

Yale University Library Preservation Department Identification of Film Types

It is important to verify the type of film base when processing and storing archival collections. Some films require special storage considerations while others can be a safety hazard that needs special care and handling.

Below are the basic characteristics so that one can differentiate nitrate, acetate, and polyester films. If there is ever any doubt about the type of film base, please do not hesitate to contact the Preservation Department for assistance with identification.

Cellulose Nitrate Identification¹:

- By deterioration characteristics (from best to worst condition):
 1. Yellowing and “mirroring” (image on the film start to reflect light like a mirror)
 2. Sticky with the start of the noxious odor coming from nitric acid formation
 3. Amber discoloration and image fading
 4. Soft and starts to stick to adjacent materials like other negatives and photos
 5. Brownish acidic powder (last stage of deterioration)
- By other characteristics:
 - The edge of the film reads “NITRATE”
 - For sheet film, the text will be embossed; for motion picture film, the text will be printed
 - Kodak brand sheet film prior to 1940 will have a “V” notch near its upper right corner
- By manufacturer date*:
 - Film manufactured before 1925 is most likely nitrate and not acetate

Cellulose Acetate Identification:

- By deterioration characteristics (from best to worst condition):
 1. Curling and some color change overall (red or blue)
 2. Vinegar (acetic acid) odor starts with some shrinkage and brittleness
 3. Warping
 4. Bubbling in the film
 5. “Channeling” (looks like 3 dimensional “rivers” running through the negative)
- By other characteristics:
 - The edge of the film reads “SAFETY”
 - For sheet film, the text will be embossed; for motion picture film, the text will be printed
 - For motion picture film, 16mm and 8mm is most often acetate.
 - Kodak had numerous notch codes to identify the type of sheet film; other manufacturers had notch codes to identify types of acetate film within the company and to differentiate themselves from Kodak. For a list of these notch codes, please see Appendix B of The Acetate Negative Survey: Final Report... by David Horvath available as a PDF file at: <http://tinyurl.com/omym3z7>
- By manufacturer date:
 - Film manufactured prior to 1955 is most likely acetate and not polyester

Polyester Identification:

- Polyester film is inert and will not deteriorate; film in excellent condition is most likely polyester
- Film manufactured after 1955 is most likely polyester and not acetate
- Viewing film through 2 polarizing lenses – seeing a “rainbow” designates polyester; dark film is nitrate or acetate²

¹ Some excellent examples of deterioration stages for nitrate and acetate films are available through the NEDCC: https://www.nedcc.org/assets/media/documents/05PH_01FilmBaseGuide.pdf and the National Park Service: (http://www.nps.gov/museum/coldstorage/html/filmid2_2.html)