

2017 Total Solar Eclipse

August 21 2017 – 1:27pm to 1:29pm CDT in Nashville

DANGER! How NOT to view an eclipse:

These methods may cause burns or blindness.

The most important factor to consider when observing any solar eclipse is eye safety. This is because during most of a total eclipse, and all of a partial eclipse, at least a portion of the Sun's photosphere is visible. Even a small fraction of a percent of the Sun's photosphere emits enough infrared and ultraviolet light to permanently damage your eyes in a very short period of time. **YOU MUST ENSURE THAT THE PROPER TECHNIQUES AND EQUIPMENT ARE USED TO SAFELY VIEW A SOLAR ECLIPSE.** During partial eclipse, when even the tiniest fraction of the Sun's surface is visible, PROPER EYE PROTECTION MUST BE WORN!



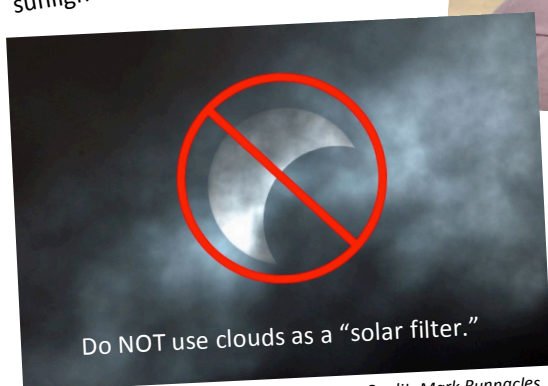
Eyepiece Solar Filter: After unfiltered sunlight is focused onto an eyepiece solar filter, the intense heat will cause the filter to crack and let through unfiltered sunlight. Credit: Stephen Tonkin



Solar Glasses through telescope: One should NEVER wear solar glasses and look at the Sun through any unfiltered telescope, binoculars, or camera. The focused, unfiltered sunlight will literally melt through the glasses and then burn your eyes, causing irreparable damage. Credit: Alex Rockafellar

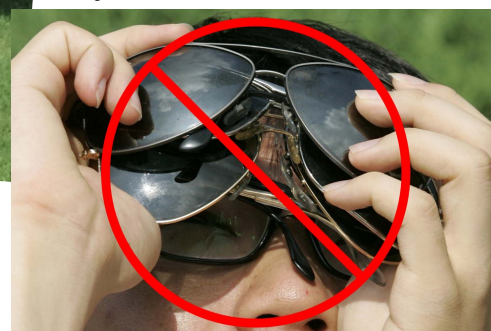


Exposed X-ray or Camera Film do not protect against the intense ultraviolet, visible, and infrared light that you are exposed to when looking directly at the Sun. Credit: Zulkifli/EPA



Do NOT use clouds as a "solar filter."

Credit: Mark Runnacles



Stacks of sunglasses should NEVER be used to view the Sun even if they are considered 100% UV protective.

Credit: AP Photo/Ahn Young-joon

How to SAFELY view an eclipse:



1

PARTIAL ECLIPSE • GLASSES ON

The eclipse begins when the sun's disk is partially blocked by the moon. This partial eclipse phase can last over an hour.



2

BAILY'S BEADS • GLASSES ON

As totality approaches, only the low-lying valleys on the moon's edge allow sunlight through, forming bright spots of light called Bailey's Beads.



3

DIAMOND RING • GLASSES ON

The last of the sunlight streaming through the moon's valleys creates a single bright flash of light on the side of the moon. This is known as the diamond ring effect, and it marks the last few seconds before totality begins.



4

TOTALITY • GLASSES OFF

Once the diamond ring disappears and the moon completely covers the entire disk of the sun, you may safely look at the eclipse without a solar filter. Be careful to protect your eyes again before the end of totality—the total eclipse may last less than a minute in some locations.



5

FINAL STAGES • GLASSES ON

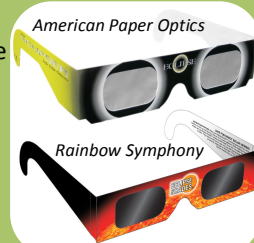
A crescent will begin to grow on the opposite side of the sun from where the Bailey's Beads shone at the beginning. This crescent is the lower atmosphere of the sun, beginning to peek out from behind the moon and it is your signal to stop looking directly at the eclipse. **Make sure you have safety glasses back on—or are otherwise watching the eclipse through a safe, indirect method—before the first flash of sunlight appears around the edges of the moon.**

Images 1 and 3-5 Credit: Rick Fienberg, TravelQuest International and Wilderness Travel
Image 2 Credit: Arne Danielson



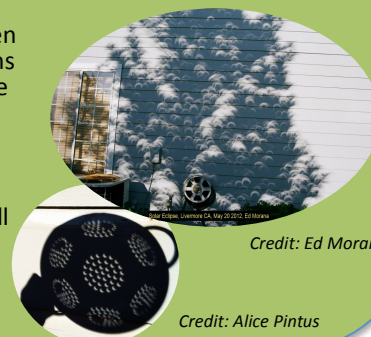
Shade 14 or darker (higher number) welding glass is suitable for solar viewing. These welding glasses also filter the UV and IR light and transmit only a minute amount of visible light. Typical welding glass will make the Sun appear green. Credit: Allen Seltzer

Solar glasses are the most common type of eye protection for viewing the Sun. They block 100% of ultraviolet and infrared light, and only transmit about one-millionth of the Sun's visible light. Mylar glasses (top) make the Sun appear bluish-white, while the black polymer glasses give an orange view of the Sun (bottom).



Solar Projection: The simple telescope rear projection method focuses an image of the Sun onto a flat (usually white) surface that is mounted near the eyepiece. One advantage of this method is that numerous people may view simultaneously. **Cautions:** Be sure the setup does not allow anyone to look through the eyepiece, and be aware this method may damage the scope, so it is for experienced viewers only. Credit: Angus Self

Pinhole Projection: Even nature provides a means to view the eclipse. The numerous small gaps between the leaves of trees, and even the holes in the leaves themselves, act as small pinhole projectors. **Caution:** Do not look through pinholes.



Credit: Ed Morana

Credit: Alice Pintus

For additional eclipse information, including more safety tips, please visit dyer.vanderbilt.edu//dyer/solar-eclipse/

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