



Viewing the 2017 Solar Eclipse Safely

Looking directly at the sun during an eclipse is dangerous

Looking directly at the sun is unsafe except during the brief total phase of a solar eclipse (“totality”), when the moon entirely blocks the sun’s bright face, which will happen only within the narrow path of totality (<https://go.nasa.gov/2pC0lhe> (link is external)).



The only safe way to look directly at the uneclipsed or partially eclipsed sun is through special-purpose solar filters, such as “eclipse glasses” (example shown at left) or hand-held solar viewers. Homemade filters or ordinary sunglasses, even very dark ones, are not safe for looking at the sun; they transmit *thousands* of times too much sunlight. Refer to the American Astronomical Society (AAS) [Reputable Vendors of Solar Filters & Viewers](#) (link is external) page for a list of manufacturers and authorized dealers of eclipse glasses and handheld solar viewers verified to be compliant with the ISO 12312-2 international safety standard for such products.

- Always inspect your solar filter before use; if scratched or damaged, discard it. Read and follow any instructions printed on or packaged with the filter.
- Always supervise children using solar filters.
- Stand still and cover your eyes with your eclipse glasses or solar viewer before looking up at the bright sun. After looking at the sun, turn away and remove your filter — do not remove it while looking at the sun.
- Do not look at the uneclipsed or partially eclipsed sun through an unfiltered camera, telescope, binoculars, or other optical device.
- Similarly, do not look at the sun through a camera, a telescope, binoculars, or any other optical device while using your eclipse glasses or hand-held solar viewer — the concentrated solar rays will damage the filter and enter your eyes, causing serious injury.
- Seek expert advice from an astronomer before using a solar filter with a camera, a telescope, binoculars, or any other optical device. Note that solar filters must be attached to the *front* of any telescope, binoculars, camera lens, or other optics.

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- If you are within the path of totality (<https://go.nasa.gov/2pC0lhe> (link is external)), remove your solar filter only when the moon completely covers the sun's bright face and it suddenly gets quite dark. Experience totality, then, as soon as the bright sun begins to reappear, replace your solar viewer to look at the remaining partial phases.
- Outside the path of totality, you must *always* use a safe solar filter to view the sun directly.
- If you normally wear eyeglasses, keep them on. Put your eclipse glasses on over them, or hold your handheld viewer in front of them.

Note: If your eclipse glasses or viewers are compliant with the ISO 12312-2 safety standard, you may look at the uneclipsed or partially eclipsed Sun through them for as long as you wish. Furthermore, if the filters aren't scratched, punctured, or torn, you may reuse them indefinitely. Some glasses/viewers are printed with warnings stating that you shouldn't look through them for more than 3 minutes at a time and that you should discard them if they are more than 3 years old. *Such warnings are outdated and do not apply to eclipse viewers compliant with the ISO 12312-2 standard adopted in 2015.* To make sure you get (or got) your eclipse glasses/viewers from a supplier of ISO-compliant products, see the American Astronomical Society (AAS) [Reputable Vendors of Solar Filters & Viewers](#) (link is external) page.

An alternative method for safe viewing of the partially eclipsed sun is [pinhole projection](#) (link is external). For example, cross the outstretched, slightly open fingers of one hand over the outstretched, slightly open fingers of the other, creating a waffle pattern. With your back to the sun, look at your hands' shadow on the ground. The little spaces between your fingers will project a grid of small images on the ground, showing the sun as a crescent during the partial phases of the eclipse. Or just look at the shadow of a leafy tree during the partial eclipse; you'll see the ground dappled with crescent Suns projected by the tiny spaces between the leaves.

A solar eclipse is one of nature's grandest spectacles. By following these simple rules, you can safely enjoy the view and be rewarded with memories to last a lifetime. More information:

eclipse.aas.org (link is external) eclipse2017.nasa.gov

