

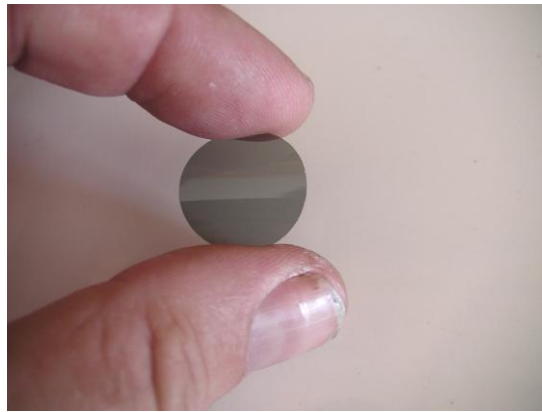
Neutral Density / Polarizer filter

5/2/10

This is a 2-in-1 lens filter.

First it is a **neutral density** filter. This means it reduces the light coming in to the camera equally – all colors are reduced equally. In some occurrences, the image may go slightly warmer with the filter (brownish/yellow). This filter reduces the light by 1-1/2 stops. The reason you would want to use a neutral density filter is to slow down the shutter and get a more blurred look for fast moving objects such as tires, roads, helicopter blades, etc. Blurring is what the eye sees naturally. With the GoPro HD Hero, the lens f-stop is fixed, so the only variable for light is shutter speed. So on a bright sunny day, the camera has no choice but to use a really fast shutter speed, thus stopping objects on screen.

The other part of this filter is the **polarizer**. In addition to darkening everything equally, it also will darken the sky and make some colors more vibrant. It will also remove reflections from windshields, roads, water, windows, etc. WORKS EXACTLY THE SAME AS YOUR POLARIZED SUNGLASSES.



Instructions:

Filter simply gets put between the camera lens and the underwater housing lens**. Open the housing, point the housing lens down and drop in the filter. Note the filter is curved in 1 direction. Match the direction with the housing lens.



Be careful to get it **perfectly centered** in the underwater housing lens. Even then, you may get a tiny bit of area in the edges of the still pictures that the filter may not cover. Simply crop out that area.

This is made out of soft plastic and is easily scratched. If you get a fingerprint on it, your images/videos will look slightly out of focus. If it gets surface scratches, use any plastic fine scratch remover product. We sell a Nova brand on our website.



See upper left corner. The filter wasn't perfectly centered. You can see where it didn't cover. Not a big deal to crop out.

DO NOT TRY TO PUT THE FILTER IN ON A WINDY DAY. IT WILL BLOW AWAY LIKE A LEAF ON A TREE. Try to find a wind-free area. When not using, a trick we use is to put the filter between the camera and the housing on the left side of the camera as a holding area. That way it's right there when you need it.

Orientation: The neutral density part of the filter is a no-brainer. Put it on the lens and it will reduce the overall light. It's very simple. The polarization part is a little trickier. We won't go into the scientific reasons why a polarizer works, but we will point out things to watch out for. Here's a good link for more info:

<http://www.great-landscape-photography.com/polarizing-filter.html>

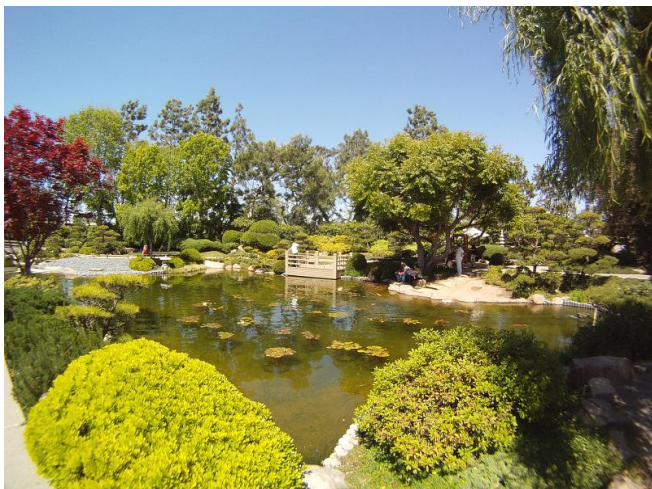
TIPS FOR POLARIZATION:

******Polarizers are directional. Which means, before you put in the filter, you need to hold it up to the sky or windshield and ROTATE the filter until you see the most effect. Then try to put it into the housing in that exact direction. There are other polarizers that are not directional and are called circular polarizers, but that's not this filter. If you do NOT want the polarizing effect and just ND reduction of light, hold the filter in front of your eye and twist it until the polarization effect is minimal. Sometimes on days with a deep blue sky the polarizer can make it look fake (purple-ish).

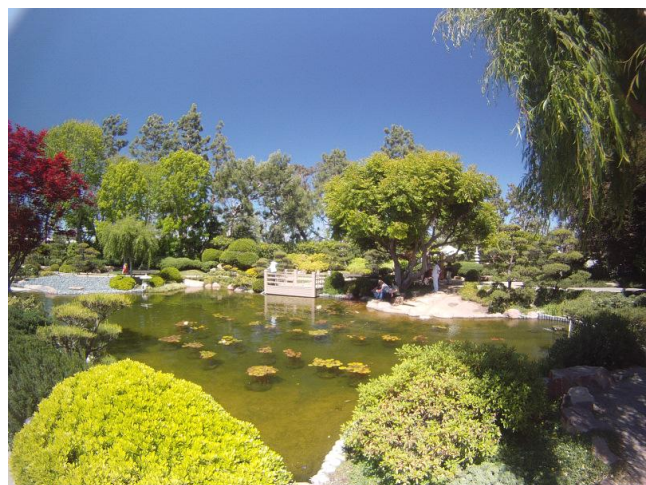
SKY: Obviously, darkening the sky only works on a sunny day. Best days are blue skies with clouds. An overcast day will have no effect on the sky. Polarizers work best at a 90 angle from the sun.

REFLECTIONS: The best part of a polarizer is the reduction/elimination of most reflections. These can be mirror reflections as on a windshield, on flat water and even diffuse reflections on a dashboard. Almost like magic!

Now as magical as a polarizer is, there are some things to watch out for. First, if you get the orientation of the filter not quite right, you'll get a sky that is partially dark and partially not. Also, sometimes the polarizer will throw the exposure meter off a little in the camera giving a glowing effect:



NO FILTER



WITH FILTER

Note the removal of water reflections and darkened sky, But also note the overexposure of the sand area.

But when done right, the results are amazing!

Neutral Density/Polarizer filter for GoPro

Increases color vibrancy, darkens sky, removes reflections on water, windshields, roads, etc.

no filter



with filter



without ND filter



with ND filter

