 52mm filter can be used with any of SMC Pentax 49mm filter size lens.
- A cheap, poorly polished filter will negate the value of even the finest lens. Filters should be at least up to the optical standards of the lenses they are to be attached to.

ASAHI PENTAX K series

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Sizes & Types

• Now Available

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		UV	Y1	Y2	02	R2	YG	Sky-		Morn &		
Size	Code	(L39)	(Y44)	(Y48)	(056)	(R60)		light	Cloudy	Eve	Flash	Flood
52mm	St'd	•	•	•	•	•	•	•	•	•	•	•
	SMC	•		•	•	•		•	•			
58mm	St'd	•		•	•			•				
	SMC	•		•	•	•		•	•			
67mm	St'd	•		•	•			•				
	SMC	•		•	•	•		•	•			
77mm	St'd	•		•	•			•				
	SMC	•		•	•	•		•	•			

*Note: St'd is an abbreviation of standard.

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Type	Used with Monochrome Films						Used with Color Films				
	UV	Y1	Y2	O2	R2	YG	Sky- light	Cloudy	Morn & Eve	Flash	Flood
Appearance	Nearly colorless	Light yellow	Yellow	Orange	Red	Yellow-green	Light pink	Light brown	Light blue	Blue	Dark blue
Exposure factor	Almost 1x	1.5x	2x	3x	6x	2x	1x (+)	1.5x	1.5x	2x	3x

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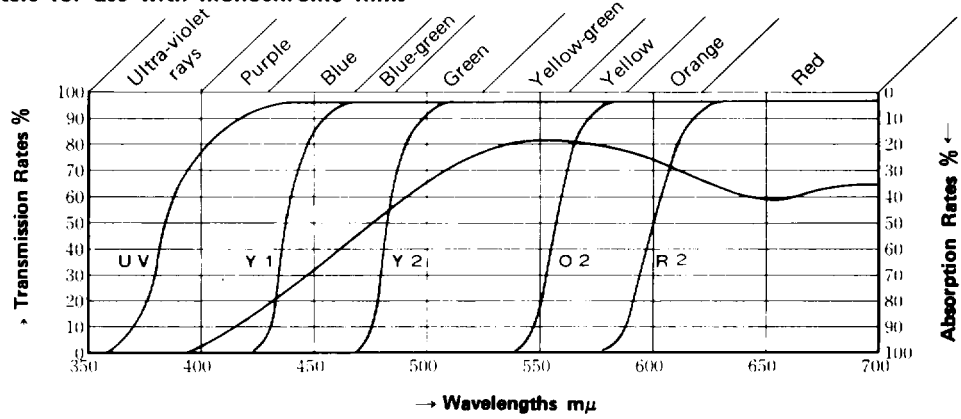
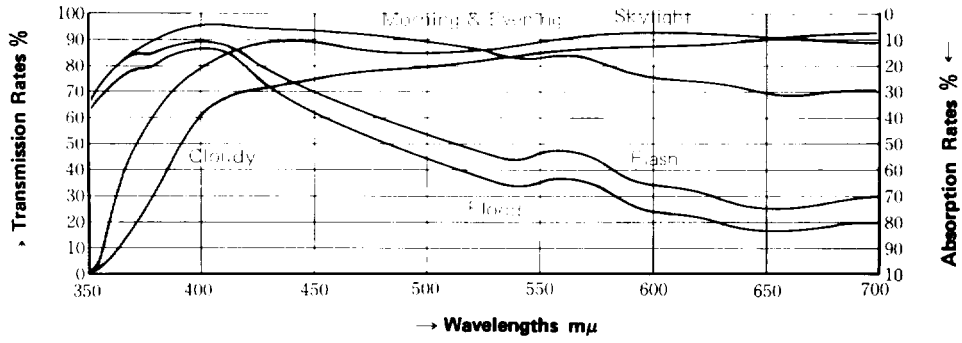
Wavelength Transmission Graph for Pentax Filters

Filters for use with monochrome films



Filters for use with color films



Hints on Using Pentax Filters

- Pentax filters are designed to be used only one at a time.
- There is no need to screw your Pentax Filter on super-tight. As long as it is secure – so it won't drop off – its exact positioning won't affect its function in any way. And very tightly attached filters are often difficult to remove.
- 52mm filters can be used with 49mm SMC Takumar lenses if you use a 49–52mm Adaptor.
- A cheap, poorly polished filter will negate the value of even the finest lens. Filters should be at least up to the optical standards of the lenses they are to be attached to.

ASAHI PENTAX K series

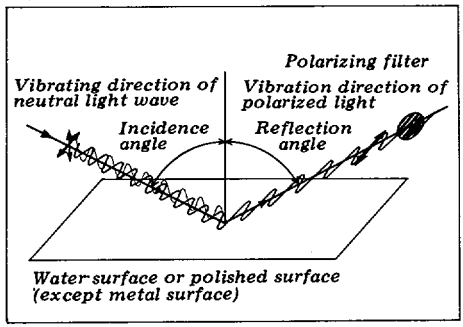
PENTAX POLARIZING FILTERS

Pentax Polarizing Filters, 52mm and 58mm

Asahi Pentax Polarizing Filters, available in both 52mm and 58mm diameters, are a special type of filter used in front of the camera lens to cut out unwanted reflections. (See Figure 1.)

Substance	Polarizing Reflection Angle
Surface of glass or ceramic ware	about 57°
Water surface	about 53°
Surface of glossy paper	about 58°
Surface of polished wood	about 55°

Fig. 1



Polarizing Light and Polarizing Filters

Ordinarily, light travels in waves, while vibrating at right angles to the direction in which the wave is travelling. However, in certain instances, light from a blue sky or light which is reflected from certain surfaces at certain angles will vibrate in only one direction. This light is called "polarized light." (Polarized light is what seems to get in the way when you are trying to see something in a shopwindow and cannot see beyond the surface of the glass, or when you are trying to look down into a pond and cannot see beyond the surface of the water.)

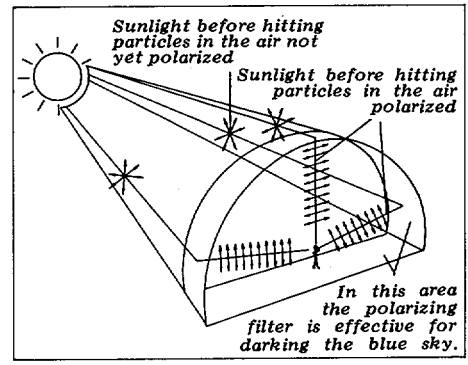
A polarizing filter is a compound filter—a polarizing film sandwiched between two glass elements) which serves to absorb most or all of this polarized light.

The Pentax Polarizing Filter is actually a filter/holder unit made up of a filter which can be rotated 360° independent of, but within, the holder which is attached securely to the camera. Since your Pentax camera—K2, KX or KM—is a single-lens reflex camera, the Pentax Polarizing Filter is very easy to use. Attach the filter/holder unit onto the lens. Then, while looking through the viewfinder, rotate the filter a full 180°. You will easily notice that the image in the viewfinder becomes lighter or darker as you rotate the filter. When the image is at its darkest, that is the position at which the filter is absorbing the most polarized light.

Hints on Using the Pentax Polarizing Filter

- Wherever practicable, use the filter at the reflection angle where the light is most polarized.
- The Pentax Polarizing Filter is most effective when photographing such things as: glass, ceramic ware, still water, plastic, oil, painted surfaces, polished wood, glossy paper or leaves, polished stone, etc. The filter will not be effective against the light reflected from plate glass when viewed straight on. At this angle, such reflected light is not polarized.
- In color photography, the polarizing filter will darken blue sky only when your camera is directed towards the sky at right angles to the sun, as explained in Figure 2.

Fig. 2



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- In the case of certain surfaces such as rough water or eyeglass lenses, their uneven or rounded surfaces scatter the incident light into many directions. Thus, even with a polarizing filter, it is impossible to absorb completely all the polarized light.

Exposure Factor Correction

The polarizing filter is a neutral grey-colored filter that transmits about 40% of the ordinary light, not including polarized light. When you are using a Pentax K2, KX or KM SLR, the camera automatically compensates for this reduction in light. Therefore, although the polarizing filter's exposure factor is actually about 3X, you need not even think about it. However, even with Pentax SLR cameras, when you are shooting through a polarizing filter, you should increase the exposure by about 1-1/2 steps—by either increasing the shutter speed or opening the aperture wider.

Combined Use with Another Filter or with a Lens Hood

When using the Pentax Polarizing Filter in combination with any other filter, attach the other filter onto the lens and then attach the polarizing filter onto the other filter. As the polarizing filter itself absorbs ultraviolet rays, there is no reason to combine it with a UV filter.

A lens hood can be attached onto your Pentax Polarizing Filter. In the following tables, the O marked combinations mean that the best results will be obtained; the X marked combinations indicate that significant vignetting (blacking out) can occur at the four corners; and the Δ marked combinations show that a slight vignetting can occur. When using a square-shaped lens hood, first rotate the filter without the lens hood to find the correct angle for optimum absorption of polarized rays; then attach the hood onto the filter.

■ 52mm Pentax Polarizing Filter

Combination / Lens	Polarizing filter	Polarizing filter + another filter	Polarizing filter + hood	Polarizing filter + another filter + hood
SMC Pentax 28mm f/3.5	O	x	O	x
SMC Pentax 35mm f/2	O	O	O	O
SMC Pentax 35mm f/3.5	O	O	O	x
SMC Pentax 50mm f/1.2	O	Δ	Δ	x
SMC Pentax 50mm f/1.4	O	O	O	O
SMC Pentax 85mm f/1.8	O	O	O	O
SMC Pentax Macro 50mm f/4	O	Δ		

■ 58mm Pentax Polarizing Filter

Combination / Lens	Polarizing filter	Polarizing filter + another filter	Polarizing filter + hood	Polarizing filter + another filter + hood
SMC Pentax 20mm f/4	x	x	x	x
SMC Pentax 24mm f/3.5	Δ	x	Δ	x

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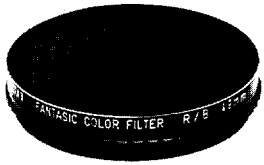
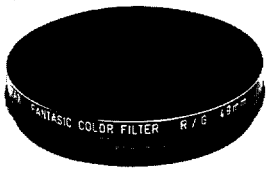
PENTAX FANTASIC COLOR FILTERS R/B and R/G



● **Fantasic Color Filter R/B**
This variable color filter changes colors from red to blue and produces violet and other intermediate colors in its spectrum. Screw the filter into your lens and sight through the viewfinder (with SLR cameras) while rotating the ring until the desired color is obtained. It is convenient for emphasing red of sunsets, blue of the sky and sea, turning daylight into pseudo night scenes and hundreds of other creative applications. (Available in both 49mm and 52mm sizes.)



● **Fantasic Color Filter R/G**
As the filter ring is rotated, Fantasic Color Filter R/G changes color from red to amber and then to green, also producing other intermediate colors in the spectrum. Screws into the lens in the same manner as filter R/B. Select color while sighting through the viewfinder. This filter produces delicate color shades for portraits and scenic shots; it is also good for fashion photography and a variety of other creative applications.

● USABLE LENSES
Fantasic Color Filters can be used with lenses having 49mm or 52mm filter threads. They cannot be used with the Pentax 500mm f/4 and Pentax SMC 1000mm f/8 lenses.

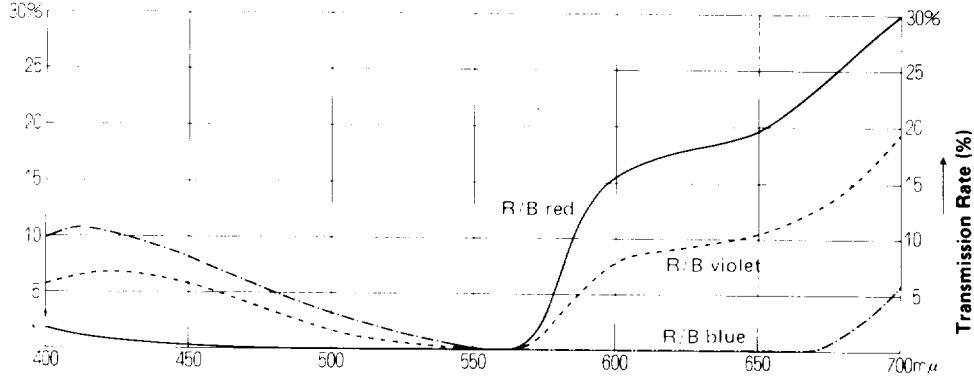
● FILTER FACTORS
SLR cameras with built-in TTL exposure meters automatically adjust for light variation produced by filters and filter factors need not be considered in this instance. When using a camera without a built-in exposure meter, please refer to the filter factors given below.

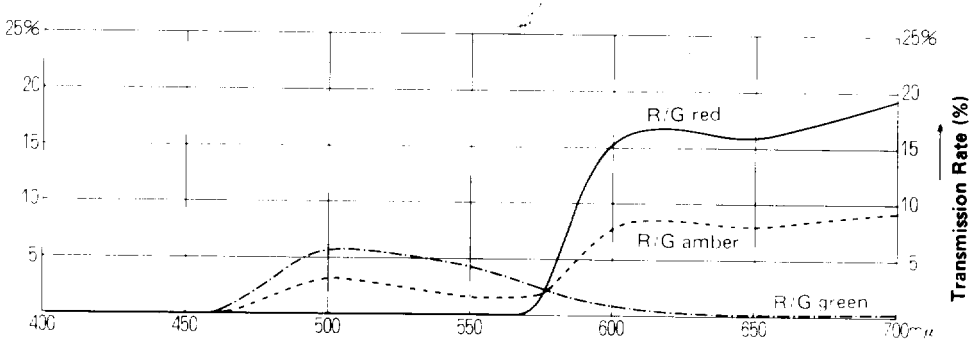
Color	Red	Violet	Blue
R/B	16X	18X	20X

Color	Red	Amber	Green
R/G	14X	20X	50X

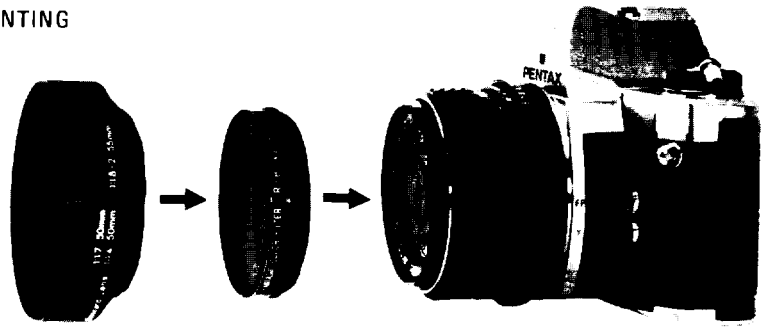
CAUTION
● When requesting color prints or slides, include a note for the processor that your negatives were shot with special color filters: "color correction not necessary." Otherwise he may eliminate the special effects you produced.
● Avoid using two filters together as lens resolution will be lowered.
● With cameras other than SLR cameras, first pick out the desired color by viewing directly through the filter, and then attach it to the camera lens. Test shots are recommended for best results.

• FANTASIC COLOR FILTER ABSORPTION CURVES





• METHOD OF MOUNTING



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