

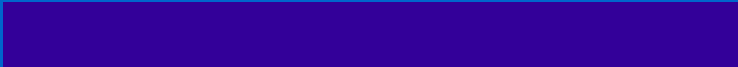


Using a polarizing filter



“No single filter type will deliver more benefit in routine photography than a properly used polarizer.”

dpfwiw.com



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A polarizer brings out clouds



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Polarizer orientation is key

- Have to meet three conditions:
- Sky must be clear blue, not hazy/cloudy, for light to be polarized
- Only the sky at a right angle to the Sun is polarized
- Polarizer must be correctly oriented (turn it for max)



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Light Values Change

- Polarizers reduce *all* light, whether it's polarized or not (they can't make light)
 - Up to 2 EV – you can measure this with Manual mode and mounting the polarizer, turning it
- Automatic exposure (Program, Aperture, Shutter, or the Scene modes) in the camera will increase the EV (slower shutter, or wider aperture, or both)
- Result: non-polarized subjects may look lighter

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Bring out clouds, darken sky

Aligned with Sun



Rotated to 90deg to Sun



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Point to the deep blue sky

- 1 - Move around to observe the subject at 90 deg to Sun direction (e.g., E or W if sun is in S)
West (Sun is in south)



- 2 - Rotate polarizer on camera for deepest color
- 3 - Not recommended for wide horizontal panoramics – sky varies unnaturally



Summary: Polarizers and the sky

- Always reduces all light somewhat
 - about 1.5 to 2 EV is expected
 - test: point to a flat subject, find EV with/without filter mounted (not just rotated – remove/replace it)
- Useless pointing toward/away from Sun
- Useless on cloudy days (just slows down shutter)
 - Can use it as a substitute neutral density filter
- Polarizing filter must be aligned (rotate it) to work
for more: www.dpfwiw.com/filters.htm#polarizers



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Reflections and polarizing filters

- Reflected light is mostly in one plane = polarized
- Polarizers pass only the part of light waves that “oscillate” in one plane
- Cross-polarizing that light with a filter will mostly remove those reflections to:
 - see through glass to the interior subject
 - shoot foliage with truer colors
 - shoot flat art objects without light reflections

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See subjects through window glass

- Reduce window glass reflections
- Shoot at ~35 deg to glass plane, then rotate the polarizer



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Remove the window glass

- As with a broad sky, polarizers reduce reflections only over the center of *wide-angle* framing
- Wide-angle shots will look like you've bored a hole in the reflection, so you may need to crop away the rest
- Polarizers are not useful with wide-angle lenses
- Instead, back away and use a mid-focal length to keep the whole frame close to 30-40 degrees

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Mostly reflection



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See through



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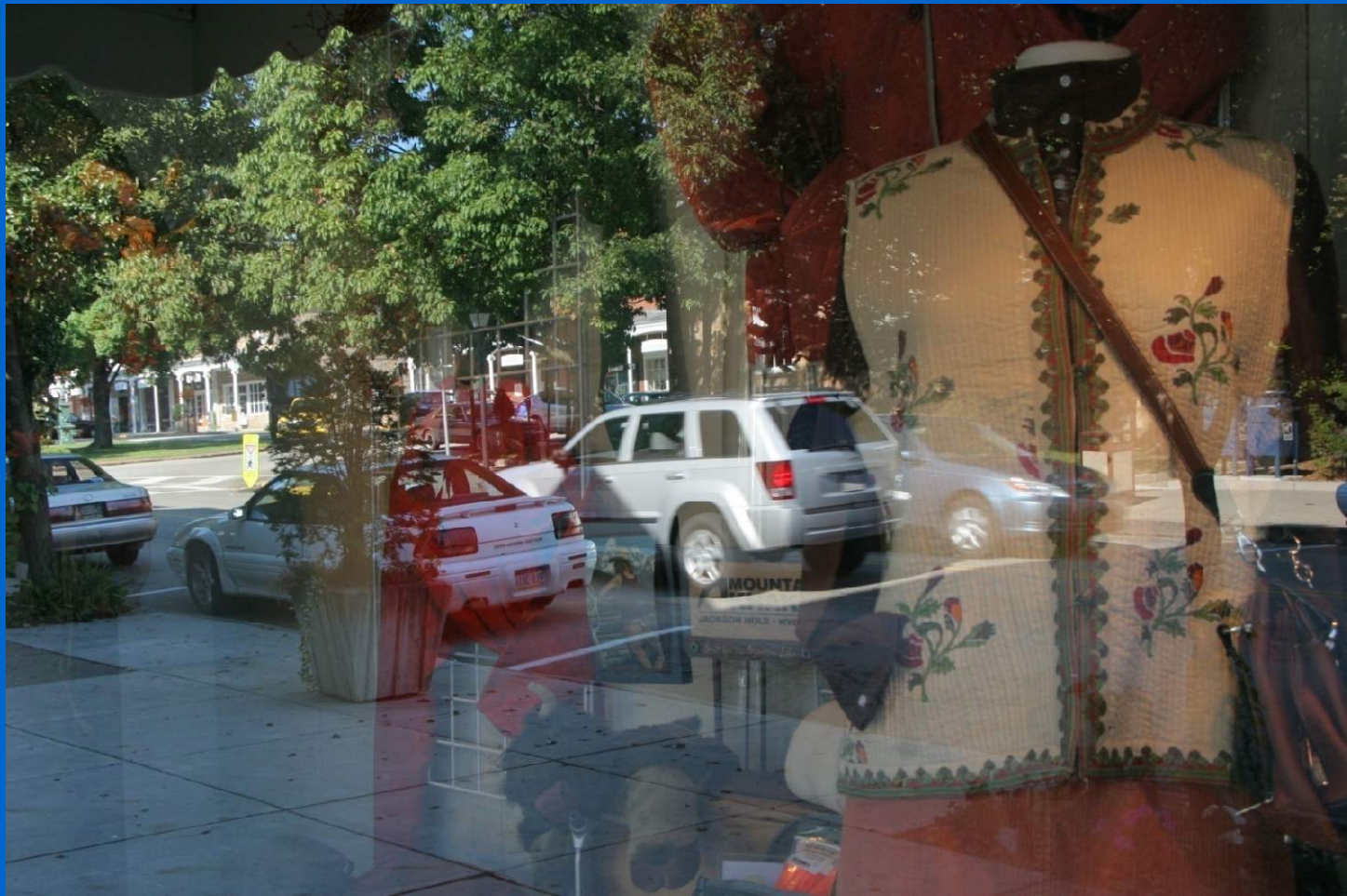
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Mostly reflection



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See through



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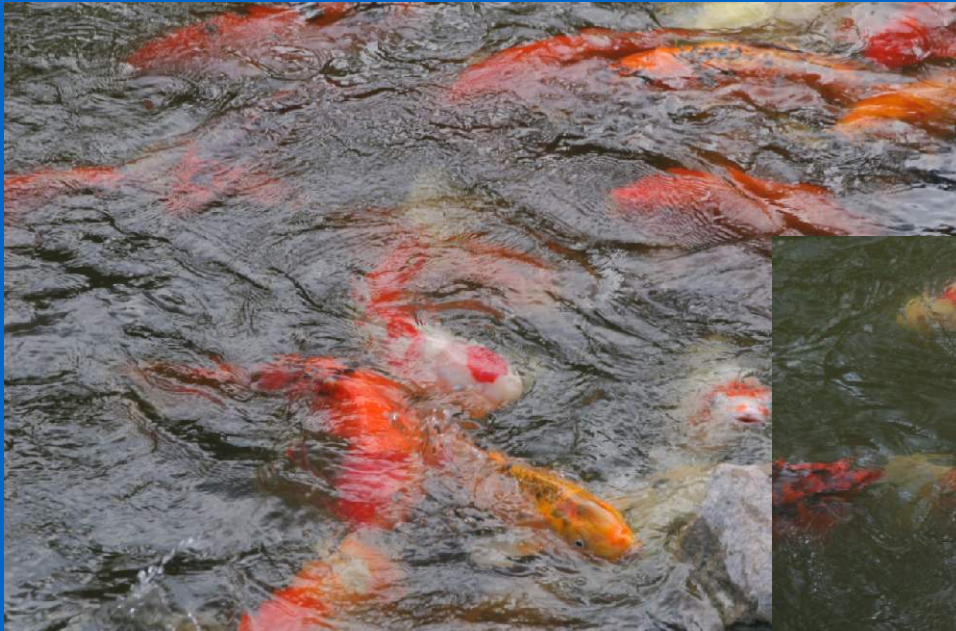
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Remove water reflections

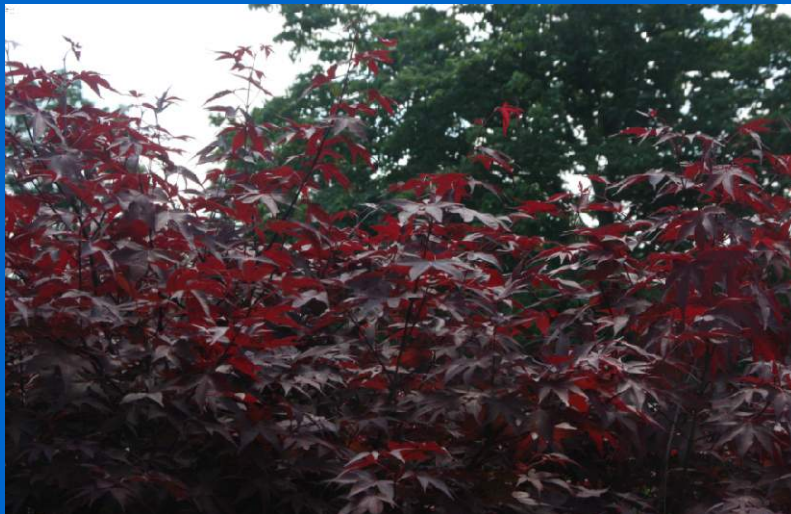


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See more true colors

Leaf reflection from blue sky light vs. real colors

no polarizer



with polarizer



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Reducing brightness

- Have two linear polarizers?
- You have a variable neutral density filter (the camera's sunglasses)
- Mount the second one on the first
- Hold the rear one steady, rotate the outer one
- Get light reduction from two EV up to about ten EV when they are fully crossed
- May have a color cast at deeply reduced light

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Infrared with two linear polarizers

No polarizer

two polarizers crossed



Note: only a few digital cameras can record IR

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Circular or Linear?

- For autofocusing many DSLR cameras use “phase detection” sensors (others sense contrast)
- A circular polarizer won't interfere with this
- A linear polarizer may work on many cameras:
 - may be somewhat more effective in polarizing light
 - two linears make a variable neutral density filter
 - cost about half as much as a circular filter
- My opinion – use either one and test

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Which is which?

- To test a polarizer for circular or linear:
- Hold it up to a mirror with threads toward you and look through the polarizer to see your own eye in the mirror
- Turn it around with threads away from you
- If it turns black, it's circular; if not, linear
- Read why in dpfwiw.com, or search web

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Using sunglasses?

- Polarizers are most useful on bright days
- Polarized sunglasses and a polarizing filter cause bad moiré patterns in an *optical* viewfinder (all DSLRs, some compacts)
- With compact cameras and an *electronic* viewfinder or DSLR in Live View, polarizer may not make patterns, work OK

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Summary on polarizers

- For sky backgrounds:
 - use it only on a clear day (blue sky)
 - place subject at right angles to the sun line
 - rotate polarizer on lens until sky is darkest
- For deepest colors, and minimum reflections:
 - aim at 30-40 deg to reflecting surface plane
 - rotate polarizer on lens *and* adjust your angle to surface until reflection minimizes
- For light reduction use two linear polarizers

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--- *End* ---

Thanks - Don Dement