

New Eastman Identification System for Safety Film

PROPER identification of nitrate and safety film, of course, is of paramount importance if accidents are to be prevented. The only safe practice is to assume that all 35-mm motion picture film is nitrate unless demonstrated otherwise.

A safe, simple, foolproof method for identifying nitrate and safety film correctly is not as easy as it might seem. For many years film manufacturers have printed the words "NITRATE FILM" at frequent intervals along the edge of film made on nitrate base, and the words "SAFETY FILM" along the edge of film made on safety base. This has usually been done by a latent image exposure at the time of slitting or perforating, and

The circulation side-by-side of both nitrate and acetate (safety) release prints has imposed severe demands upon the resources of the film manufacturer, the laboratory, the exchanges—and last, but by no means least, upon the projectionist who must deliver the sum total of industry effort, from story conception down through the manifold stages to the delivery of the finished product to the paying patron at the theater box-office.

Ever responsive to the requirements of the man who keeps the theater going, (Mr. Projectionist), Eastman Kodak Company has developed a system of print identification which should go far to ease the burden of projectionists, who utilize its product to translate a narrow ribbon of film into the dollars which provide the economic sinews for the world-wide operation of motion picture theaters. This article was prepared and is copyright by Eastman Kodak Company.

when a nitrate positive is printed from a safety master and a safety duplicating negative. The nitrate print carries not only its own identifying name in black but the words "SAFETY FILM" in white

production of a portion of a print on safety film which was found in the trade. A sample had to be burned to establish the identity of the base. Both black-and-white and color prints have also been seen frequently with a flash along the edge which virtually obliterates the nitrate or safety identification.

Additional limitations to this system of film identification are the fact that it is invisible in the raw stock and that every individual spliced strip of processed film in a roll must be examined.

It is thus apparent that the existing system of nitrate and safety base identification is entirely inadequate. Eastman Kodak Company has given a great deal of thought to this problem in recent years because of its importance in fire prevention. Many ideas have been suggested and it has finally been concluded that two separate identification systems for safety film are necessary. Two such systems are now being put in practice as follows:

Distinctive, Visible Frame-Line Printing

A scheme has been devised by which identification of the base can be combined with visible frame-line printing as shown in Figs. 3 and 4. Eastman Nitrate Motion Picture Positive, Sound Recording, and Duplicating films carry a width-

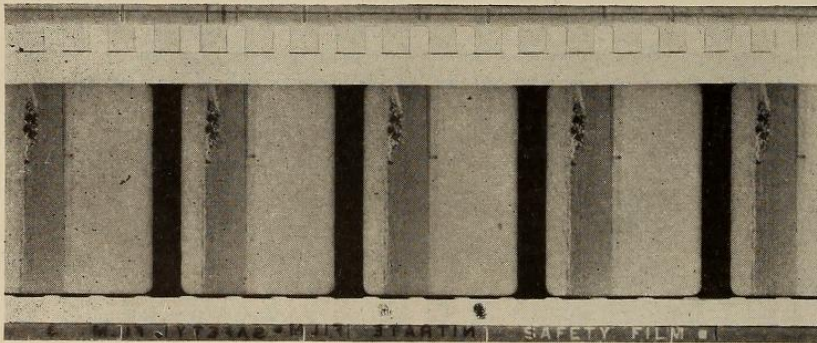


FIG. 1. A print on nitrate stock showing conflicting identifications printed through from a safety master positive and a safety duplicating negative.

the identification is visible only after processing.

This identification system was adequate as long as only nitrate film was used for professional 35-mm theater productions. Now that both nitrate and safety films are in general use, there is the danger of misidentification caused by printing through from a safety negative onto a nitrate print, or *vice versa*.

Figure 1 illustrates what can happen

printed through from the safety duplicating negative, and the same in black printed through from the safety master positive.

Obliteration of Markings

The original identifying name on a piece of film usually appears sharper than one resulting from a second generation print, but there is still a real danger of misidentification. In Fig. 2 is the re-

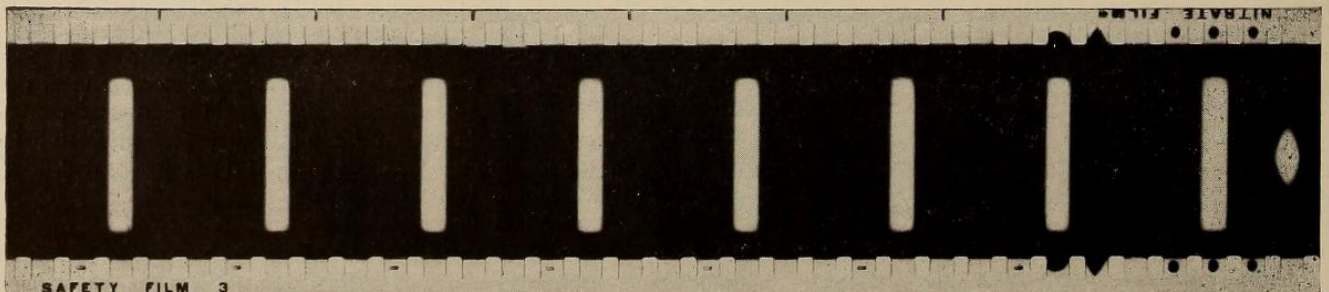
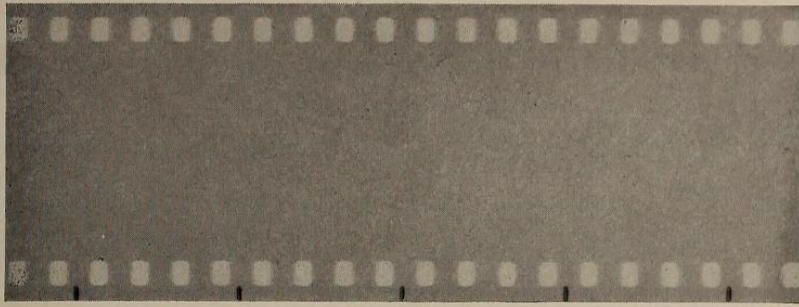
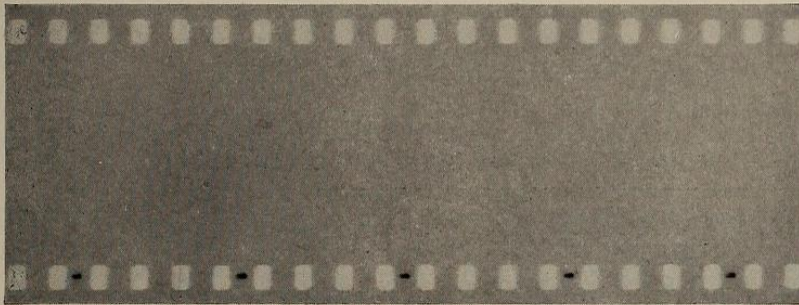


FIG. 2. A portion of a print on safety film stock found in a film exchange. Note confusion of identifying names. The correct identity can be established by the presence of the safety frame-line mark. (See Fig. 3.)



NITRATE FILM



SAFETY FILM

FIG. 3. The new Eastman visible frame-line mark on safety raw stock compared with nitrate.

wise frame-line mark after every fourth perforation printed along the extreme edge of the film.

Eastman 35-mm black-and-white Safety Motion Picture Positive Film now carries a lengthwise frame-line mark after every fourth perforation located exactly between the perforations instead of at the extreme edge of the film. This is the only area on the film which is ordinarily not exposed in printing. This new safety frame-line mark when used on safety negative film will not print through on positive film, provided that care is taken to see that printers never expose the area exactly between successive perforations.

A more positive identification is thus obtained—whenever the new safety frame-line mark is found, one can be reasonably certain that the film is on safety base regardless of nitrate frame-lines or nitrate edge printing which may have been printed through from the negative. If the safety frame-line printing is not present, the film is either on nitrate base or on safety base made prior to the use of the new frame-line.

Black Ink Now Used

Both the nitrate and safety types of visible frame-line printing are applied to the back of the film by means of black ink instead of by latent image exposure and, therefore, are visible on the raw film (Fig. 3) as well as on the developed film (Fig. 4). The ink used will withstand processing solutions and normal handling wear. Even if the film is flashed before development, the ink is visible by reflected light, although not by transmitted light.

The new safety frame-line mark has

been used on 35-mm black-and-white Eastman Safety Motion Picture Positive Film since early in 1949. It will appear on all 35-mm Eastman safety motion picture films (both negative and positive types in black-and-white) as soon as the necessary equipment changes can be made—it is hoped, sometime during 1951. (All color films manufactured by Eastman Kodak Company are made on safety base but may not carry this new frame-line mark.) Of course, some Eastman safety film is already in circulation which does not have this new safety frame-line printing, but as time passes, this method

of identification should prove of increasing value.*

Attention is drawn to the fact that nitrate film formerly manufactured by Canadian Kodak carried a visible frame-line mark running lengthwise of the film instead of widthwise, as in the case of Eastman nitrate film manufactured in the United States (Fig. 5). The Canadian Kodak nitrate frame-line mark was located at the extreme edge of the film. It may therefore be distinguished from the new Eastman safety frame-line mark located between the perforations. Thus *both* the direction and the location of the frame-line mark must be checked to establish the identification of the base.

A Fluorescent Edge For Safety Film

The new visible frame-line printing described above as a useful and necessary method for identifying safety film, but it also has its limitations. In a spliced roll, every separate strip would have to be examined to make sure that the entire roll including leader and trailer was safety film.

Correct identification of the whole roll is especially important for sorting films going into storage vaults where a small piece of nitrate film might damage other films. It is also important in sorting film for scrap recovery. In such cases, individual examination of every spliced strip would be very laborious and costly. It was felt that some rapid method of determining whether or not a roll of film is all safety is necessary.

The method which has been adopted

*A distinctive type of frame-line mark for safety base motion picture materials manufactured in foreign countries is also being instituted.

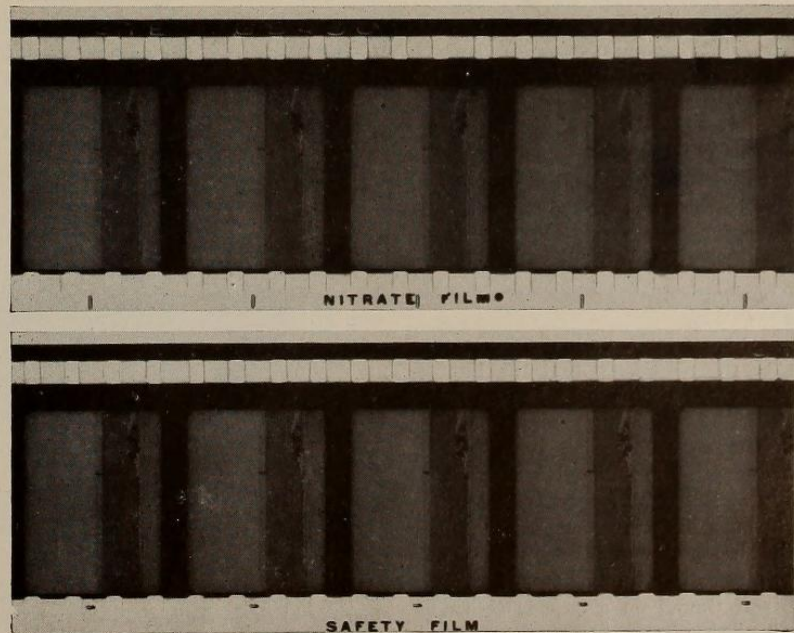


FIG. 4. The new Eastman visible frame-line mark on processed safety film compared with nitrate.

Proper Handling of Safety Film

SAFETY motion picture film requires no special precautions in handling or storage as far as its own fire hazard is concerned. Underwriters' Laboratories describe approved acetate film as slow-burning and state that "hazards in use and storage are small, being somewhat less than those presented by common newsprint paper in the same form and quantity." Where safety film is used exclusively, only normal fire precautions are required as in any office or building containing paper, wood, or similar combustible material. Safety films should be stored in individual cans in metal cabinets, but these need not be sprinklered or vented.

Where safety and nitrate films are both being used in studios, laboratories, exchanges, theaters, or storage vaults, the same regulations and precautions must be followed as if *all* the film were nitrate. It is, of course, entirely feasible to segregate the work involving safety film alone in any given studio, laboratory, or exchange, so that certain areas might be operated without the restrictions applying to nitrate film.

The only real hazard in acetate film is that its increased

use will tend to make people careless, and proper safety precautions may be neglected while some nitrate film is still in circulation. If this happens, a serious accident may result.

Combination Safety-Nitrate Prints

A roll of film which is acetate base at the outside might contain nitrate film spliced in the interior of the roll. A print released on acetate stock may later have replacements made on nitrate stock and be run on a projector not properly maintained for nitrate film. A laboratory which has been using safety stock for release prints for a period of time may suddenly switch to nitrate stock without announcement or warning. The danger of such practices is obvious.

Even when no more nitrate film is being manufactured in the United States, foreign negatives or prints on nitrate stock may be imported. Another hazard is the quantity of nitrate negatives and prints in storage vaults, some of which may be kept for 25 years or more. Any such collection of nitrate films that is to be saved should be stored in a separate approved vault, never in the same vault with safety films.

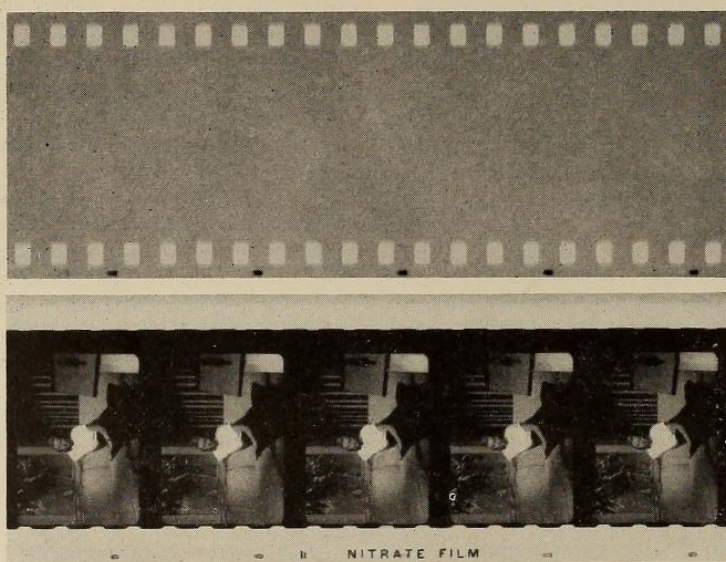


FIG. 5. The visible frame-line mark on raw and processed nitrate film manufactured by Canadian Kodak.

by Eastman Kodak Company is to apply a very small amount of a fluorescent chemical on safety film base used for 35-mm motion picture film. When a 35-mm roll of film so treated is viewed on edge under a suitable ultraviolet lamp in a partially darkened room, a vivid purple fluorescence is visible; whereas untreated film viewed in the same way appears black. In white light fluorescent-treated and untreated films look exactly the same.

Extensive tests in both the laboratory and the trade indicate that the fluorescent treatment of the base has no detrimental effect on the film before or after development.

This simple and effective method of rapidly distinguishing nitrate and safety film in bulk form is illustrated in Fig. 6 which shows a composite nitrate and safety film roll on an exchange reel. The same roll wound on a core is shown in Fig. 7. The nitrate film appears black and the fluorescent-treated safety film ap-

pears white in these reproductions.

The contrast between the two films is much more striking in actual practice or in a color photograph where the edge of the safety film appears purple. The ex-

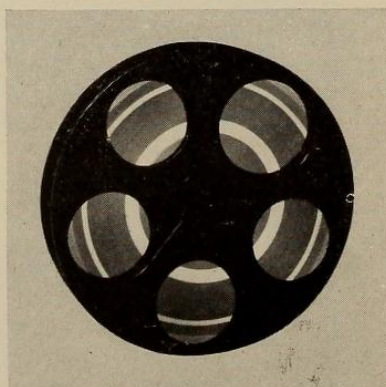


Figure 6

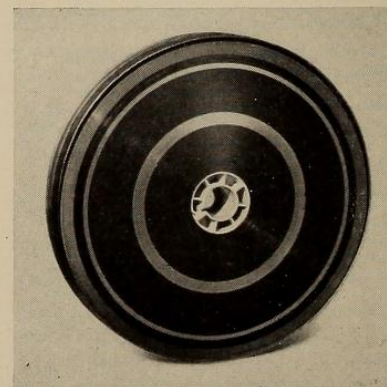


Figure 7

In Fig. 6 is shown a mixed roll of fluorescent-treated safety film (white) and untreated nitrate film (dark) on an exchange reel. (Photographed with ultraviolet light.) The edge of the treated safety film is actually colored purple, and the nitrate film black in ultraviolet light. Fig. 7 shows the same roll as in Fig. 6 but on a plastic core.

change reel does not permit as complete an examination as in the case of a roll on a core, but it is still possible to tell quickly whether most of the roll is nitrate or safety.

A suitable inexpensive ultraviolet lamp in various table, overhead, portable, spot, or flood-light models may be purchased from several manufacturers complete with transformer and filter ready for use.** A 100-watt bulb is recommended for general use, but smaller or larger ones may be obtained if desired. The ultraviolet bulbs and other parts may also be purchased separately from electrical supply stores and assembled in standard fixtures.

The ultraviolet lamp should be equipped with a hood or reflector, and care should be taken not to expose the eyes for long periods to direct ultraviolet radiation from these lamps. Provided such care is taken, ultraviolet lamps present no personnel hazard. They are in constant use in various other industries.

(Continued next page, foot of Col. 1)

** For example, Switzer Brothers, Inc., 1220 Huron Road, Cleveland 15, Ohio, Black Light Model 103.