

WATERSPORTS EYEWEAR GUIDE

LiP SUNGLASSES

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Why Are Watersports Sunglasses So Important?

Eyes are the second most complex organ after the brain and are responsible for 80% of all learning. Unlike most organs of the body, there is currently no procedure for eye transplants, so looking after our eyes really is an absolute necessity.

If you are not using eyewear when you are out on the water (or you are using the wrong type of eyewear) the long term health of your eyes is at serious risk of harm. UV-A radiation can damage the macula, a part of the retina at the back of your eye, whereas UV-B radiation can damage the front of your eyes – like the cornea and lens. Macular degeneration, cataracts, pterygium, skin cancer and corneal sunburn all result from UV exposure and can lead to temporary or even permanent blindness.

The risk of damage to your eyes is especially high on the water as UV radiation is scattered and reflected from surfaces. Snow, white water and sand are highly reflective. Moreover, physical damage to your eyes is a risk if your existing sunglasses are constructed of unsuitable materials.

In addition to protecting the long term health of your eyes, good watersports eyewear will add to your enjoyment and enhance your performance on the water. By seeing more clearly with crisp and undistorted vision, you will also stay one step ahead of hazards and have greater awareness of your surroundings.

We've written this guide to help you through the process of making the right choices to protect your eyes and get the most out of your watersports eyewear. If you're looking to know more about sunglasses for watersports, but don't yet know what to buy or why, dive into this guide and learn what's what in the world of watersports eyewear.

Let's get started...

EYE HEALTH & UV PROTECTION

1. Do the lenses adequately filter out 100% of UV rays?

Not all sunglasses with UV protection labels are telling the truth, so it's important to verify that the sunglasses you're looking into buying do actually block all the harmful UV rays. If the packaging or marketing information does not explicitly state that the lenses block all UV radiation, then this should trigger alarm bells.

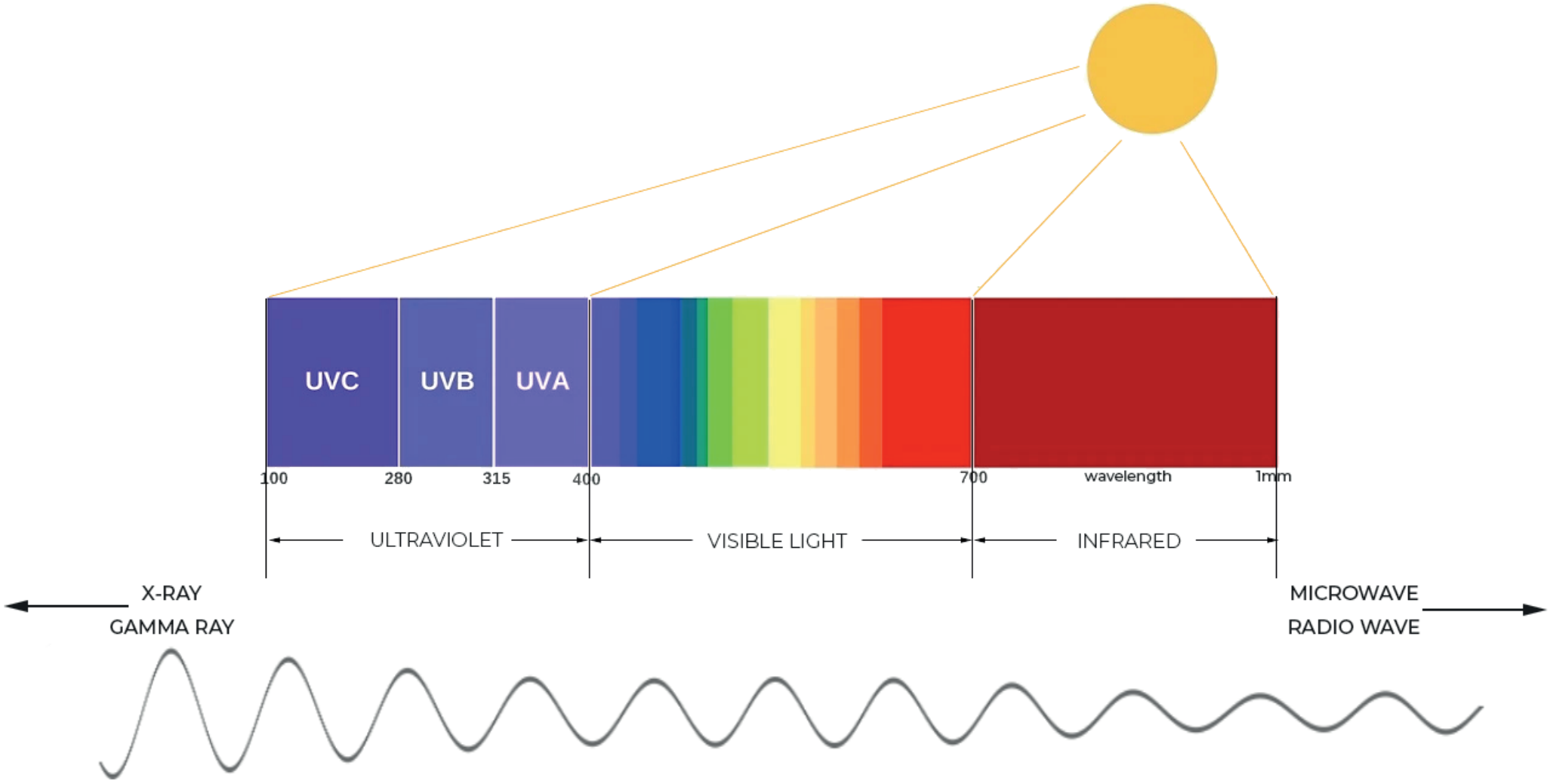
What are the harmful UV rays? The sun emits 3 types of UV waves – UVA, UVB and UVC. Both UVA and UVB make it through to the earths surface, whereas UVC (which is the most dangerous) is completely absorbed by dioxygen and ozone in the atmosphere. Almost 95% of all UV rays that reach the earth are UVA, and the remaining 5% UVB. Both UVA and UVB are known to cause damage to the skin & eyes after prolonged exposure.

Sometimes, you may see the term 'UV400'. What this means is that the lenses will block UV waves that are shorter than or equal to 400 nano-metres. Check out the visible and non-visible light spectrum illustration on the next page.

If you want to check whether or not your existing sunglasses lenses block out all UV rays (studies have shown that over time the protective UV layer in lenses does fade), then you can ask your local optometrist to carry out an analysis using a spectrophotometer. If that sounds like too much of a hassle, you can try a home hack using a UV torch, a dollar bill and your lenses. Place the dollar bill on a table and shine the UV torch on the dollar bill to see the security strip. Now place the lenses in front of the torch. Do you still see the security strip? If you do, then UV is passing through the lenses and you are not fully protected.

Remember always that If you spend any time outdoors, you are at risk of UV radiation. The actual dose of UV radiation you get depends on a number of factors, including time of day, time of year, geography, cloud cover and the local environment. You can read up on all of these factors and how they influence UV radition levels here.

UV, VISIBLE LIGHT & INFRARED



ENSURE YOUR SUNGLASSES CUT OUT 100% UV

2. Does size and shape matter with respect to protection?

Size and shape do matter. Frame and lens size and shape are important considerations when it comes to protecting your eyes from the elements and from harmful UV rays.



With anything less than a full wrap fit, the gap between your face and the edge of the sunglasses frame is asking for trouble.

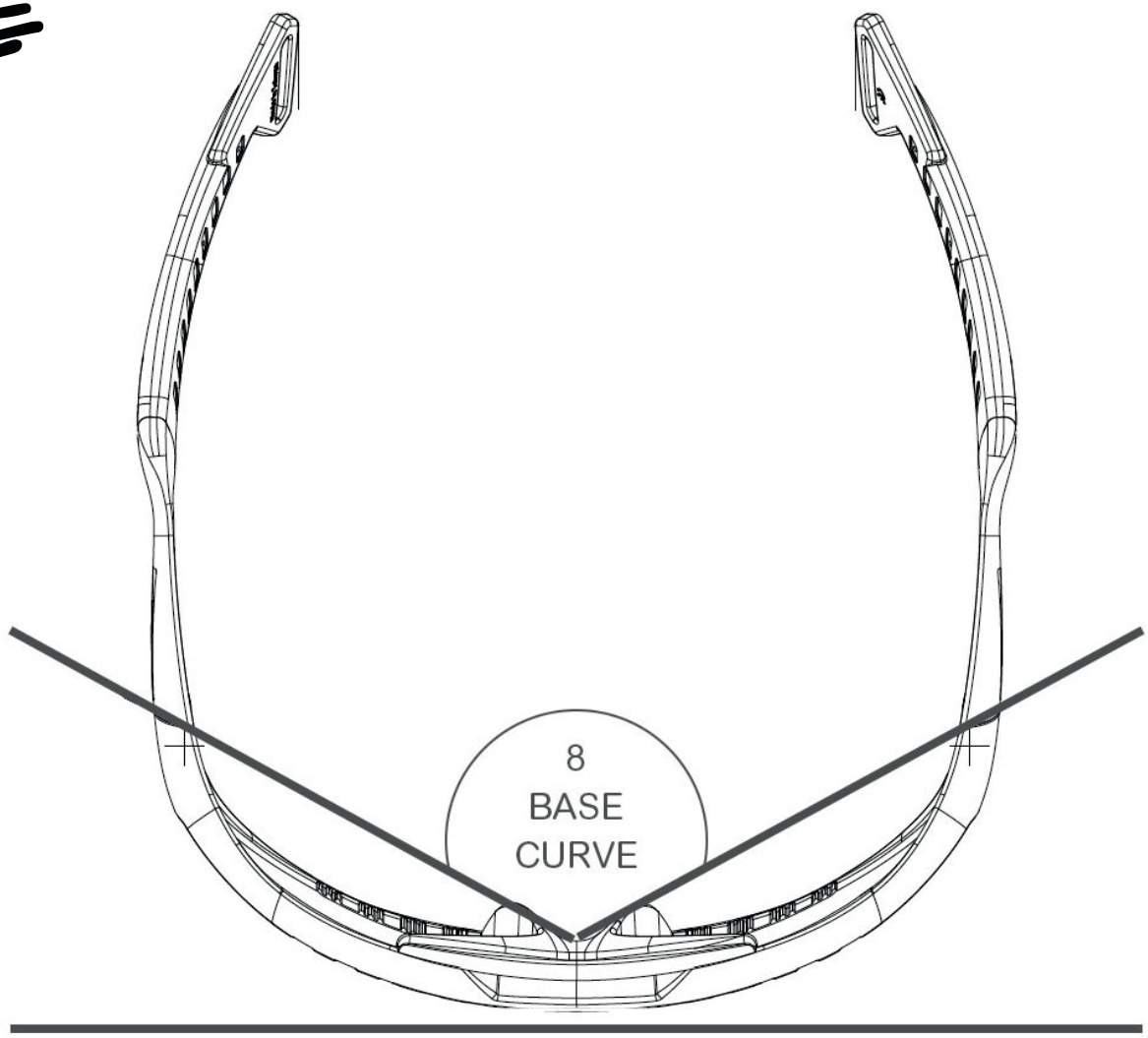
Wraparound (or '8-base') frames & lenses are recommended for watersports for two reasons; 1) to prevent glare, direct and scattered UV rays from entering your eyes from the top, bottom and sides, and 2) to stop wind, spray, insects and other airborne particles from getting behind the lenses and disturbing your vision and causing red-eye / eye fatigue.

As we all have different face shapes, it is advisable to try on the sunglasses for a good fit at the shop before committing to buy, or if you are buying online, verify that you have the option to return your purchase if the fit doesn't work out for you.

A good way to test if the fit is suitable is to put on the sunglasses, and see if you can slide your index finder behind the lenses and touch your eye from the top, side and bottom without touching the frame? If you can, then UV rays, water and wind will likely find its way in too.

The frame and lenses should be larger than an average pair of sunglasses, not only to ensure that your eyes and the skin around the eyes are protected, but also to give you a wide field of view.

SURGE



The 8-base wrap frame of the Surge protects your eyes from being bombarded by harmful UV rays, wind and sea-spray

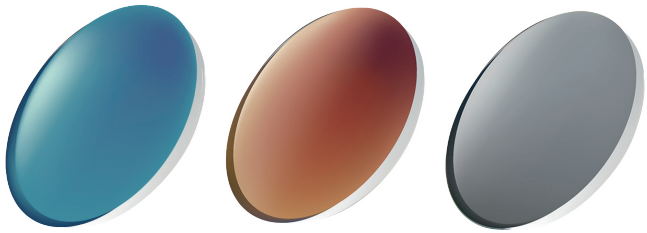
FUNCTION & SUITABILITY

Once you have assured yourself that the sunglasses will filter out all harmful UV rays and are a suitable shape and size, the next step is to evaluate their functionality. We've broken down our review of function and suitability into two sections: (1) Lenses and (2) Frames.

LENSES:

In this section, we look at six essential considerations for watersports sunglasses lenses:

1. What lens materials are suitable for watersports?
2. Lens distortion, object shifting and decentered lenses
3. Lens base colours and mirror coatings
4. Polarisation
5. Visible Light Transmission (VLT) rates
6. Hydrophobic and oleophobic coatings



1. What lens materials are suitable for watersports?

Our Lens Material Features chart below provides a summary of the qualities of some of the most common lens materials available for sunglasses.

LENS MATERIAL FEATURES	Mineral Glass	Trivex	Polyamide	Polycarbonate
Weight (gram/cm^3)	1 (2.5 g/cm^3)	4.5 (1.11gr/cm^3)	5 (1.01 g/cm^3)	4 1.20 g/cm^3)
Abbe Rating[1] (Abbe number)	4 (49-50)	3.5 (45)	5 (52)	2 (30)
Refractive Index [2]	4 (1.52)	(4) 1.54	4 (1.51)	2 (1.58)
Material Pureness	5	4	4	3.5
Impact Resistance	1	4	4	5
Scratch Resistance	5	3.5	3.5	3.5

All features are rated 1 to 5, where 1 is poor and 5 is excellent

1. The higher the Abbe number, the better the lens material for optical quality.
2. A lens with a high refractive index will be thinner than a lens made of a material with a lower refractive index.

Lens Materials and their properties

At a minimum, lenses for watersports should have good **impact resistance**.

Glass lenses, while offering great visual clarity, are not suitable for sports. Glass is liable to crack or even shatter on impact, leading to a potential eye injury. Trivex and Polycarbonate offer the best impact protection, closely followed by polyamide (nylon).

The next consideration is **optical clarity**, and here we look at the 'Abbe' value. The higher the Abbe number, the better the optical clarity. Having discounted glass as a suitable material, the materials with the highest Abbe values with good impact resistance are polycarbonate, Trivex and polyamide.

Weight is also an important factor to consider. Heavier lenses may cause the frame to slide down your nose – which would be irritating unless you have a retention leash to hold the frame in place. Also, if you are planning to have long sessions on the water, the lighter the better for lasting comfort. Polyamide is the lightest lens material, closely followed by Trivex.

The **refractive index** of the lens is also something to bear in mind, and this is related to lens thickness. A lens with a higher refractive index is thinner. Polycarbonate is the winner here.

A final consideration is the **scratch resistance** of the lens material. While mineral glass has excellent scratch resistance, it is unsuited to impact sports. Both polycarbonate and polyamide both have average to good scratch resistance.

Note that many brands will offer an 'anti-scratch' or 'hard coating' to increase the scratch resistance, but the plain truth is that polycarbonate, polyamide or Trivex lenses are liable to scratch if you do not look after them. 'Scratch-resistance' is not 'scratch-proof'.

2. Lens distortion, object shifting & decentered lenses



Gloss Black / ZEISS Gun Blue lenses



Optically decentered lenses prevent distortion & eye strain

Lens distortion is your No.1 enemy particularly in crowded waters because optically incorrect lenses can convince you that you are further away from an object in the water than you really are.

In general terms, the flatter the lens, the less distortion. But as we have noted above flat lenses allow water, direct and reflected light in at the sides, top and bottom which is undesirable. Curved lenses however refract (or distort) the light as it passes through. So for wrap sunglasses it is crucial that the lenses are 'decentered' to ensure sharp, distortion free vision throughout the field of view. When a lens is optically decentered, the sweet spot is shifted from the middle of the lens to an optimised position in front of the eye.

Many eyewear brands claim that their lenses are distortion free – but don't take these claims at face value. If the lenses are not decentered, then 'object shifting' could bring you much closer to a collision than you would want. This is especially important if you are moving at high speeds. If you are buying a wrap or '8-base' pair of sunglasses, ask the sales assistant if the lenses are decentered.

Also, visually inspect the lenses to check that the surface has a constant curvature throughout. If the curvature is not uniform, you are likely to experience distortion.

3. Lens base colours & mirror coatings

Next up, you'll need to think about what base colour you want. When it comes to watersports, the one to go for will depend on your **local weather conditions** and your **personal preferences**.

Grey lenses are great for bright and sunny conditions, and brown or bronze lenses are suited to variable conditions. But there are many options out there. It is ultimately a personal choice, as colour perception varies from person to person, and some eyes are more sensitive to colours than others.

In recent years, there has been an emergence of colour enhanced lenses – for example pink or violet lenses, which have emerged in response to demand for specific activities. These are often termed 'high contrast' lenses. For watersports, rose and violet tinted lenses both offer great colour and depth perception and increase contrast, which in turn reduces eye fatigue.

Making the right decision can be a difficult call as often we encounter all sorts of weather and lighting conditions throughout the year. Having a second set of lenses to handle different weather conditions can be a good idea.

Query if you can buy additional lenses for your sunglasses, and ask if it is an easy process to switch them over?

BASE COLOURS	FEATURES & BENEFITS	IDEAL CONDITIONS
YELLOW & AMBER	• filters out blue light • reduces eye strain • perfect for low light conditions, dusk	
ROSE & PINK	• increased depth of field • higher contrast • reduces eye strain • good for cycling, skiing, watersports	
GREY	• true and neutral colour representation • minimises glare especially from water • darkest of all tints • great for high contrast / sunny conditions	
GREEN	• Transmits colours evenly • good in low light conditions and shade • reduces glare • good for daily use and general purpose	
BROWN & BRONZE	• enhances contrast in all light conditions • enhances depth of field • enhances reds • versatile all round lens colour	
BLUE & PURPLE	• reduces glare • filters out white light • enhances colour perception and contours • good for skiing, fishing, watersports	

Mirror Coatings

Alongside base colours is the option of mirror coatings. People often confuse the two, but they are quite different things.

For example, if you have a blue mirror coating, this does not mean that you have a blue tinted lens or blue base colour. It means that there is a blue coloured coating that has been applied on top of the base colour (whatever that base colour may be).

There are some benefits of mirror coatings in addition to style and aesthetics. For example our FLO with Pacific Blue lenses has a violet base colour and a blue mirror coating. The violet base lens colour enhances whites and greys, while the blue mirror coating reflects blue light away from the eye. In a bright ocean environment where blue is everywhere, this helps to balance the overall light spectrum and provide greater visual acuity.

There are additional benefits of mirror coatings such as the reduction of glare (in addition to the effects of polarization), and this further reduces eye strain.

A word of caution on mirror coatings - they are more liable to scratch, so take good care of them!

FLO - Matt Black with Pacific Blue lenses



4. Lens Polarisation

Ordinary light is unpolarised: it oscillates in all directions until it strikes a smooth surface. When sunlight is reflected off a surface (e.g. water, asphalt, snow) it can lead to distracting and blinding glare, particularly when the sun is at a low angle. This not only makes life uncomfortable but it can be hazardous too.

There are certainly times where polarization can be detrimental to your performance on the water, such as reading waves or surface texture when the sun is directly overhead – see our blog 'The Case for Non-Polarised Watersports Lenses' about this.

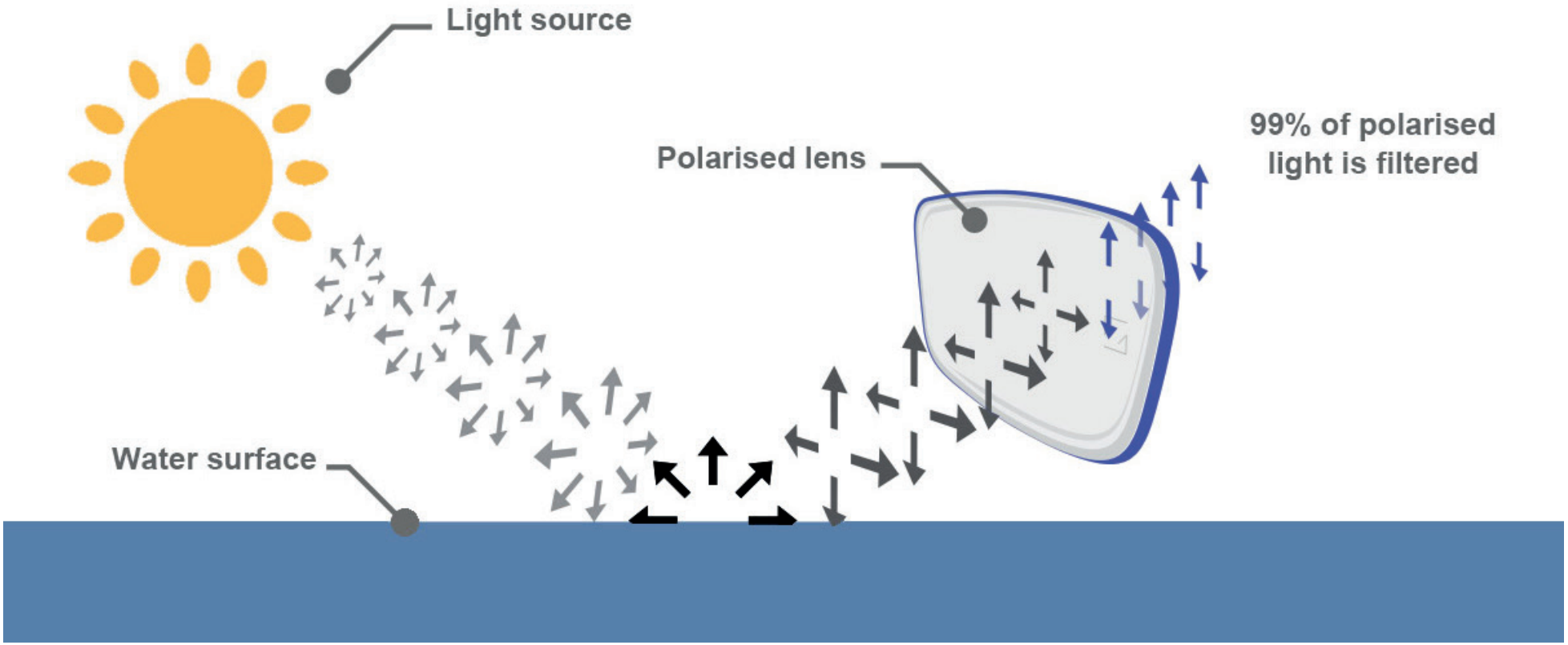
If you expect to be out on the water in the midday sun, and especially if you are based on or near the equator, you might want to consider having a quiver of lenses at your disposal - both polarised and non-polarised. It's worth checking if you can purchase additional lenses to cater for all the conditions you are likely to encounter, and whether it is easy to swicth over the lenses.

Mostly however, the benefits of polarization are clear. Polarized lenses cut out glare, increase contrast, and reduce eye fatigue, and for practically all watersports we recommend them.

However, not all polarized lenses are made equally, and you'll want to do your homework to check the quality of the polarisation layer. Some manufacturers apply a polarising film on the front surface of the lens. We advise against this kind of polarisartion as it is notorious for peeling or rubbing off, sometimes within a few months of purchase.

If you want a polarized filter that stands the test of time, you'll want to ensure that the polarization layer has been 'injected' during the lens molding process. All of LiP Sunglasses watershades have an injected polarisation layer.

How Polarisation Works



In the midday sun, the water surface is perpendicular to the sunlight's direction of travel so the sunlight that passes through the water's surface is polarized vertically. As polarized lenses are vertically polarized, this light is not filtered out by the polarizing filter. This explains the tendency to see through the water's surface and focus on whatever lies beneath.

As the sun arcs later in the day, the perpendicularity of the sunlight to the water surface naturally reduces. This has two effects. Firstly, more light bounces off the surface, and this reflected light is horizontally polarized which polarizing lenses can filter out. Second, less vertically polarized light passes through the water's surface meaning that the surface becomes decreasingly transparent.

5. Visible Light Transmission (VLT) rates

This is an important consideration as the VLT determines what percentage of visible light (not to be confused with UV rays) passes through the lens and into the eye. Here's a summary of the 5 categories and usage for all lenses:

Category	VLT range	Description	Use	Day Driving	Night Driving
0	100% - 80%	Very low reduction of sun glare		✓	✓
1	80%- 43%	Limited Sun glare reduction		✓	X
2	43% - 18%	Medium reduction of sun glare		✓	X
3	18%- 8%	High reduction of sun glare		✓	X
4	8% - 3%	Very high reduction of sun glare		X	X

Category 3 lenses are the most suitable for watersports, unless you're located in a dimly lit location where it might be more appropriate to consider a category 2 lens.

There's a 10% range within category 3, so if the weather you expect to encounter is very bright and sunny, then you will want to be on the lower range – say around 8-11%. If you are expecting sunny and mixed weather, then you will probably want to look at the mid range – say 12-15%.

LiP Watershades lenses and their transmission rates

Brand & Lens Name	Material	Base Colour	VLT	Model
Zeiss: Methane Bown	Polycarbonate	Brown	10.2%	Typhoon
Zeiss: Methane Smoke	Polycarbonate	Grey	10.17	Typhoon
Zeiss: Methane Smoke + Gun Blue Mirror	Polycarbonate	Grey	10.95%	Typhoon
Zeiss: Multilayer Rose Gold	Polyamide	Brown	14.19%	Typhoon
Zeiss: Flash Pacific Blue	Polyamide	Violet	9.93%	Typhoon, Flo
Zeiss: Multilayer Red	Polycarbonate	Grey	26.14%	Flo
LiP Sunglasses: Brown	Polycarbonate	Brown	10%	Surge
LiP Sunglasses: Smoke	Polycarbonate	Grey	10%	Surge, Flo
LiP Sunglasses: Vivide Ice Blue	Polycarbonate	Rose	8.35%	Surge, Flo
LiP Sunglasses: Smoke Gold Mirror	Polycarbonate	Grey	11%	Flo

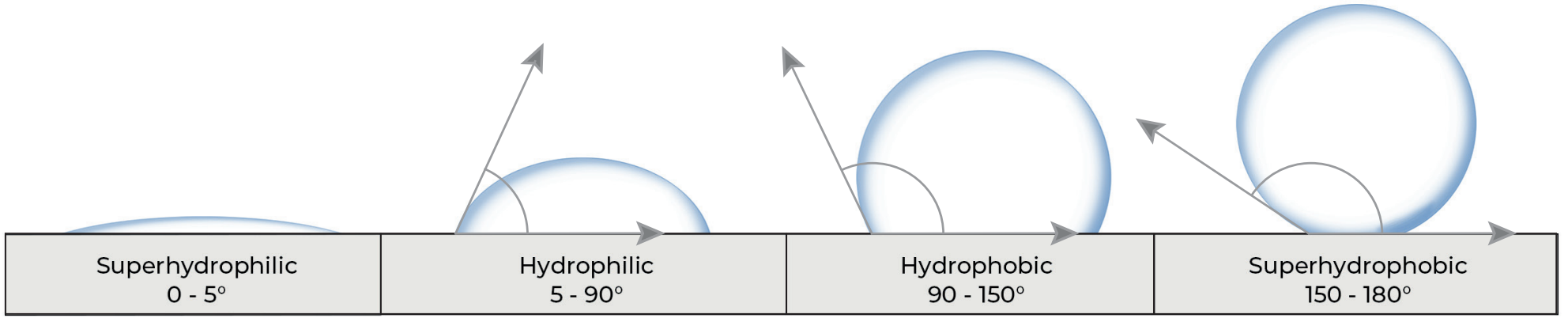
6. Hydrophobic and Oleophobic coatings

You'll want to ensure that your lenses have at least a hydrophobic coating so that water droplets do not accumulate on the lens surface, and better still an oleophobic coating too.

A hydrophobic coating repels water whereas an oleophobic coating repels oils, sweat, dirt and dust. It is the last layer on the lenses. As the graphic below shows, the hydrophobic layer acts to repel water droplets by weakening the bond of the water molecules to the lens surface. If the contact angle of the water to the lens surface is ≥ 90°, it is hydrophobic, and if it is ≥ 150°, this is termed "superhydrophobic".

As you will see, there is quite a range. A hydrophobic coating which offers a contact angle of 90° is not as good as one with a contact angle of 120°. If your sunglasses can offer a hydrophobic contact angle of 110° or more, then this is a good level that will make a material difference to lens 'water spotting'. Having a high angled hydrophobic coating will ensure that your vision remains clear and uninhibited, allowing you to concentrate on your performance without distraction.

A few things to note on these coatings; 1) their efficiency can fade with time, so it's worth asking whether the warranty on the coatings is limited in time. 2) As the hydrophobic coating is the final layer on the lenses, it can easily be damaged by poor product care - for example buffing the lenses without first removing dust or salt particles that may have accumulated on the surface from a previous session.



Choosing sunglasses with high quality hydrophobic and oleophobic coatings combined with good product care will make all the difference to your experience on the water



FUNCTION & SUITABILITY

Now that we have looked at the function and suitability of lenses, we turn our attention to the other major component - the frame.

FRAMES:

In this section, we look at the four essential considerations for watersports sunglasses frames:

1. Frame material and impact protection
2. Frame curvature and field of view
3. Leash retention system or floaters?
4. Venting and anti-fogging



1. Frame material and impact protection

As with lens material, the frame should be robust and capable of withstanding impacts. Whether you are riding waves, racing, or just shredding it at your local spot, you're going to suffer a wipeout from time to time so you need your frames to be capable of taking a beating.

Frames come in a range of materials such as zyl, acetate, metal, polycarbonate, carbon and Optyl, but none of these materials have what it takes to withstand the rigours of the ocean and heavy impacts.

For any kind of impact sports, you'll need to ensure that the frame is strong, lightweight and flexible, so that when you have that inevitable wipeout, your frame isn't twisted or broken – and your face and eyes are protected.

The frame material that satisfies these requirements is TR90, which is a thermoplastic nylon which is super-strong and extremely flexible. This material provides 100% memory allowing the frames to bounce back to their original shape after a shock. It is basically unbreakable. It is also resistant to very high and low temperatures.

All of LiP's watershades are constructed from TR90 and are guaranteed not to break, which is backed by our warranty.

Some manufacturers will also offer additional impact protection on the frame in the form of overmolded rubber. The rubber acts like a fender to dampen any impact force and also serves to form a comfortable interface between the face and the frame - which is great for extended sessions on the water.

An example of this overmolded rubber can be seen on our Typhoon model which provides additional impact protection via the soft TPU rubber padding which surrounds the frame and on the temple tips for ultimate comfort and security. See the illustration on the next page.

Soft TPU Rubber (pink material)

- provides a soft and comfortable interface
- acts as a cushion on wipeouts and impacts

TYPHOON



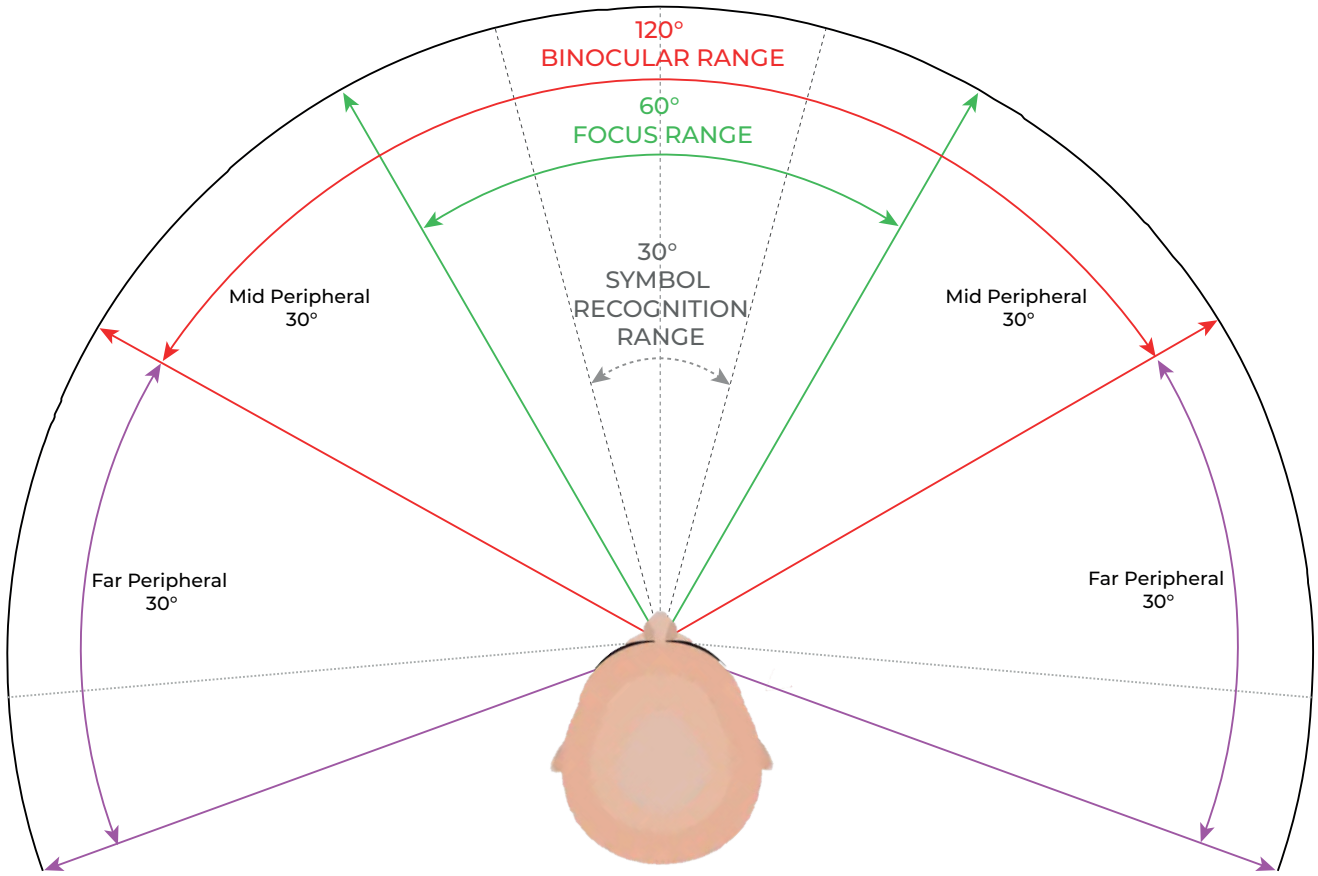
Flexible Frame

- Grilamid TR90 is lightweight, flexible and incredibly strong
- absorbs and spreads impact force and then returns to original shape

2. Frame curvature and field of view

We touched on this in the first section of this guide – “Does size and shape matter with respect to protection?”, so we won’t repeat the advice already given there. Suffice to say that a wrap frame is both desirable and necessary.

But there is one additional reason why wrap sunglasses are desirable from a functionality point of view, and that is because they offer a superior field of view. Having clear vision throughout the field of view is essential to navigating safely.



If you are seeing your sunglasses frame in your peripheral vision, then you are needlessly restricting the quality and quantity of information that your eyes can process.

Peripheral vision is designed to pick up on movement outside of your 60° focus range and is an inbuilt safety mechanism.

So it is advisable to choose a frame that has an ‘8-base’ curve at a minimum to provide you with a decent field of view that enables your eyes to pick up on movement throughout your peripheral vision.

2. Leash retention system, or flotation device?

Give some thought to what happens when you get caught inside a wave set, get thrown overboard, or suffer a big wipeout. Will you lose your sunglasses to the ocean? It happens all too frequently.

There are two ways to mitigate against this:

- Use sunglasses that float, or
- Use a reliable retention system

If you prefer the simplicity of floating sunglasses (or frames that use a flotation device), consider the practicality of locating them once you've been separated. In rough seas, it's not easy to see a small pair of sunglasses. If the tide is on its way out or if you have a strong current or river flow, they may be gone in a matter of seconds. If you capsize your surfski or wipeout on your windfoil, it may take you a minute or so to get back on board. How likely is it that you will find them again after this kind of delay?

If you opt for a frame which doesn't float but which attaches a flotation device, how secure is that flotation device and will the flotation device become irritating as it catches in the wind?

If you prefer a leash and retention system, is the leash system guaranteed to work? What is the leash attached to? Will it withstand the rigours of being caught inside an overhead wave set?

At LiP, we offer both of these solutions. We suggest floating frames are suitable for light-wind and light flow watersports as you are much more likely to locate them after a wipeout, and a failsafe leash system for when the winds are stronger and/or the water is more fluid or powerful.

3. Venting and anti-fogging

We all want to avoid the horrors of the fog.

For watersports sunglasses, the main cause of fogging is when warm air from your body or your breath comes into contact with lenses that have suddenly been cooled down (either by the air temperature or by the water temperature). The water vapour in the warmer air condenses into tiny droplets that cling to both the inside and outside of the lenses.

The problem of fogging mostly occurs in locations where there is warm / humid air and cold water, or at least where there is a signifcant difference in temperature between the water and the air.

There's a bit of science behind the phase change from air to water, but the short story is that because the laws of nature determine if and to what extent fogging occurs, the challenge is to have a solution for when it does occur.

Some manufacturers use "anti-fog coatings". The truth is that many of these coatings have a tendency to degrade quite quickly, and because the anti-fog coating is generally soft and pliable, they have a tendency to scratch. Anti-fog coatings are generally hydrophillic, meaning that they attract water rather than repel it.

Technology is starting to improve in this area though. From late 2019, LiP's prescription watershades ('Watershades RX') include an option for a state-of-the-art anti-fog coating called ORION-X, which clears fog in just a few seconds, even in the most challenging atmospheric conditions.

Aside from these coatings, a reduction of fogging can be achieved through a combination of good frame & lens design to encourage airflow across the lenses on the one hand, and good user / product care habits on the other.

Below we list the anti-fogging design aspects of LiP watershades and also make some behavioural suggestions to reduce the likelihood of fogging occurring in the first place.

Anti-fog design considerations

- LiP's patented double vortex vent system encourages air flow behind the lenses that clears fogging from the inside. Once you get moving again, the fog should clear.

- Hydrophobic lens coatings that repel moisture. Water on the lens surface is encouraged to "bead" and slide off the lenses.

Anti-fog product care advice:

- Avoid touching or wiping the lenses when they are wet or fogged up. The natural oils on your skin will disrupt the hydrophobic surface and encourage water to accumulate where the lenses have been touched.

- Avoid placing sunglasses on top of your head. Heat and sweat from your head (the hottest part of your body) will accumulate on the inside of the lenses.

- Take care of your sunglasses after every session on the water, and be sure to let them dry before you buff them with the microfibre bag. Particles on the lens surface will attract water and dirt, so check for dust or salt residue on the lenses immediately before you head out on the water.

DURABILITY

We have already covered the issue of the ability of the frame and lens to withstand impacts, but there are a few additional points to make about durability and, in particular, the corrosive power of salt.

1. Hinges, clips and screws

In your research into how well your sunglasses will cope with salt water, consider that every pair of sunglasses has some mechanism to connect the temples to the frame. Some have screws, and others use hinges.

We suggest that you avoid spring hinges at all costs – their fragility will not withstand repeated exposure to salt water – no matter how many times you wash them down with fresh water after use.

Barrel hinges will not fare much better unless they are made from a high grade of stainless steel, and even then stainless steel is not corrosion free.

The best solution is for the temples to be connected to the frame using high grade stainless steel screws. Quality stainless steel screws are rust-resistant throughout the entire screw, not just on the surface. It is worth noting that even with high grade stainless steel, there will likely be some oxidation (blackening) on the surface of the screw. This oxidised layer will act as a barrier to further corrosion. It's worth mentioning that it's always worth checking that your hinge screws are tight and secure from time to time as part of your product care routine.

If there is a retainer strap, make sure there are no metal components, as these will also corrode. If it is made of another material, will that material withstand the corrosive power of salt?

2. Lens Layers & Coatings

We mentioned earlier that you should avoid polarisation layers that are essentially glued to the front surface of the lens. The most durable polarization layer is injected in the mold.

It's not just the polarization layer that can get damaged by sun and salt. If you want water to bead nicely off the lenses, then you will need a hydrophobic coating on the surfaces of the lens, as we touched on before in the functionality section.

Hydrophobic coatings can be notoriously short-lived. but high quality coatings should last for years as long as good product care is practised. This involves rinsing the sunglasses after every session on the water, and regularly cleaning the lenses with a mild detergent to remove any dirt or particles. This helps to reset the hydrophobic and oleophoibic coatings to their factory condition.

You'll get a good idea of the quality of these coatings by looking at the length of the warranty offered and to what extent it includes the lens coatings.

We've also mentioned before that mirror coatings tend to scratch more easily than lenses without a mirror coating. This is especially the case for sunglasses that are used on the beach and on the water. Sand and salt get everywhere.

To avoid any accidental damage to any of these coatings, it's a good idea to carry a bottle of fresh water in your kit bag and rinse your sunglasses as soon as you finish your session, and then immediately place them in the microfibre bag and put them out of harm's way. You can then give them a full service clean when you get back home.

COMFORT

Last, but by no means least – are the sunglasses comfortable? A good measure of whether a pair of sunglasses are comfortable or not is whether you notice that you are wearing them after a period of time on the water, say 15-20 minutes. If you stop noticing that you are wearing them, that's a really good sign. It's worthwhile considering a few final points on comfort:

1. Do your eyelashes touch the inner lens surface?

This can not only be frustrating, but did you know that the oils on your eyelashes can disrupt the hydrophobic coating on the inner lens surface (if indeed there is a hydrophobic coating there)? A good frame design should ensure that there is enough room for all but the most prominent eyelashes.

2. Do the frames slide down your nose?

The sunglasses should sit squarely on the face and should not slip down the nose when you lean forward or jump up and down. Heavier sunglasses tend to slip forward, and may become uncomfortable after extended use, even if you are using a leash. Choosing the lightest frame and lens material will go some way to insuring this does not happen.

3. If you suffer red-eye or eye-fatigue even when wearing your sunglasses?

This is a sign of one or more of the following:

- the lenses are not filtering out all UV light
- water / wind is penetrating behind the lenses
- the polarization layer is not functioning well
- the lenses are distorted or inadequately decentered



THANKS FOR READING OUR WATERSPORTS EYEWEAR GUIDE

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LiP SUNGLASSES

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