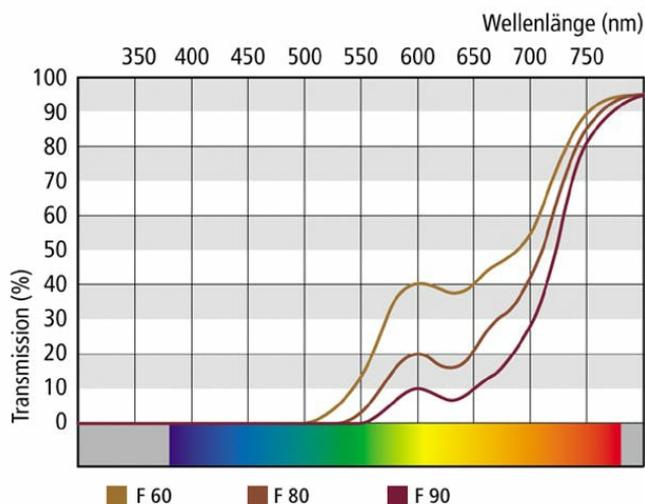


## F 60-90 and F 540-580

### Special filters for medical applications

The special filter lenses F 60, F 80 and F 90 and F 540, F 560 and F 580 for medical applications were developed and tested in collaboration with international institutes and ophthalmologists. Transmission has been optimised so that part of the visible shortwave spectrum is absorbed.

### 1. The Right Recommendation for Retinitis Pigmentosa

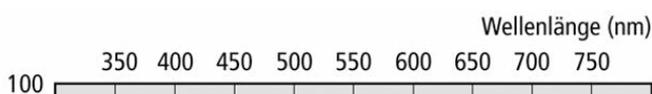


Transmission curves for F 60, F 80 and F 90

Retinitis pigmentosa, or more correctly retinopathia pigmentosa, is a hereditary, progressive disease of the eye. Due to a malfunction in the metabolism of the retina, the sensory cells (rods and cones) are not sufficiently supplied with blood and hence gradually degenerate. The many forms which this disease takes make it impossible to give an exact description of the symptoms.

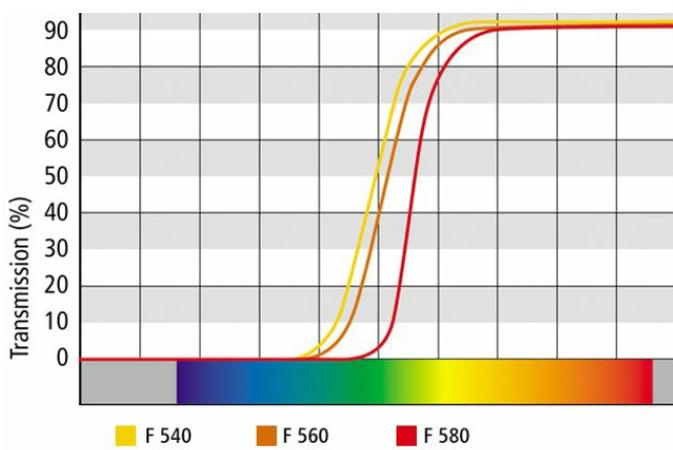
Initially, the function of the rods is impaired. Increasing difficulty is experienced with twilight and night vision, extending to total night blindness. There is a gradual contraction of the visual field from the periphery inwards until the patient is left with "gun barrel" vision. Orientation then becomes very problematic.

A further symptom of RP is reduced cone function. Reduced visual acuity, a deterioration in visual contrast and colour, and a high degree of sensitivity to glare are the result. Special filter lenses often provide enhanced wearing comfort.

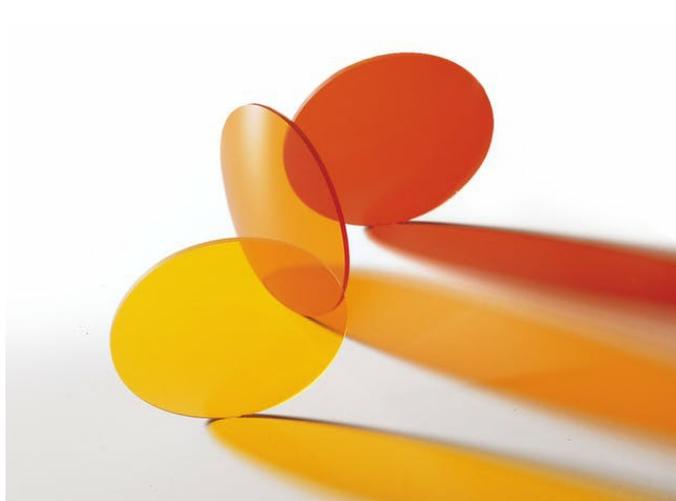


### Increased Visual Comfort for Colour Blindness

Achromatopsia or rod monochromatism is a type of colour blindness in



Transmission curves for F 540, F 560 and F 580



F 540, F 560 and F 580

which the cones totally fail to function. The patient affected has no sense of colour whatsoever and can only distinguish between various degrees of brightness. Nystagmus (trembling of the eyeball) is often also present. Sensitivity to glare is very high and visual acuity is usually severely reduced. The glare effect results from overexposure of the rods.

The special filter lenses absorb the wavelength range to which the rods are over-sensitive and therefore reduce glare.

### Increased Visual Comfort for Diabetic Retinopathy

The damage caused by diabetes is usually focused on the middle and inner layers of the retina which are responsible for processing image contrast.

In a retina damaged by diabetes the sensitivity to contrast is impaired. In bright surroundings, relatively dark details generate the maximum signal possible in the brain. Brighter details do not generate a sufficiently strong signal and cannot therefore be distinguished from darker zones. Particularly patients in the advanced stages of diabetic retinopathy are easily dazzled by glare and find light/dark adaptation difficult.

Cut-off filters such as F 540, F 560 and F 580 absorb the part of the spectrum to which the cones are sensitive and hence shield them. The special filter lenses therefore reduce glare and facilitate adaptation to changing light.

## 2. Details



Special filter lenses from ZEISS are tinted in a special dip dye bath

### Special filter lenses at a glance

- ✓ F 60: reddish brown, 60% absorption at 600 nm
- ✓ F 80: brown, 80% absorption at 600 nm
- ✓ F 90: dark brown, 90% absorption at 600 nm
- ✓ F 540: bright orange, 50% absorption at 540 nm (cut-off filter)
- ✓ F 560: orange, 50% absorption at 560 nm (cut-off filter)
- ✓ F 580: red, 50% absorption at 580 nm (cut-off filter)

### Filtercategories for F 60-90 and F 540-580

Lens Type	Category as per DIN EN ISO 8980-3	Solar UV absorption	Suitability for traffic and driving at night and in twilight as per DIN EN ISO 14889
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<b>F 60</b>	Category 2 (57-82%)	100% solar UV-B absorption 100% solar UV-A absorption	Not suitable for use in traffic!
<b>F80</b> <b>F90</b>	Category 3 (82-92%)	100% solar UV-B absorption 100% solar UV-A absorption	Not suitable for use in traffic!
<b>F 540</b> <b>F 560</b>	Category 1 (20-57%)	100% solar UV-B absorption 100% solar UV-A absorption	Not suitable for use in traffic!
<b>F 580</b>	Category 2 (57-82%)	100% solar UV-B absorption 100% solar UV-A absorption	Not suitable for use in traffic!

### Tips for the optician

- ✓ Every lens with the refractive index 1.5 is also available as F 60, F 80, F 90 and F 540, F 560, F 580
- ✓ All coatings except for hard are possible

ZEISS is one of the world's leading manufacturers of spectacle lenses, and is committed to delivering maximum precision and comfort. ZEISS designs and produces lenses, instruments and measurement systems, as well as retail concepts and technology services that continue to raise the bar in vision care.



### Contact us to get started

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