



Technical Data Sheet

Formatt Filters HD Soft – Technical Data

General Principles

The Formatt HD Soft filter is designed to soften the harsh outlines which can result in High Definition work, but with minimal loss of detail and contrast.

It is a variation on the age old technique of using water droplets on glass, but with the benefit of modern technology to make it suitable for modern requirements and in particular HD.

The filter uses a series of hemispheres within its structure which have a very slight difference in refractive index to both the glass and the matrix within which they sit. This imitates the water droplet but with the added sophistication of having a precisely controlled surface shape. The assembly is then sandwiched in Schott B270 Superwite® optical lens glass.

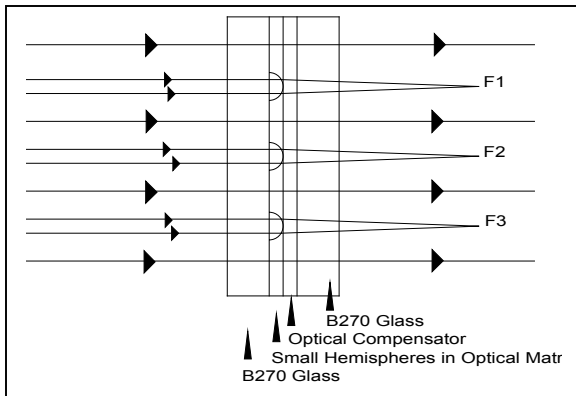


Fig 1 Most rays pass undisturbed whilst small hemispheres defocus the remainder

The Formatt HD soft filters are designed to allow the light to pass through for the most part undisturbed, however a small part of the surface area of the filter has a series of very small hemispheres on it acting as small planar convex lenses. These hemispheres de-focus the light rays producing a very slight lack of distinction within a very small area of view.

The small hemispheres use their enhanced small radius to produce a controlled spherical aberration, avoiding the risk of secondary focus at short focal lengths.

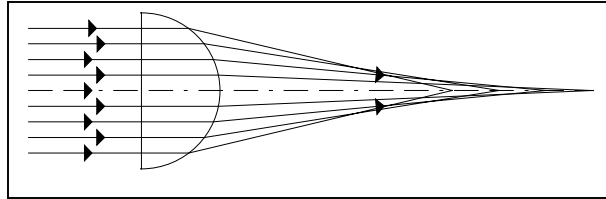


Fig 2 Spherical aberration spreads the focal point.

When using the filter the aberration produces a series of focal points along the axis of the hemispheres rather than one bright point of focus which would degrade the image.

The small hemispheres are distributed within the filter area in a stochastic pattern, eliminating the danger of Moiré fringing even in difficult conditions such as sun lit water surfaces.

Reversal of the filter presents the hemisphere as a convex planar lens to the camera which has a slightly different range of focal points, giving maximum flexibility with just one filter.

The high quality of the specially created materials ensure that optical integrity is maintained across all wavelengths. This gives minimal loss of contrast and chromatic dispersion.

Filter Grades

The filters are graded to give a useable progression through three grades.

Grade	Affected Area
1	8%
2	15%
3	24%

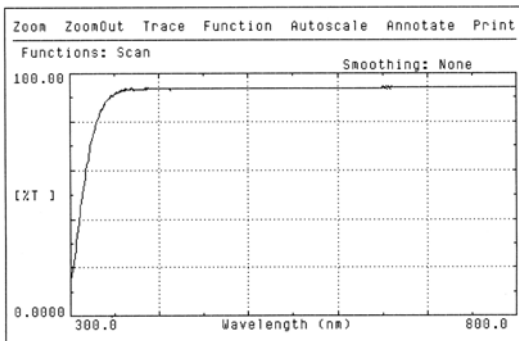
Grade 1 affects only 8% of the total filter area (92% is unaffected) and is for subtle use and close up work.

Grade 3 is for maximum effect and affects 24% of the surface area of the filter. Although it is the highest of the grades 75% of the filter area is still unaffected.

Formatt Glass Standards

All Formatt glass filters are made from Schott-Desag B270 crown glass (Superwite®). Crown glass is made by melting products of the highest purity and is free from lead and iron.

The diagram below shows the excellent transmission of all the visible wavelengths obtained using this material.



It is for this reason B270 is used for the highest quality optical systems

Formatt Polishing Standards

All Formatt glass filters and optical flats are precision lapped and polished to a nominal thickness of $3.00 \text{ mm} \pm 0.05 \text{ mm}$. Polishing standards are to better than $\lambda/4$ over $\varnothing 25 \text{ mm}$. ($\lambda = 633 \text{ nm}$)

This compares with all internationally acceptable standards for high quality optical components.

Each Formatt filter is accompanied by its personal certificate of conformance which carries the interferometer image of the polished surface.

The Formatt HD Soft filter series is designed to be chromatically neutral with only a slight adsorption in the UV range, and hence produces no change in subject colourations. Further colouration effects can be obtained by using the Formatt range of skin tone enhancers. Use of Formatt linear polarizer filters will give maximum colour contrast by removing stray light.

Limitations Of Use

All filters remove attributes from the original image. They are not able to add image or colour.

In certain conditions of very wide angle or very short focal lengths the camera may come to focus on the internal structure of the filter, which may or may not be intentional.

The same result may be also achieved using autofocus whilst panning.

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