INSTRUCTION MANUAL

Orion® Safety Film Solar Filters

#7784, #7785

ORION®
TELESCOPES & BINOCULARS

Providing Exceptional Consumer Optical Products Since 1975

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IN 485 Rev. A 02/13

Our Black Polymer Solar Filters are a low cost alternative to our aluminum cell and glass filters. They have been designed with quality and cost in mind. They can be used on telescopes, binoculars, monoculars, cameras and finder scopes. Unlike other solar filters, our black polymer solar film will provide a more pleasing and natural Yellow-Orange image of the sun. This color also offers more contrast and clarity than other solar films. The advantages of this material are that it is stronger and more durable than other thin film solar filters. The actual filtering properties are protected within the substrate. **Patent Pending**

The safety of this product is guaranteed by ensuring the coating has a transmission of 0.001% or less. The Black Polymer is tested before shipment. Do not use any film that shows any form of defect. Please contact us for further return instructions. All solar filters are covered by a limited liability warranty from defects in material and workmanship.

DANGER! Viewing the Sun through any optical instrument without a correctly inspected and installed solar filter can cause immediate, permanent eye damage and blindness!

Solar viewing is safe only if you understand the potential dangers and follow all directions. Read these instructions carefully and save them for future reference. Do not allow children or inexperienced adults to use the telescope or solar filter unattended.

How to Size a Filter to Fit Your Telescope or Binoculars

Your solar filter cell fits over the outside of the telescope or lens holder. This is the same when covering a pair of binoculars or a finder scope.

Felt tape is included for custom fitting with each filter.

Measure the outside diameter (O.D.) of the device and choose the filter size with the inside dimension (I.D.) of the cell larger than the lens holder. Do not choose a filter the same size as your O.D. This will be too tight and not allow room for the felt lining which you will use to tightly fit the filter to your device.
The filter should fit just tight enough to keep from slipping off when the telescope or binocular is pointed down. If your filter is too loose, it can be custom fitted by applying strips of the supplied felt tape on the inside rim of the cell. Cut felt tape into strips as required. This will provide the best and most secure fit.

Using the Solar Filter

1. Check the filter's optical surfaces for any possible damage before each use. The view through your telescope should be comfortable and not appear excessively bright. Stop looking immediately if the view is excessively bright.
2. Check for any pinholes. Even one bright pinhole could degrade the image quality. Do not use any film that shows any form of defect such as Pinholes and scratches.

3. Keep the front of any finder scope covered if it is not equipped with a solar filter. Better yet, remove the finder altogether when observing the Sun. An uncovered finder scope is dangerous to look through. Even if you do not look through it, unfiltered sunlight may melt internal parts of a finder scope.
4. Aim the telescope at the Sun by moving your tube assembly until the smallest shadow is cast on the ground.
5. Allow the telescope and filter to equalize to outside temperature for at least 15 minutes.
6. Direct sunlight may warm the tube assembly enough to cause internal heat currents that can degrade image quality, especially on dark-colored telescopes. Cover the tube assembly with a light-colored cloth to help avoid this.
7. If possible, do not view over pavement or buildings. Viewing over grass will help avoid surface heat currents.
8. Point the telescope away from the Sun before removing the solar filter! Removing the filter while the telescope is aimed at the Sun is dangerous if anyone is looking into the eyepiece, and can damage the telescope if left pointed at the Sun for too long.

Inspection & Maintenance

Do not use any film that shows any form of defect such as Pinholes and scratches.

Solar Photography

By attaching a camera body to a telescope, in effect using the scope as a telephoto lens, you can take striking photographs of the Sun. Only attempt this if the telescope is equipped with the proper solar filter.

Depending on the aperture and focal length of your telescope and "seeing" conditions, you will need to experiment to find the best exposure time for your equipment.

Do not be discouraged if your first attempts at solar are less than desired. The Sun is very difficult to image because of poorer "seeing" conditions caused by unavoidable heat currents associated with daytime viewing. The highest possible resolution for any land-based telescope, regardless of location, is about 1 arc second. Ideal seeing for any location will be available less than 5% of the time. It may be some consolation to consider that your results could equal those at professional observatories, as larger apertures and location have little, if any, advantage. During bad seeing conditions, it may help to "stop down" apertures over 5" with an off-axis mask.

One Year Limited Warranty

This Orion Safety Film Solar Filter is warranted against defects in materials or workmanship for a period of one year from the date of purchase. This warranty is for the benefit of the original retail purchaser only. During this warranty period Orion Telescopes & Binoculars will repair or replace, at Orion's option, any warranted instrument that proves to be defective, provided it is returned postage paid to: Orion Warranty Repair, 89 Hangar Way, Watsonville, CA 95076. If the product is not registered, proof of purchase (such as a copy of the original invoice) is required.

This warranty does not apply if, in Orion's judgment, the instrument has been abused, mishandled, or modified, nor does it apply to normal wear and tear. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. For further warranty service information, contact: Customer Service Department, Orion Telescopes & Binoculars, 89 Hangar Way, Watsonville, CA 95076; (800)-676-1343.

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