increases with increasing acid concentration. The effect of bromide ion added as KBr was determined for the solution containing 0.32 M sulfuric acid. The rate of image development increases slightly with increasing bromide-ion concentration in the range 0 to 0.35 M. The rate of fog formation decreases with increasing concentrations of bromide over the range 0 to 0.06 M, but subsequently passes through a minimum and then increases. The increase may be attributed to the solvent action of the higher concentrations of bromide ion on the silver bromide.

Development by vanadium probably follows the simple chemical equation:

$$V^{++} + AgBr \rightarrow V^{+++} + Ag + Br^-.$$

The experimental results suggest that the rate-controlling step is the diffusion of the vanadous ion. The rate of development of liquid (uncoated) emulsion is very high compared with that of the coated emulsion, so that diffusion through the gelatin layer probably is the dominant factor in determining the rate of development of coated film. The first-power dependence of rate on vanadous-ion concentration and the low temperature coefficient, both, are in accord with this interpretation. The fact that the rate of image development increases slightly with increase in bromide-ion concentration is just the opposite from the expected result if the rate were controlled by a chemical reaction, but is in accord with expectation if the rate is controlled by diffusion. Increase in bromide-ion concentration increases the negative charge on the grain surface and should increase slightly the rate of diffusion of the positively charged vanadous ion in the immediate neighborhood of the grain. At vanadous-ion concentrations greater than 0.10 M, the rate of development no longer is simply proportional to concentration, and the diffusion process evidently becomes more complicated.

American Standards PH22.21, —.22, 1953, 8mm Motion-Picture Film, Usage in Camera and Projector

Published on the following pages are revisions of two American Standards: Z22.21-1946, Emulsion Position in Camera for 8mm Silent Motion-Picture Film; and Z22.22-1947, Emulsion Position in Projector for Direct Front Projection of 8mm Silent Motion-Picture Film. The revisions are purely editorial in nature, consisting of a change in title and use of the word "rate" in place of "speed" in paragraph 2.—*H.K.*

American Standard

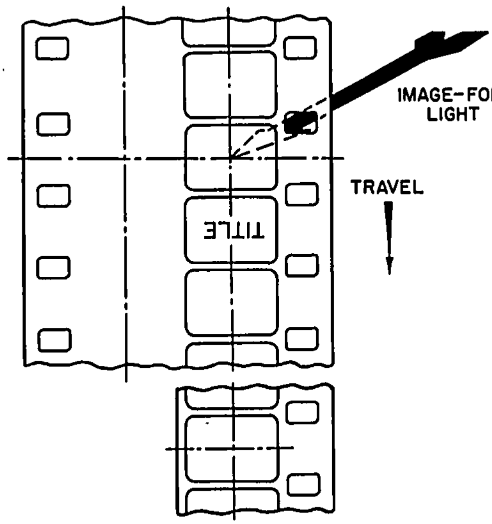
8mm Motion-Picture Film Usage in Camera

ASA Reg. U.S. Pat. Office

PH22.21-1953

Revision of Z22.21-1946

*UDC 778.53



Film as seen from inside the camera, looking toward the camera lens.

1. Position of the Emulsion

1.1 Except for special processes, the emulsion shall be toward the camera lens.

2. Rate of Exposure

2.1 The normal rate of exposure shall be 16 frames per second.

Note: This standard differs from the 1941 and 1946 editions solely in editorial modifications.

Approved December 17, 1953, by the American Standards Association, Incorporated
Sponsor: Society of Motion Picture and Television Engineers

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American Standard

8mm Motion-Picture Film Usage in Projector

ASA Reg. U.S. Pat. Office

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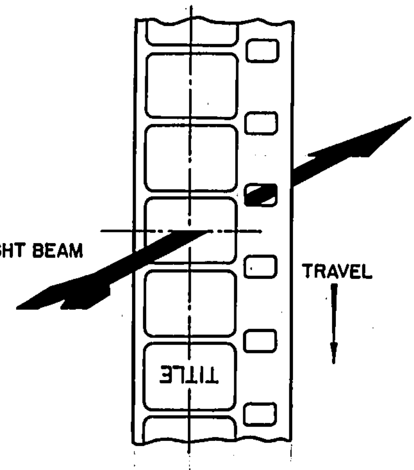

Film as seen from the light source in the projector.

1. Position of the Emulsion

1.1 Except for special processes, the emulsion shall be toward the projection lens.

2. Rate of Projection

2.1 The normal rate of projection shall be 16 frames per second.

Note: This standard differs from the 1941 and 1946 editions solely in editorial modifications.

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