



## How to View the 2017 Solar Eclipse Safely

A solar eclipse occurs when the Moon blocks any part of the Sun. On Monday, August 21, 2017, a solar eclipse will be visible (weather permitting) across all of North America. The whole continent will experience a partial eclipse lasting 2 to 3 hours. Halfway through the event, anyone within a 60- to 70-mile-wide path from Oregon to South Carolina (<http://bit.ly/1xuYxSu>) will experience a brief total eclipse, when the Moon completely blocks the Sun's bright face for up to 2 minutes 40 seconds, turning day into night and making visible the otherwise hidden solar corona — the Sun's outer atmosphere — one of nature's most awesome sights. Bright stars and planets will become visible as well.



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 (<http://bit.ly/1xuYxSu>).



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. To date three manufacturers have certified that their eclipse glasses and hand-held solar viewers meet the ISO 12312-2 international standard for such products: Rainbow Symphony, American Paper Optics, and Thousand Oaks Optical.

- 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 glancing 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 eye(s), 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.
- If you are within the path of totality (<http://bit.ly/1xuYxSu>), 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 glance at the remaining partial phases.



An alternative method for safe viewing of the partially eclipsed Sun is pinhole projection. For example, cross the outstretched, slightly open fingers of one hand over the outstretched, slightly open fingers of the other. 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.

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](http://eclipse.aas.org)

[eclipse2017.nasa.gov](http://eclipse2017.nasa.gov)

# Eclipse Eyeglass Safety: *Don't be Blindsided!*

NASA has been alerted there are unsafe paper solar glasses being distributed. How to tell what is safe?

Conforms to and meets the Transmission Requirements of ISO 12312-2, Filters for Direct Observation of the Sun. Meets the Transmission Requirements of EN 1836:2005 + A1:2007 (E) for an E15 Filter for the Direct Observation of the Sun. Meets the Transmission Requirements of AS/NZS 1338.1:2012, Filters for Eye Protectors. EC Type Examination by: SAI Global Assurance Services Ltd. (Notified Body No. NB2056), MKS 8HJ U.K.

Mfg. by: American Paper Optics, LLC, 2995 Appling Rd., Ste. 106, Bartlett, TN 38133, USA, Tel: 901-381-1515, [www.3dglassesonline.com](http://www.3dglassesonline.com)



**User Instructions:** Inspect each time before use. Do not use and discard if damaged, torn, punctured or separated from the frame in any way. Do not use with other optical devices. This is not a toy. Children should only use with adult supervision. Limited to 3 minutes continuous use, intermittently for several hours. When using this product do not move around, drive a motor vehicle, or operate machinery. Do not use with diseased eye or after eye surgery. **Warning:** Never look at the sun without special eye protection. When viewing the eclipse, use eclipse glasses at all times when any part of the Sun is visible. Direct viewing of the Sun can cause permanent damage if the proper precautions are not taken. Adequate eye protection specifically designed for viewing the Sun is essential and should be worn so that no harmful rays from the Sun can reach the eye. Clean with a soft cloth or tissue only. Discard and do not use after 3 years.



Look for BOTH:

1. Manufacturer Name (For example, American Paper Optics, Rainbow Symphony, Thousand Oaks Optical, Baader Planetarium (AstroSolar Silver/Gold film only), and TSE 17)
2. "ISO" Icon (Must have ISO reference 12312-2)

Other tips:

1. If lenses have scratches, don't use
2. If lenses are wrinkled, not safe for viewing the eclipse
3. If older than 3 years, not recommended



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