

Original BAADER AstroSolar™ Safety Film

For construction of high-quality objective-filters for observing the sun with binoculars, camera or telescope

Specially CE-tested safety film with high-quality optical characteristics Reduces intensity of sunlight by 99.999%



How to make your own objective solar filter for binoculars, camera or telescope

- 1 Cut two equal sized rings of stiff cardboard. The inner diameter to be the same as the full aperture of the telescope-lens (or mirror), the outer diameter to be 10cm (~4") larger.
- 2 Cover one full face of each cardboard-ring with double sticky film or "Double-Tape". Cleanly cut any inner and outer excess of film, so that only the two cardboard faces are covered with sticky tape.
- 3 Stretch out a square piece of "Kleenex-Tissue" flat on a hard plane surface (a table) and secure the four corners of the tissue with clear adhesive tape. The tissue must be stretched out flat without ripples.
- 4 Cut a square piece of AstroSolar Film a little larger than the outer diameter of the stiff cardboard rings. (For cutting put AstroSolar Film between two sheets of white paper. This "sandwich" with both sides paper and the film in between can easily be cut without producing creases or fingerprints on the film.)
- 5 Gently place AstroSolar Film onto the flat Kleenex-tissue and secure the four corners with tape – **but do not stretch it!**
AstroSolar Film must not be put under stress tension to retain its precision optical property.
- 6 Hold one cardboard ring with the sticky side down 10mm above the film and let it **fall down** onto the film, so that the ring touches the film all around at the same time..
- 7 Turn around the cardboard ring with the film covered side facing upward and lay it back onto the Kleenex. Stick the second cardboard ring against it. Now you have created a round film-holder with AstroSolar Film cleanly and securely fastened without creases and ripples – but most of all: **without stressing the film!**
- 8 Now put a 50mm (2") wide stripe of strong cardboard around the telescope dew cap or front end and tape the ends with double-tape. Repeat this procedure 3 times with double-tape between each layer to produce a stiff 50mm high cardboard cylinder to precisely fit onto your telescope.
- 9 At last glue the AstroSolar film holder onto the 50mm cylinder while the cylinder is still mounted onto the front end of your telescope.

Your homemade solar filter is ready! Store it properly!

Technical Details / Certification

Baader-Planetarium's AstroSolar™ safety film is a specially manufactured streak- and blister-free foil only 0.012 mm thick, and attains the optical quality of plane-parallel glass filters. The base material is not "Mylar." The highly uniform molecular structure of this material is the result of research in nuclear and elementary particle physics. The coating is subject to constant quality control. Its reflective property of over 99.999% has been tested by the *Physikalisch-Technische Bundesanstalt* (the German Republic Bureau of Standards) and conformity with EU norm 89/686 is certified with the CE-symbol. It reduces the intensity of sunlight by a factor of over 100,000. Coating on both sides of the foil ensures a highly uniform filtering, while neutralizing the occasional microscopic holes in the coating (which are also much more present in glass filters). One layer of this foil is sufficient for the construction of a safe, high-resolution solar filter. The quality of the solar image is immeasurably better than can be achieved by using so-called Mylar "rescue blankets" or similar materials, which must be used in several layers.

Please observe the following safety precautions

- 1 Before each and every solar observing session, check the filter's fit and, if necessary, tape it to prevent slipping. Never use the filter at the eyepiece (where you look into the telescope), only attach it onto the objective (where light enters the telescope); otherwise it can become dangerously hot inside the instrument – and inside the eyes! In case of binoculars, be sure both objectives are securely covered; with cameras cover the viewfinders front lens!
- 2 A filter made of this durable material is relatively resistant to breakage (even during intentional attempts) in comparison with a glass filter. However, care should be taken with sharp pointed objects. Also be aware that the coating can be damaged by scratching or rubbing and take this into account when storing the filter. A filter with damaged foil should be destroyed immediately to avoid accidental use.
- 3 Emphasize the importance of caution to those observing with you, especially children. Intentionally removing or damaging to the filter can endanger their eyesight. This is no place for jokes! Never leave the telescope outside unattended during the daytime !
- 4 If your telescope has a finder, you should also put a filter on it, or put dust cover on its objective and secure it with tape. Unprotected viewing through the finder would have the same catastrophic consequences as viewing through the main telescope. Additionally, an uncovered finder directed at the sun can produce exceedingly unpleasant scalp burns.

For larger requirements, such as instruments with large aperture, order AstroSolar™ Safety Film in rolled sheets of 50x100cm (approx. 4 Sq.Ft.) or 117x117 cm (46"x46")

Important hints for visual safety. Please read before use!

Avoid absolutely all forms of unprotected solar viewing! Your eyes could suffer irreparable damage. Smoked glass, darkened film negatives, CDs or doubled sunglasses do not offer sufficient protection, even at sunrise or sunset.

AstroSolar™ Safety Film reduces the intensity of incident sunlight by a factor of over 100,000. According to current medical research, the filter (when properly used) provides complete protection against thermal damage to the retina (photocoagulation).

Under certain circumstances, any intense source of light (e.g. spotlight, laser beam, welding arc, the sun) can trigger so-called photo-toxic processes in the eye. In extreme cases, such reactions can have an additive effect over time, leading to deterioration of the vision.

Please note: This filter provides protection against solar radiation similar to that offered by welding glasses. However, as long as it is not absolutely certain that even welders glasses completely hinder phototoxic reactions, the same reservations must apply to this solar filter.

Therefore, exercise your own best judgment when using this product.

Although we have never heard of a single case of eye damage in 10 years of sales of this product to thousands of telescope users, and knowing that welders ply their trade for years, while the solar filter's use can be measured in minutes, we believe it appropriate to inform you of the current state of scientific knowledge.

In any case, it is advisable to interrupt solar observation occasionally and look at other objects. If you have any doubts at all, especially in cases of known excessive eye sensitivity, consult your ophthalmologist or optician.

GUARANTEE

We guarantee the filtering capability of this solar safety film (reduction of light intensity by 99.999%). If your foil has arrived damaged, we will replace it free of charge. We cannot accept further liability, especially in cases of improper use.



Authorized AstroSolar™ Distributor: