Completing the Polarization Test

How to Make and Use a Film Viewer

The film viewer is valuable tool for distinguishing polyester film supports from cellulose acetate and cellulose nitrate film supports in a simple and no-destructive manner (NOTE: It **cannot** distinguish **between** cellulose nitrate and cellulose acetate). This information is important to know when considering your park unit's cold storage needs, as B&W polyester films are significantly more stable than cellulosic film supports and do not need cold storage. Therefore, such materials may be stored in normal environmental conditions (70 degrees /50%RH) within museum storage spaces. Ultimately, this may save considerable space within a freezer compartment or cold storage vault.

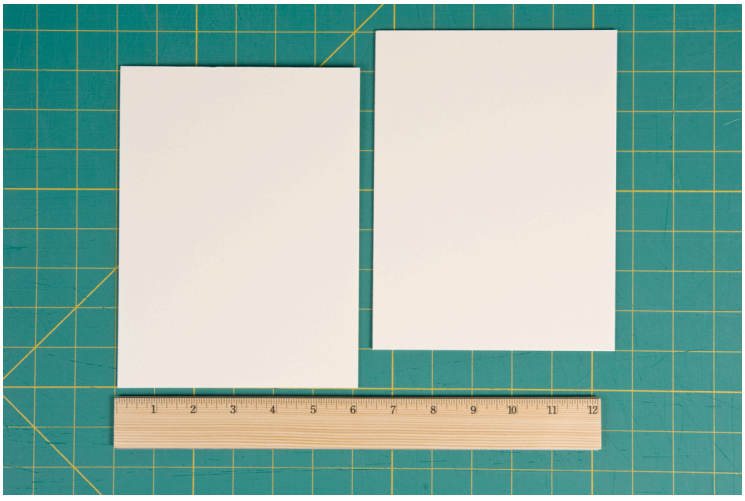
Instructions on How to Make a Film Viewer

Materials Needed:

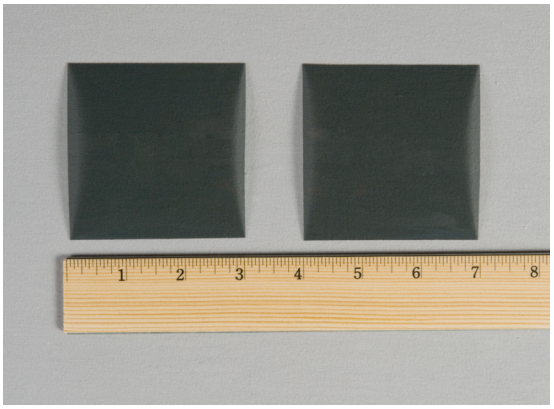
- Polarizing Filter sheet film (available at photo supply stores)
- Archival Mat Board
- 3M-415 Clear, Double-sided tape (1/4" width, recommended)
- Tyvek tape (2 ¼" width, recommended)
- Scissors
- Scalpel/blade or Exacto knife
- Paper cutter or blade for cutting mat board and polarizing filter/film

To make a 6" x 8" viewer tool:

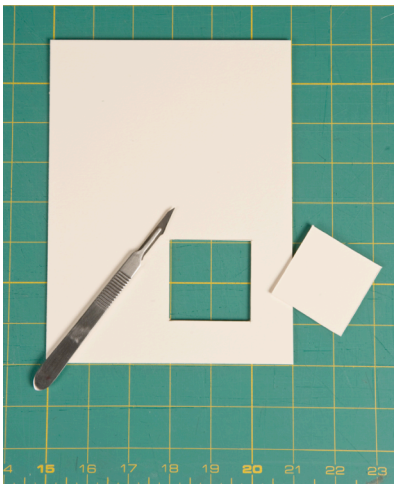
1. Cut mat board into two 6x8" pieces



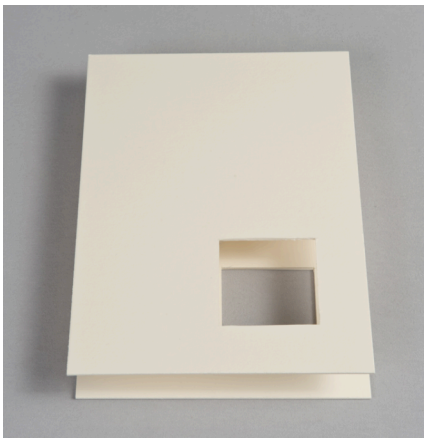
2. Cut two 3x3” square pieces of polarizing filter/film



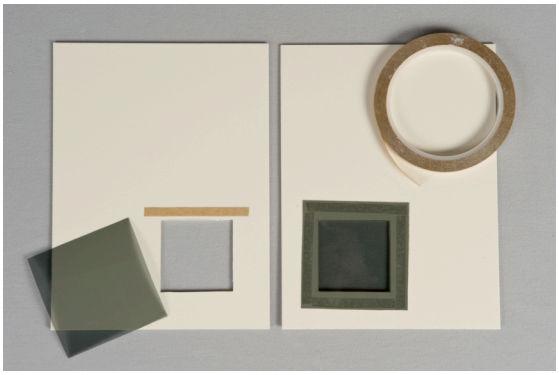
3. With mat board lying flat, use scalpel/blade or Exactor knife to cut out a 2x2” square in lower right corner. Square should be 1 inch from each edge. Cut these in both mat boards.



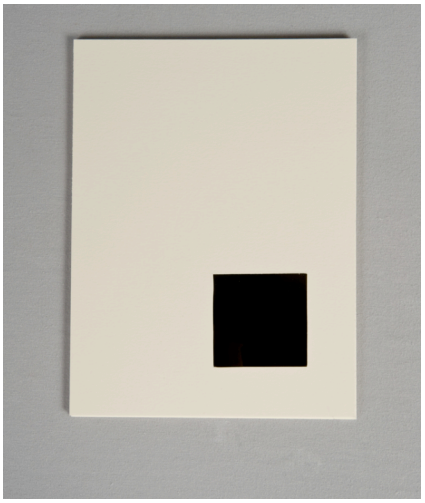
4. Place one board on top of the other so the squares match up (this is how the mat boards will look when taped together. You will be able to open it like a book.



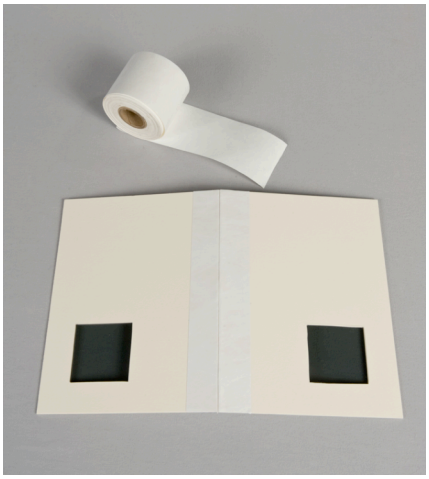
5. Place one small piece (approximately 3 inches long) of clear double-sided tape above each side of the open/cut square on the mat board (this will hold the polarizing filter/film in place over the square opening). Place one piece (3” square) of the polarizing filter/film over the cut square so it lies on top of the clear tape. This will be the inside of the viewer tool, as if you were opening a book.



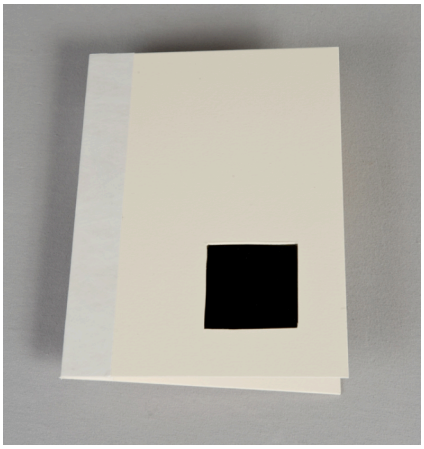
6. For the second mat board, you will need to match up the polarizing filter/film at opposite directions so that when you have the two boards on top of each other and “close the book,” the square will be dark. When you have the square piece of filter/film properly in place over the cut square in second mat board (which will now be underneath the board you just completed), you can adhere it using the clear tape (use the same procedure indicated above).



7. Place the boards on top of each other, with the cut squares on top of each other on the lower right. Confirm the cut square is dark. The Tyvek tape will be used to hold these two mat boards in place (like the binding of a book). If you were to open the book and lay it flat with the open pages facing down, you would be taping the spine. Place the piece of Tyvek lengthwise over the center (the "spine" area), with about an inch on each board. Turn the taped boards over and tape the "inside of the spine" the same way. The mat boards should now be held together securely with the Tyvek tape on both sides.



8. Close the book and be sure the cut squares match up and the square is dark.

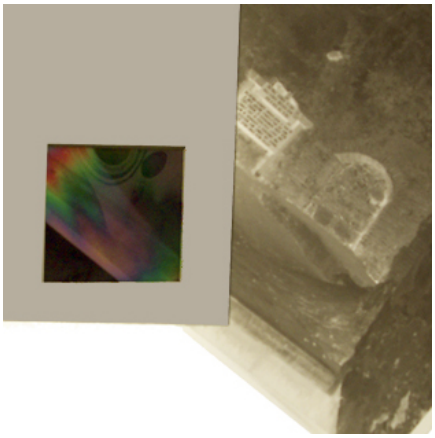


NOTE: If the square is not dark when closed, then you have the filters positioned at the same orientation which is not correct. You need to remove one and re-position it so it is at the opposite orientation. That is the ONLY way the tool will function properly when viewing films between the boards.

Instructions on How to Use the Film Viewer

To use the viewer, open it (like a book) and place the film over the polarizing filter (window) to the right. Make sure to select an area of the film that has thin or no image making material, such as an outer edge, to be within the window frame. Otherwise, you will not be able to see through the film. Close the viewer, hold it up to a light source (or place it on a light table) and look through the window. You may need to tilt the viewer back-and-forth or move the film slightly in the viewer to observe color changes.

- If the film base is polyester, you will notice red and green interference colors (rainbow patterns like a soap bubble) and the film will appear brighter and clearer.



- If the film base is cellulosic (acetate or nitrate), there will be no interference colors, and the window will be dark.

References:

Bennett, Karen L. and Jessica S. Johnson (1999) NPS Conserve O Gram 14/9 – *Identification of Film-Base Photographic Media*

Fischer, Monique C. and Andrew Robb (1993) *Guidelines for Care and Identification of Film-Base Photographic Materials.* Available online at http://palimpsest.stanford.edu/byauth/fischer/fischer1.html

Reilly, James (1993) *The IPI Storage Guide for Acetate Film.* Rochester: Image Permanence Institute