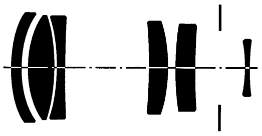
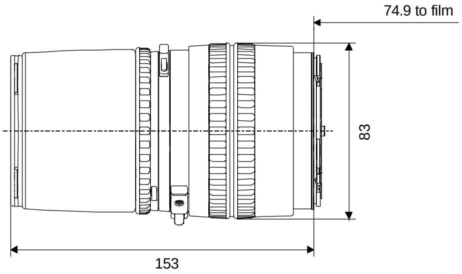
Sonnar® Superachromat 5.6/250 CFE





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The Sonnar® Superachromat 5.6/250 CFE lens is a lens with a perfect color correction never achieved before. It is the first photo lens on the market that ever had superachromatic color correction, which is the highest level of color correction ever conceived. The manufacture of this lens is extremely difficult. A critical combination of very special optical glasses and crystals are used.
Superachromatic color correction goes far beyond apochromatic color correction: The so-called secondary spectrum, the dominating lens aberration in telephoto lenses, is so well corrected over the entire spectral range from 400 nanometers (the border of the ultraviolet range) to 1,000 nanometers (which is far inside the infrared domain), that residual aberrations are within the Rayleigh limit of focussing uncertainty. So they are absolutely negligible, because, due to the wave-nature of light, focussing cannot be more precise than allowed by the Rayleigh limit. With the Sonnar® Superachromat 5.6/250 CFE lens the spectral limit in the infrared domain beyond 1,000 nanometers is not set by the lens but rather by the infrared sensitivity of the films available. For that reason the Sonnar® Superachromat 5.6/250 CFE lens is not Carl Zeiss T* coated since T*, while providing excellent transmission for visible light, cuts off both the ultraviolet and infrared. The Carl Zeiss T-coating used with the Sonnar® Superachromat 5.6/250 CFE lens provides higher transmission of infrared light. Focussing visually with the Sonnar® Superachromat 5.6/250 CFE lens leads to perfect sharpness, even with infrared-sensitive black & white or color film.

No infrared correction needs to be applied. The lens therefore comes without an infrared-index. The focussing ring can rotate beyond infinity to allow use of this lens in a variety of temperature conditions.
The Sonnar® Superachromat 5.6/250 CFE lens provides Hasselblad photographers with a wealth of special opportunities in scientific, technical and creative photography – on earth and in space. In general photography the Sonnar® Superachromat 5.6/250 CFE lens enables tele shots of unique sharpness. Provided, of course, that high-resolution film is used and all influences that could deteriorate sharpness are meticulously eliminated.
Not only color aberrations, both lateral and longitudinal, are extremely well corrected with the Sonnar® Superachromat 5.6/250 CFE lens. Other aberrations are also reduced to such an extreme extent that the performance of the Sonnar® Superachromat 5.6/250 CFE lens in the central area of the image is limited only by the final, the unavoidable of all limitations: the diffraction. Optics conoisseurs around the world in search of the perfect lens therefore consider the Sonnar® Superachromat 5.6/250 CFE lens the finest photo lens ever conceived and brought to reality. It is an extremely valuable lens. And the only one that can produce perfectly sharp photos on infrared color film.

Preferred use: telephoto shots with extreme sharpness, infrared and multi-spectral photography, industrial, scientific, aerospace, digital photography

Cat. No. of lens	**10 45 50**
Number of elements	6
Number of groups	6
Max. aperture	f/5.6
Focal length	249.2 mm
Negative size	55 x 55 mm
Angular field 2w*	width 13°, height 13°, diagonal 18°
Min. aperture	45
Camera mount	CFE
Shutter	Prontor CFE 1s-1/500s, b, f
Filter connection	bayonett series 60
Focussing range	infinity to 3.0 m
Working distance (between mechanical front end of lens and subject)	2.7 m

Close limit field size	528 mm x 528 mm
Max. scale	1 : 9.6
Entrance pupil*	
Position	136.8 mm behind the first lens vertex
Diameter	44.6 mm
Exit pupil*	
Position	8.1 mm in front of the last lens vertex
Diameter	22.5 mm
Position of principal planes	
H	110.0 mm in front of the first lens vertex
H'	132.1 mm in front of the last lens vertex
Back focal distance	117.0 mm
Distance between first and last lens vertex	103.9 mm
Weight	1010 g

* at infinity

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Performance data:

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1. MTF Diagrams

The image height u - calculated from the image center - is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top of this page.
The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph, the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.
Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

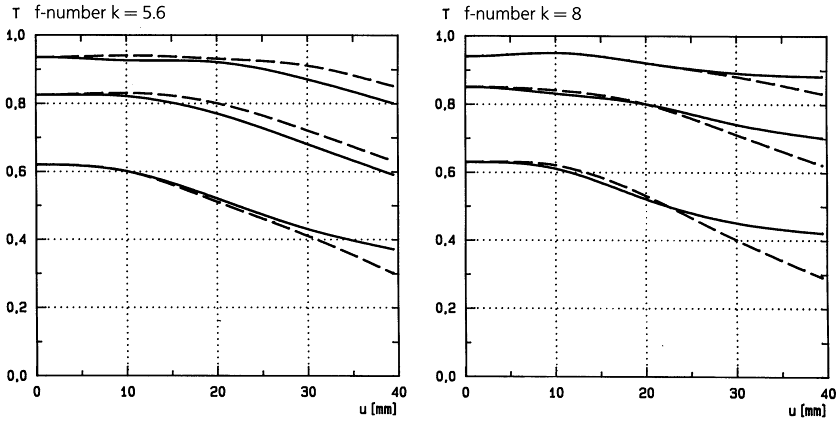
2. Relative illuminance

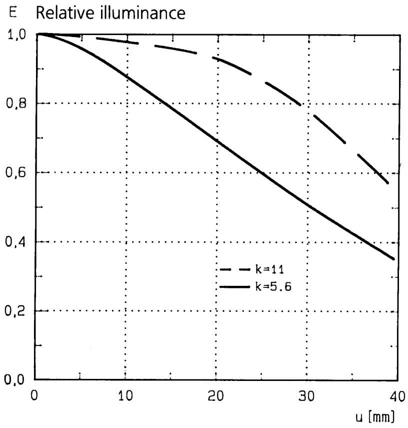
In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

Modulation transfer T as a function of image height u. Slit orientation: tangential — — — sagittal ———
White light. Spatial frequencies R = 10, 20 and 40 cycles/mm





Subject to change.

Printed in Germany 29.05.2002

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