

DIY Filter Cell for Thin Solar Film

Do It Yourself solar filters can be made to fit any binoculars, telescope or camera lens with poster board, glue, tape and a sheet of thin solar film. You will also need a tape measure or ruler, scissors, and razor blade or Xacto knife.

For construction of the cylinder, a plastic lid from a food jar or a cardboard tube may be used instead of constructing one from poster board. The only requirement is the cylinder fit snugly over the end of the device and slips on and off easily.

The Cylinder

To construct the cylinder to fit over the front aperture of your optical device, cut several long strips of poster board about 2" wide and wrap them around the end of the lens cell or dew cap until there are 3 or 4 layers. This will make a cylinder approximately $\frac{1}{4}$ inch thick. Carefully glue the strips to each other to form the cylinder.



The Filter Cell

To construct the filter cell cut two rings of poster board with the following dimensions:

- The outer diameter of the rings should equal or be slightly larger than the diameter of the cylinder you just constructed.
- The inner diameter of the rings should equal the actual diameter (aperture) of the lens on your binoculars, telescope or camera lens.

On one side of each ring near the outer edge, attach a number of pieces of double sided tape.

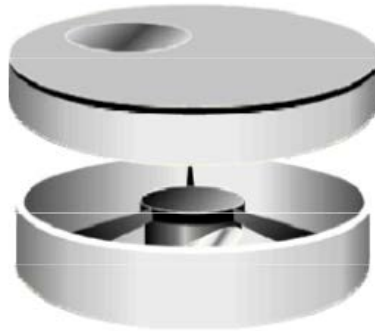
Be careful when handling the solar film to ensure it does not crease or get scratched.

- Using a sharp razor blade or Xacto knife, carefully cut a square of the film slightly larger than the outer diameter of the rings you just cut.
- Place the cut film on a piece of tissue paper. Allow the film to lay flat and relax on the tissue paper – **slight wrinkles in the film will not affect the image it produces.**
- Place one of the rings, tape side down, over the film and carefully press into place.
- Flip the assembly over and press the other ring onto the film.
- Use scissors or razor blade to trim off the excess film.



Glue the completed filter cell onto the cylinder to complete construction.

For Newtonians or Schmidt-Cassegrain telescopes larger than 8", construct an "off-axis" filter for use on these larger scopes. Reducing the amount of light entering the tube will help reduce air turbulence within the telescope and improve the image with these larger scopes. Construct the cylinder as above, but cut an additional piece of poster board to cover the entire front end except for a 2" hole for the film:



Storing Your Filter – a plastic container with a tight-fitting lid works well to protect the film and keep moisture out.

Safety Precautions:

- Carefully inspect the finished filter for integrity, make sure it is glued well and slides on and off the tube
- Carefully inspect the film – **do not use if scratched or there are pinholes in it**
- When constructing for binoculars, make one for each objective
- Don't forget your finderscope! Construct a filter for it, or if not being used, make sure it is covered with an end cap
- Emphasize safety to others using the device
- Always cover the working end of optics – **do not let unfiltered light enter any telescope, binoculars or camera lens!**