

Summer, Sun, Sunglasses!

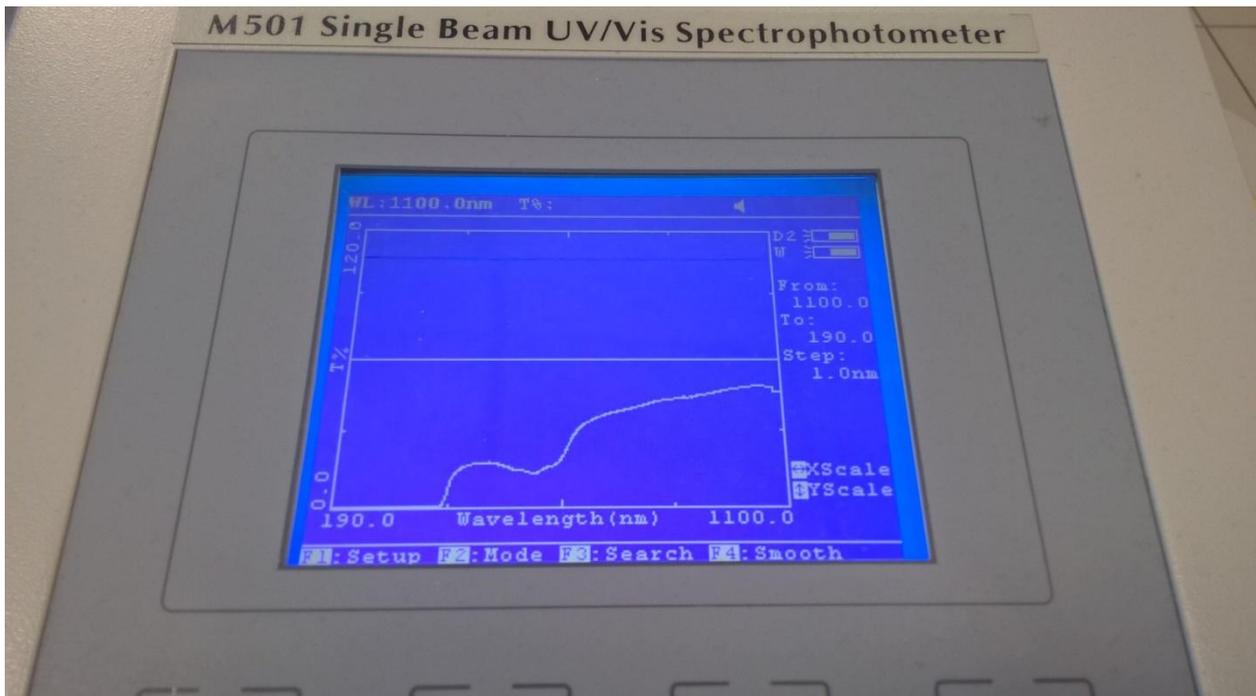
Sunshine turns the mind to outdoor activities, from enjoying an ice cream, to taking a stroll, or to going for swim or participating in some kind of outdoor sport. The sun energises us; sunshine is even essential for the production of Vitamin D. Yet sunrays also have drawbacks: UV radiation can cause permanent injury to our sensitive eyes. And that is where sunglasses can be of help. But what filter categories are available and what protection do they really afford against UV radiation? Measurement of the transmission spectra provides pertinent information.

Sunglasses come in all manner of colours and shapes: large or small, round or square, made of metal or plastic. Apart from being a chic accessory, sunglasses are worn primarily as protection against glare. However, good sunglasses offer far more than mere protection from glare. They absorb dangerous UV radiation and thus protect the eye against injury. UV light is a particularly energetic part of the visible spectrum and can permanently damage our eyes in excessive concentrations. This is why the UV protective function is indispensable. Two product declarations should be distinguished:

- “UV Protection 100%” offers just minimal protection because only UV wavelengths of up to 380 nm are absorbed, representing just a fraction of incident radiation.
- “UV 400” sunglasses block all UV wavelengths up to 400 nm and provide better protection because they also filter out a large proportion of the blue light.

Basically there are many kinds of sunglass lenses or contact lenses offering adequate UV protection. However, neither the colour of the lenses nor the intensity of the tinting has a direct influence on the UV protective action. Colour and tint protect against glare and also contribute to the fashionable design of the glasses. Laboratory measurement of the transmission spectra permits not only assessment of the UV protection but determination of the filter category and the corresponding suitability of sunglasses.

The quality of UV protection provided by a pair of sunglasses cannot be judged with the naked eye. Nor is the price of sunglasses a reliable indicator of the quality of UV protection. Only the labelling of the sunglasses provides the purchaser with information about the UV protective function. In order to obtain reliable information for labelling, the transmission properties are measured with the aid of a spectrophotometer. The degree of absorption of the harmful UV radiation can be exactly determined from the transmission curve. Scratches, sweat, or dirt on the lenses can modify the transmission properties. Renewed measurement with a spectrophotometer is necessary to ascertain whether used sunglasses have retained their protective function.



Result of a transmission measurement with a spectrophotometer

Also of relevance for UV protection are the shape of a pair of sunglasses and the extent to which they shield the eye because harmful radiation reaches the eye not only frontally through the lens but also from above or sideways. The potential purchaser can only tell how well a pair of sunglasses shields, and thus protects, the eye by trying them on.

PFI tests and certifies sunglasses and is equipped for such work with two modern spectrophotometers among other instruments. Thanks to its comprehensively equipped laboratories, PFI can simulate various kinds of ageing of lenses, e.g. through UV radiation or by scratching of the surface. This permits reliable assessment of the UV protection offered by sunglasses in new condition and after use for a given period of time. We would be pleased to advise you with regard to testing and labelling of sunglasses in order that you can reliably inform your customers about the quality of eye protection offered by your products.

Further questions will gladly be answered by:

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