

Film Information

Film gauges include 35 and 70mm - theatrical use, 16mm - television, archives, educational, libraries, corporate, museums, Super 8 and 8mm – home/amateur, 28mm and 9.5mm – very rare and used long ago. Film is composed of two layers, the film Base and emulsion. The film base, since it's inception, there have been three types used: Cellulose Nitrate (1893s – 1952) – used for 35mm only and very flammable; Acetate (1920 – present) – all gauges called safety film and Polyester (mid 1950s – present) – 35mm, 16mm, super 8mm also called safety film. The emulsion layer carries the photosensitive materials in a gelatin binder forming the image-creating layer and the composition differs for black & white and color films.

Common Types of Damage

Mechanical Damage

Causes - various

- Mishandling
- Play through projector over time
- Film passing through worn rollers, sprockets and gates
- Rewinding
- Poor shipping (improper packing, rough handling, exposure to elements)

Mold, Mildew, and Fungus

Causes - storage under humid conditions

- Organisms start from the outside edge and cause damage to the emulsion layer.
- Once the organisms have eaten the emulsion layer the damage is irreversible

Acetate Decay

Causes – exposure to water, high humidity and heat

- In early stage the plastic releases acetic acid, destroying part of the base
- Acetate Decay cannot be reversed but improving storage conditions can slow it.

Shrinkage

Causes – dry storage conditions

- Can also be a symptom of Acetate Decay

Color Fading

Causes – time

- All types and brands of color motion picture film will fade over time.
- The three dye layers (yellow, cyan and magenta) lose their colors at different rates
- Once the color breaks down, the color balance changes

Nitrate Decay

Causes – chemical reaction over time

- This film composition has not been used since 1952 due to it's highly flammable nature
- The image on the film will start to fade and the emulsion layer will become sticky
- Once the emulsion layer softens and blisters it is beyond retrieval

Magnetic Track Deterioration (Sound Track)

Causes – all of the above but especially acceptable to Vinegar Syndrome (Acetate Decay)

- Magnetic coating can shed oxide, become sticky or completely separate from the base