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Filters & Tints - Where to Start?

The first thing to decide is whether the patient will benefit from "Filters" or "Tints". Both MultiLens Filters and NoIR Tints [the name stands for No Infra Red] will protect against damage from ultra violet light. The difference between the two systems is that "TINTS" used in the majority of NoIR sunglasses dim the complete colour spectra of the light – the darker the tint the less we see through them – they do not discriminate between the helpful light rays and the disturbing light rays. The term Visible Light Transmission [VLT] is used to describe the amount of light that can pass through the tinted lens. A high percentage VLT means a lot of light can pass through the tint a low percentage VLT means not much visible light can pass through the tint. On the other hand, "FILTER's" are designed to eliminate specific light waves within the light spectrum below a defined level, whereas almost all the light above that defined wavelength will pass through the filter. [The NoIR SpectraShield Plus range are true FILTERS just like the Multilens range].

When the light passes through the lens of the eye the blue part of the spectra will spread and scatter causing a loss of contrast and sharpness. The benefit of using "FILTERS" is that they will block out the disturbing parts of the blue light whilst allowing the beneficial light rays to pass through the lens unaffected.

Clinical studies have shown that the shortwave Ultra Violet and Blue light can have a damaging effect on our vision if allowed to pass through the lens of the eye and onto the retina. The amount of damage will of course depend on the level of exposure to these light rays. Both MultiLens FILTERS and NoIR TINTS will protect vision by filtering out these potentially harmful light rays.

Psychological and Social Influences.

Many people with a visual impairment will tend to select TINTED sunglasses far too dark for their needs if they do not have expert advice. [Tints with low VLT]. It is often thought that "dark glasses" will protect the eyes more effectively than those with a light tint. This is of course not true. Additionally some people experiencing a visual impairment will try to fit into the role of a "stereo-typical blind person" by wearing dark glasses because they think that is what is "expected of them" despite the fact that the dark glasses further reduce their ability to see. A further psychological influence is that of "grieving". When an individual loses a significant amount of vision, it is a serious "loss" and the individual may be attempting to "hide away from the world" by living in darkness, keeping the curtains or blinds drawn when at home and hiding behind dark glasses when out. This

reaction to loss of vision is similar to the reaction many people get when bereavement occurs. The problem is that if a visually impaired person continues to live in darkened conditions or continues to wear very dark tints they may become light sensitive, which in turn exacerbates the problem. It is therefore very important that when assessing or advising people regarding the use of FILTERS or TINTS that the three issues above are not influencing the final choice of lens. When using NoIR tints always remember to use the one that will achieve the goal and which also has the highest possible visible light transmission. [VLT].

What are we Assessing ?

- Glare Avoidance?
- Contrast Enhancement?
- Control for Light Sensitivity?

Glare Avoidance.

Generally speaking, discomfort glare is caused by the short wave light rays entering the eye and "scattering" within the ocular media. Short-wave light below 511 nm. are associated with this type of discomfort glare. In the MultiLens range the 450, 500 and 511 are the most appropriate filter for this purpose. In the NoIR range Spectra Shield 465-39, 505-39, will achieve similar results and in the UV Shields the Amber, Orange, Grey and Greens tend to be the most successful. When using the NoIR range always select the tint with the highest possible Visible Light Transmission [VLT].

Contrast Enhancement.

Contrast enhancement is also achieved by reducing the amount of shortwave light entering the eye. Again the MultiLens filters from 400 – 511 nm. are recommended to improve contrast vision. In the NoIR range the Spectra Shield 465-39 and 505-39 will achieve similar results and in the UV Shields the Yellow, Amber and Orange tend to be the most effective. Always remember to use the filter that will achieve the goal, which has the highest possible VLT.

Control for Light Sensitivity.

For those individuals who cannot tolerate high levels of illumination either outdoors or indoors, a darker tint will be required. In the Multilens range a filter between 527 nm. up to 580 nm. may help. In the NoIR range the Spectra Shield 533-39 and 553-39 may prove successful. In the UV shield range the Grey, Grey-Green, Red and Plum tend to be the most successful. Always remember to use the tint with the highest VLT that is acceptable.

Which Filter / Tint for which Eye Condition?

There is no precise answer to this question. Individuals have their own preferences furthermore; many people have more than one visual impairment. For example, Macular Disease and Cataract often go together, so to do Glaucoma and Cataract or Glaucoma and MD, Diabetic Retinopathy and Cataract are also very often combined. Other visual impairments such as Optic Atrophy have a wide range of symptoms making it impossible to generalise. If we add to this the issues raised above, "what are we assessing for? " - Glare Avoidance – Contrast Enhancement – Light Sensitivity - it can be seen that precise rules cannot be given. All that can be offered is very general advice.

Macular Degeneration.

As an all-round glare control and contrast enhancer the majority of MD sufferers benefit from the MultiLens 511 and 527 filters. This has been well documented in research projects. In the NoIR range the Spectra Shield Plus 505-39 Orange or the 533 Amber / Orange is recommended. In the UVShields range the 40% Amber, 60% Orange tends to work best. If the individual also has a light sensitive problem then the U21, Medium Grey the 22 Dark Grey or the 32 Grey-Grey Green may be suitable. If you are assessing for light sensitivity always remember to use the tint with the highest VLT that is acceptable.

Glaucoma

Significant numbers of people with glaucoma experience reduced contrast sensitivity, the MultiLens 400 or 450 are often the most appropriate for contrast enhancement in this case. When using the NoIR range the 10 Clear [for indoors and when reading] the 50 Yellow or the 21 Grey tend to be successful. If the individual is light sensitive or suffers badly from glare then the 22 Dark Grey or 32 Grey-Green or the 81 Plum may prove more effective. If you are assessing for light sensitivity always remember to use the tint with the highest VLT that is acceptable.

Diabetic Retinopathy

The Multilens 511, 527 of 550 tend to be the most beneficial in this situation. In the NoIR range the Spectra Shields 533-39 and 553-39 can help, in the UV Shields the 60 Orange, may prove successful. In cases where the individual also suffers from light sensitivity the 81 Plum may be more appropriate.

Retinitis Pigmentoas

Generally speaking the vast majority of RP sufferers benefit from Orange or Red filters. In the MultiLens range the 527 Orange/Red, 550 Red are the most beneficial. In the NoIR range the Spectra Shield 533-39 Amber/Orange, 553-39 Red/Orange and the UV Shield 60 Orange may work well. It is obvious that the lightest possible VLT lens should be used with this visual condition.

Cataracts

People with cataracts tend to benefit most from light filters, which illuminate the blue light waves. In the MultiLens range the 400 Light Orange, 450 Lemon Yellow or 500 Yellow are usually the most effective. In the NoIR range the Spectra Shield 465-39 Yellow, or 505-39 Orange may prove most successful. The UV Shield 50 Yellow, 40 Amber or 21 Grey, are also successful. In cases of extreme glare problems the MultiLens 511 Yellow Orange, the NoIR 22 Dark Grey may help.

How To Assess - Objective and Subjective Trials.

It is important to undertake an objective measurement of the benefits of the range of Filters and Tints. It is simply not sufficient to allow the individual to try the various options in a subjective manner, this will inevitable end up with the individual choosing a tint fat too dark which will in turn reduce visual acuity.

A distance visual acuity chart [Snellen, Logmar, or similar] is essential, so too is some form of Contrast Sensitivity Chart, [Peli Robson, Lighthouse or Precision Vision] Take a best corrected visual acuity reading without a filter to record current acuity levels. Start your assessment based on the filters recommended above. Administer further acuity

measurement with the various filters [if possible change the chart to avoid the patient memorising the chart]. If the patient's acuity improves with specific filters, then record the improvement. If the filter reduces the patient's visual acuity, then eliminate them from the trial. Once you have identified filters that enhance [or at least do not reduce] the visual acuity, then move on to a contrast sensitivity measurement. Administer the test, recording which filters improve contrast sensitivity and which ones reduce contrast vision. Eliminate those lenses that reduce contrast sensitivity. A standardised glare avoidance test should then be undertaken, simply directing a task lamp towards the patients face from a meter or so distance whilst asking the patient to observe an object behind the light source can often achieve this goal. At the end of these three processes you should have identified the most beneficial filter/s for the patient. If more than one filter provides the same result then the patients own subjective choice should be used to determine the final choice. Remember that it may be necessary to provide more than one filter or tint for different activities. For example, one for indoors or when reading/undertaking hobby activities and one for outdoors.

Polarised or Non-Polarised?

Generally speaking non-polarised filters and tints are recommended. The exception to this rule is when the patient is intending to be active in very bright outdoor activities such as fishing, skiing or sailing, or when in very bright climates where light is often being reflected horizontally or even from below. In these circumstances polarised lenses will prove advantageous. Please remember that the polarised layer will reduce the VLT as well as darkening the filter colour. This fact should therefore be considered when assessing for polarised lenses.

John Collins. May 2006.