

Derrick Pitts' Solar Viewing Tent ©2023

Derrick H. Pitts, Chief Astronomer, The Franklin Institute Science Museum, dpitts@fi.edu,
215 448 1234



In preparation for the 2017 total solar eclipse, I created the solar viewing tent seen here, that allowed groups of people to enjoy a filtered view the solar eclipse together.

It consists of a steel frame canopy tent [like this one](#). I replaced the vinyl canopy in one quadrant of the roof with [Thousand Oaks Silver-Black Polymer \(TOSBP\)](#) solar viewing material, bulk rolls, not sheets.

I devised this method for several reasons:

- Many people would come to The Franklin Institute to experience the eclipse with us, expecting we would provide an authentic and unique viewing experience.
- I understood that the best viewing experience would be as a group experience in which many people could view and experience the event together, all seeing the same thing at the same time.
- I knew that the easiest view for visitors would be with their own eyes – no telescope - and with as wide a field of view as their vision would allow.

- Even though we had filtered telescopes, Sunspotter projection telescopes, eyepiece projection telescopes and pinhole projector activities, people still want as direct an experience as possible.
- We could serve many people at once, rather than having people wait in line to use one of the singular experience methods of viewing.

The canopy tent frames were already here, left over from other outdoor programs and I had purchased the TOSBP material several months earlier because options for obtaining solar eclipse glasses were quickly evaporating but the bulk rolls of the TOSBP were (100' length x 12" width) in stock and relatively inexpensive. I figured if I bought it, I'd at least have it and could figure out how to use it, if needed.

About three weeks before the eclipse, the idea came to me that I could simply replace the canopy over the steel frame with the TOSBP and people could stand under the filter roof and observe directly and safely. Admittedly, attaching the TOSBP to the frame was tricky and our final solution was just barely above a jerry-rigged, kluge job. We used black gaffer tape to attach the TOSBP to the frame and 2" transparent packing tape to connect the 12" wide strips to each other to cover the quadrants of the frames. We overlapped the edges of the 12" wide TOSBP strips about 1.5" to eliminate any gaps between sheets. We cut the strips to length to fit horizontally across the quadrant. We didn't pull the material to be taut on the frame, allowing some flex; surprisingly that didn't interfere with observing very much.



These worked really well for us. Our visitors really enjoyed it and it achieved all the objectives we set. It could've been better built but for a test, it was quite successful. This time around we've rebuilt the tent using the same frame, but it now looks like this:



Basically, we cut an opening in the canopy and dropped a frame-mounted filter window over the opening. The framed filter attaches securely with hook-and-loop strips around the periphery. The window frame comprises about 85% of the canopy quadrant area. This way, we don't handle the filter material very much, don't tape to the steel framing and have more rigidity for the material.



Materials used for the updated version:

- Steel Frame Canopy Tent – It's the frame you want not necessarily the canopy. Get it anywhere you like. I paid \$120. Ea. Here's an example:
https://www.uline.com/Product/Detail/H-2674W/Canopies-and-Tents/Steel-Frame-Canopy-10-x-10-White?pricode=WA9444&gadtype=pla&id=H-2674W&gclid=CjwKCAjwxOymBhAFEiwAnodBLDmfLu3OXey98vmI25zwGxvhZXYkIHIOEEeJynmxL_9ZL-oM_C87jRoCQIUQAvD_BwE
- Thousand Oaks Silver-Black Polymer Solar Viewing Material Bulk Rolls – Certified Safe for Solar Viewing:

<https://thousandoaksoptical.com/shop/solar-filters/bulk-rolls/>

- 1/8" thick ABS material, CNC- cut to the trapezoid shape
- Stainless fasteners to hold the frame/filter/frame sandwich together
- 2" transparent packing tape to join the filter strips
- 2" hook and loop strips to attach the filter frames to the tent canopy

Please reach out to me if you have further questions and if you come up with improvements, please let me know. Happy SAFE solar observing!

- **Derrick H. Pitts, Chief Astronomer, The Franklin Institute, dpitts@fi.edu, 215 448 1234**
8/14/2023, 9/19/23.