v 1.1

Premium ND Filter System

ZERO Color Shift
ZERO Color Correction

White Paper

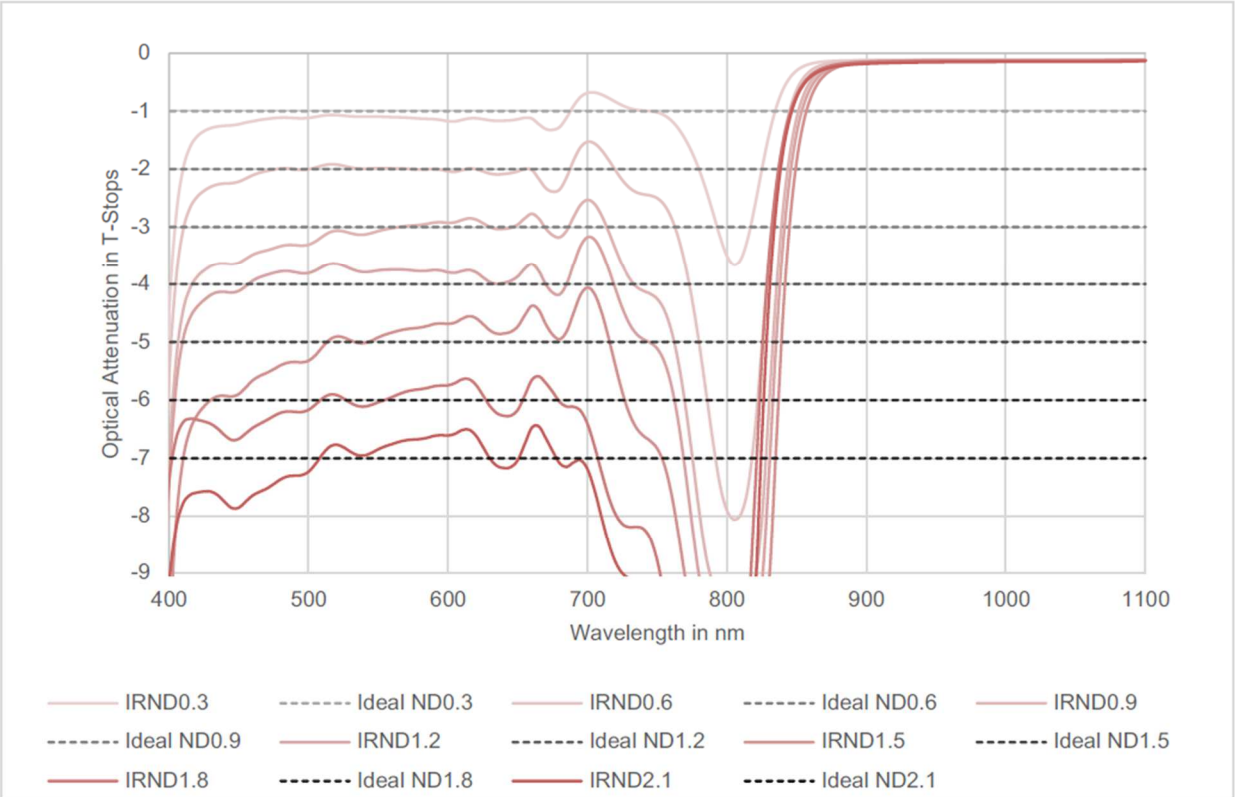
IDX System Technology, Inc.
Torrance, California

ALPHA-I Full Spectrum ND Filters are the newest addition to IDX's product lineup. Most will question why IDX decided to enter the camera lens filter industry. When your R&D Director is a professional cameraman not satisfied with ND filters out in the world, you spend 3 years making one that is the best in the market!

Neutral = No Character

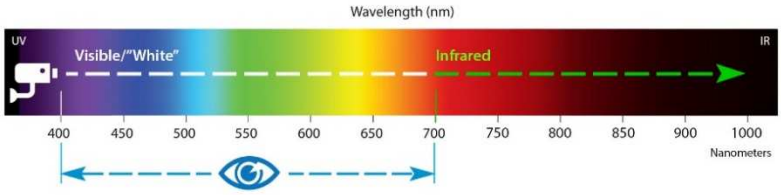
ND filters are like sunglasses for cameras. Put them on when its bright so certain effects can be achieved with different aperture stops. But unlike sunglasses, neutral density (ND) filters need to be pure and not have any characteristics that will alter the image in any way.
The standard dye-based ND filters, that are still popular in the industry today, are made with either dyed glass or dyed films sandwiched between two glass sheets. However, these tend to have individual characteristics that are far from being called neutral. There is a noticeable shift in color that most believed to be the norm of a ND filter. Years later, multilayer thin-film ND filters were introduced as the possible alternative for the dye-based filters, but these too had their own characteristics that we thought should not exist in a neutral density filter.
ALPHA-I ND filters were developed with everything above in mind, to be the most neutral ND filters in the world.

Transmission Graph of a Typical ND Filter Set



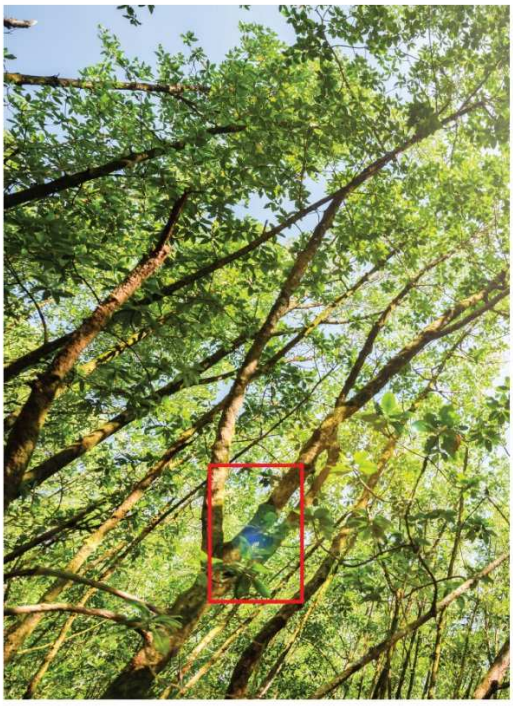
The Technology of ALPHA-I Full Spectrum ND Filters

IDX is known as one of the most innovative and dependable companies due to the consistent high-quality product standards that have been held for 30 years while exceeding the expectations of the industry. This mentality is what has brought us to push the limits and raise the standard of every step of manufacturing each ALPHA-I ND filters.
The main ND portion of the ALPHA-I took numerous trial and error to find the perfect material combination to achieve the flat neutral response we were looking for in every color value. Not just the visual spectrum, but our focus was equally on the near IR and the infrared as well which led to the formula of the ALPHA-I ND substance.

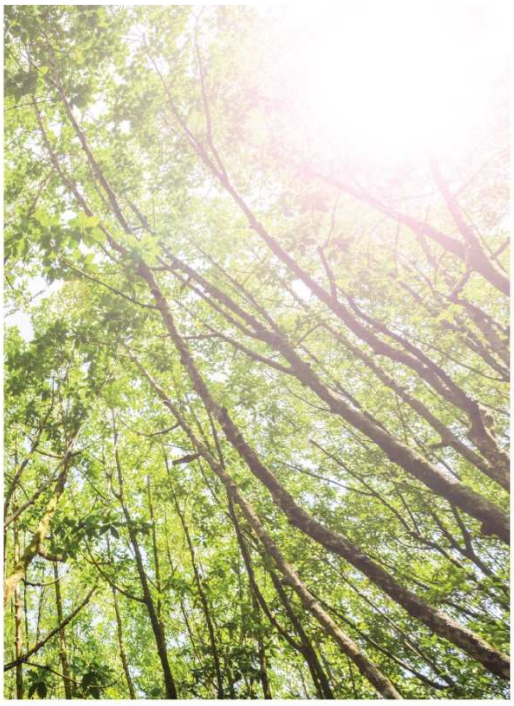


In addition to color neutrality, this special formula also keep reflection to the minimum which helps tremendously with ghosting and flaring.

Examples of Ghosting & Flaring



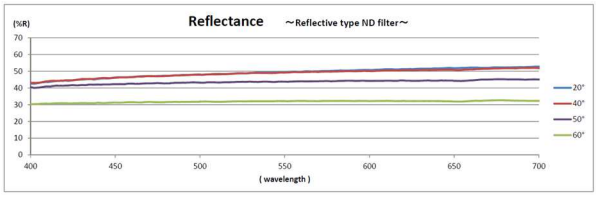
Ghosting



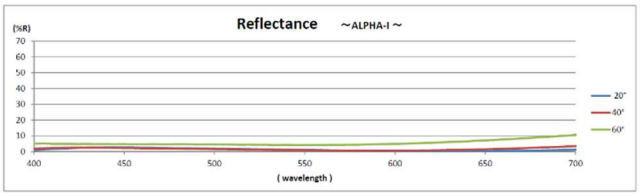
Flaring

Reflectance Comparison

While reflective type of ND filters have about 40% reflection, ALPHA-I ND filters have minimized reflection to about 3%. With the ALPHA-I, that perfect angled shot can now be achieved with minimal to no ghosting and flaring.



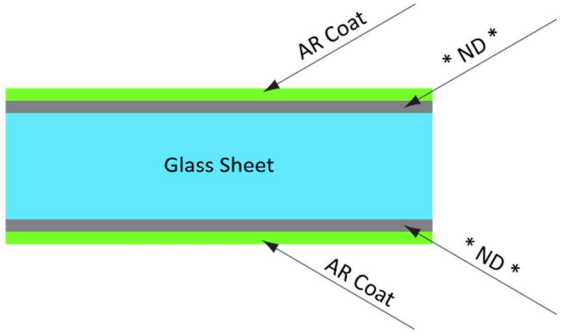
Competitor



ALPHA-I

Highest Quality in Every Step of the Manufacturing Process

And all this effort would be a waste if the glass sheets used are not perfect either. Because the ALPHA-I manufacturing process has the ND substance sandwiched in between two glass sheets, additional steps were included to flawlessly buff both glass sheets until perfectly smooth and parallel to avoid imperfection anywhere on the individual filter surface. To top it off, an additional coating surrounds the filter to protect from normal wear and to assist in easy cleaning.



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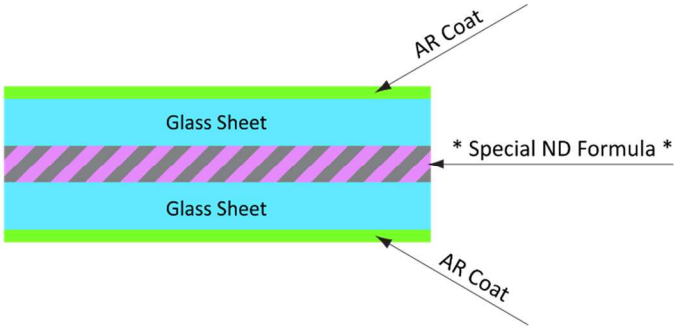
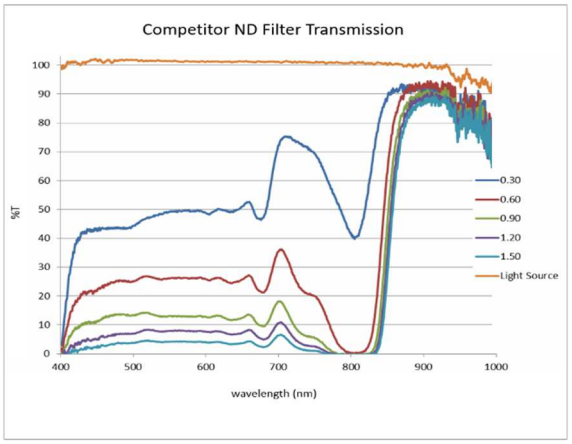


ALPHA-I

Transmission Comparison

Visual spectrum is the portion of the electromagnetic spectrum that is visible to the human eye. The wavelength within this range is called visible light. A typical human eye will respond to wavelengths from about 380 to 740 nanometers. And the near infrared is just out of the human vision and extends into the far infrared with wavelengths in the range of about 740 to 1,000 nanometers. The graph below shows how much each density filter attenuates the visible light

and the infrared. A neutral denisty filter should pass through wavelengths in this range evenly to avoid any color shifting when used.



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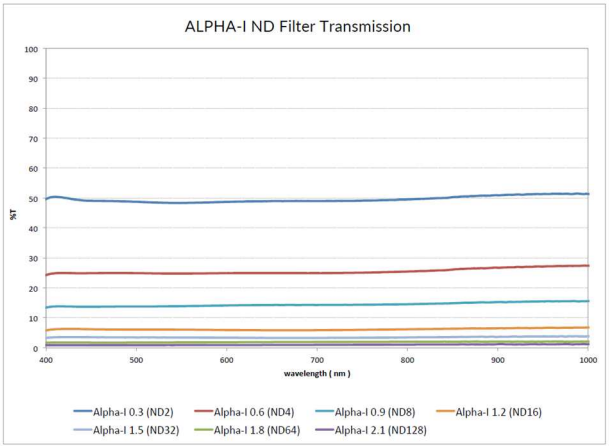
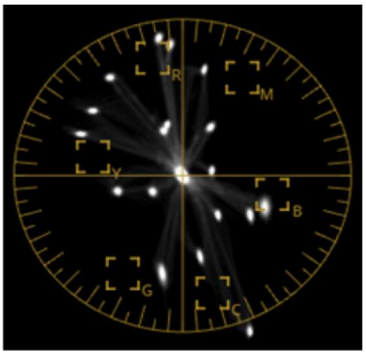
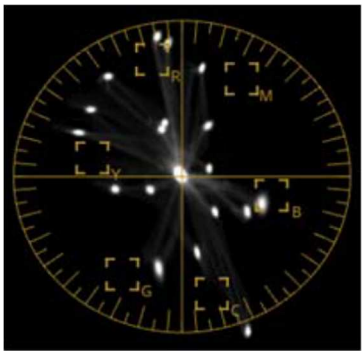


ALPHA-I

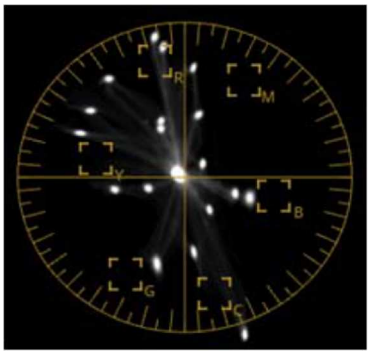
Vectorscope Comparison *(with ND 1.5)*



No Filter



ALPHA-I

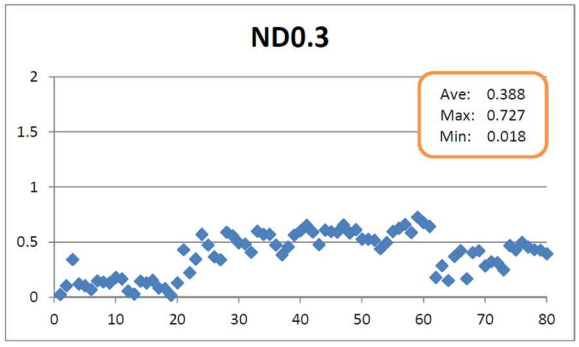


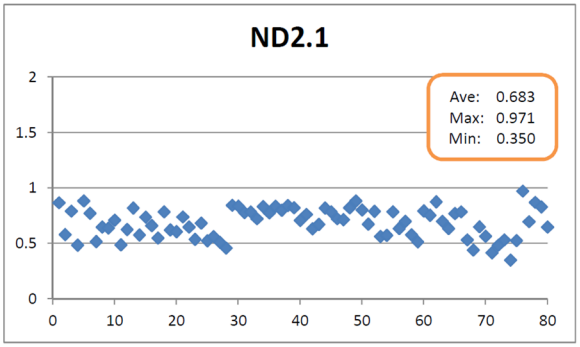
Competitor

Delta ΔE - The measure of change in visual perception of two given colors

Delta E is a metric for understanding how the human eye perceives color difference. The term delta comes from mathematics, meaning change in a variable or function. The suffix E references the German word Empfindung, which broadly means sensation. On a typical scale, the ΔE value will range from 0 to 100. (*ΔE≤1.0: Not perceptible by human eyes, 1<ΔE<2: Perceptible through close observation, 2<ΔE<10: Perceptible at a glance*)

From 0.3 to 2.1, ALPHA-I has an average ΔE value of 0.5 for any given filters produced.





Every meticulous step of the manufacturing process has made ALPHA-I ND filters to be the best in color neutrality, color consistency, and durability in the market.

ALPHA-I Full Spectrum ND Filter = ZERO Color Shift. ZERO Color Correction.

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