STANDARDS AND RECOMMENDED PRACTICES

Approved American National Standards

Four American National Standards were approved by the American National Standards Institute on May 11, 1982: ANSI PH22.9M-1982, Specifications for Camera Usage of 16-mm Motion-Picture Film; ANSI PH22.154-1982, Dimensions of Projectable Image Area on 8-mm Type S Motion-Picture Film; ANSI PH22.156M-1982, Specifications for Camera Usage of 8-mm Type S Motion-Picture Film; and ANSI PH22.164-1982, Position, Dimensions, and Reproducing Speed of Magnetic Sound Record on 8-mm Type S Motion-Picture Film. Copies of these revised standards are available for a nominal fee from the American National Standards Institute, 1430 Broadway, New York, NY 10018.

Approved SMPTE Recommended Practices

The Society's Executive Committee for Standards Approval approved two SMPTE Recommended Practices on March 9, 1982: RP 5-1982, Dimensions of Patch Splices in 2-in Video Magnetic Tape; and RP 21-1982, Dimensions of 35-mm Motion-Picture Rewind Spindles. The practices are available from Society Headquarters for $1.50 each.

Proposed SMPTE Recommended Practices

Three Proposed SMPTE Recommended Practices are published here for a trial period and public review: RP 114, Dimensions of Photographic Control and Data Record on 16-mm Motion-Picture Film; RP 115, Dimensions of Photographic Control and Data Record on 35-mm Motion-Picture Release Prints; and RP 116, Dimensions of Photographic Control and Data Record on 35-mm Motion-Picture Camera Negatives. Comments should be addressed to Alex E. Alden, Manager of Engineering, at Society Headquarters prior to March 1, 1983. If no adverse response is received, the proposals will be submitted to the Society's Board of Governors for approval.

Reaffirmed SMPTE Recommended Practices

On the recommendation of the Society's Engineering and Standards Committees, the Executive Committee for Standards Approval approved the reaffirmation of two SMPTE Recommended Practices on October 12, 1982: RP 37-1969, Color Temperature for Color Television Studio Monitors; and RP 45-1972, Use and Care of Sound Test Films. Copies of these and other SMPTE Recommended Practices may be purchased from Society Headquarters at $1.50 per copy.

Initiation of Canvass

The Society of Motion Picture and Television Engineers, through the canvass method of the American National Standards Institute (ANSI), is seeking recognition of Proposed American National Standard Electrical and Mechanical Characteristics for Digital Control Interface, SMPTE 207M, published for trial and comment in the September 1982 *Journal*. SMPTE has elected to take this canvass action because no appropriately organized national committee is currently established.

ANSI coordinates the development of national consensus standards through voluntary action and serves as a clearinghouse for information on standards. In the canvass method, organizations and individuals known to have substantial concern and competence in the subject covered by the scope of the standard are canvassed or polled by mail in order to obtain evidence of consensus for approval of the standard.

The scope of this standard defines the electrical and mechanical characteristics of an interface system comprised of a general purpose communication channel and interface device(s) used for the transfer of data and digital control signals between equipment utilized in the production, post-production, and/or transmission of visual and aural information. It is intended that the communication channel and device(s) described in this standard be part of an overall equipment interface, allowing interconnection of programmable and nonprogrammable control and accessory equipment as required to configure an operational system with a defined function. The standard is also intended to allow rapid reconfiguration of a system providing more than one defined function utilizing a given group of equipment.

If you are interested in reviewing this proposal and informing SMPTE of your position on its proposed recognition as an American National Standard, please contact A. E. Alden at Society Headquarters.—*Alex E. Alden, Manager of Engineering*

ANSI PH22.9M-1982
Revision of ANSI PH22.9-1976

American National Standard
specifications for camera usage of 16-mm motion-picture film

Approved May 11, 1982 | Secretariat: Society of Motion Picture and Television Engineers

1. Scope

This standard specifies the position of the emulsion and the frame rate for 16-mm motion-picture film perforated one or two edges, and the camera thread-up distance between sound recording unit and picture aperture for 16-mm motion-picture film with a sound record.

2. Film Position

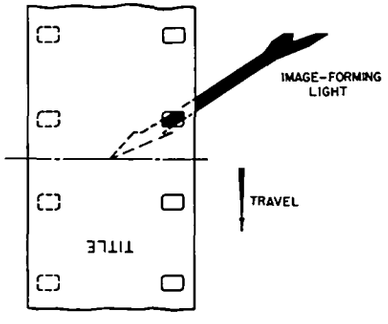
2.1 Except for special processes, the emulsion shall be toward the camera lens.

2.2 The dimensions of the camera aperture image shall be as specified in American National Standard Dimensions of 16-mm Motion-Picture Camera Aperture Image, ANSI PH22.7-1976.

3. Frame Rate

3.1 The frame rate for film perforated two edges not used for sound shall normally be 18 or 24 frames per second, depending upon its intended use. Amateur films are usually photographed at 18 frames per second and should be projected at that rate. Professional films not used with a sound record may be photographed at any rate from time lapse to high speed but are generally intended for projection at 24 frames per second, except when special study is desired.

3.2 The frame rate for film containing a sound record or to be used in conjunction with a separate sound record shall be 24 frames per second for both photographic and magnetic sound. However, films which will have post-process recorded magnetic sound and are to be projected at 18 frames per second should be exposed at the rate of 18 frames per second.



Film as Seen from Inside Camera Looking Toward Camera Lens

4. Relationship between Sound Record and Picture

The camera thread-up path for motion-picture films containing a sound record shall place the sound recording point ahead (in the direction of film travel) of the center of the picture being exposed. Counting the frame in the camera picture aperture as zero (0), the sound recording point shall be opposite the center of the 26th frame for photographic sound or the 28th frame for magnetic sound to accommodate film with sound, as specified in American National Standard Dimensions of Photographic Sound Records on 16-mm Motion-Picture Prints, ANSI PH22.41-1975, and American National Standard Position, Dimensions and Reproducing Speed of 100-Mil Magnetic Sound Record on 16-mm Motion-Picture Film, ANSI PH22.112-1977.

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Appendix

(The Appendix is not a part of this American National Standard, but is included for information purposes only.)

Section 3 giving the usual frame rate as 18 frames per second is in apparent contradiction with 16 frames per second associated with silent film speeds. In modern practice, however, 16-mm film perforated along two edges is used to a large extent in the amateur field; cameras designed for the amateur are usually spring wound, portable, and not closely governed in taking speed. Variations from 20 to 14 frames per second, at least, are commonly observed. It is not customary to design amateur projectors that will reproduce exactly the taking speeds and, as a matter of fact, it has been found that, for amateur cinematography, this exact speed reproduction is not necessary. Projection at 18 frames does not detract objectionably from films exposed at 20, 16 or even 14 frames, and it has the advantages discussed in American National Standard Specifications for Projector Usage of 16-mm Motion-Picture Film, ANSI PH22.10-1980.

Therefore, the camera dial setting of 16 or 18 frames per second is regarded as an aim to which considerable tolerance will normally apply. Pictures taken in cameras having this speed tolerance, as well as pictures taken in cameras having a constant-speed motor governed at 16 frames per second, will show some change in the apparent velocity of movement when projected at 18 frames per second, but this is not considered to be objectionable.

For professional camera work, the film used is 16-mm film perforated 2R-2994. The frame rate for this class of work is 24 frames per second. These films are normally used as originals from which prints are made.

There are cameras used to take pictures at high rates. Many of these high-speed cameras traditionally use 16-mm film perforated 2R-3000 which is packaged for the purpose and labeled "For Use in High-Speed Cameras," even though the same emulsion will be supplied at 0.2994-inch pitch for professional cameramen taking pictures from which prints will be made. The films used in high-speed cameras are generally for purposes of measurement and prints are seldom prepared.

ANSI PH22.154-1982
Revision of ANSI PH22.154-1976

American National Standard
dimensions of projectable image area on 8-mm type S motion-picture film

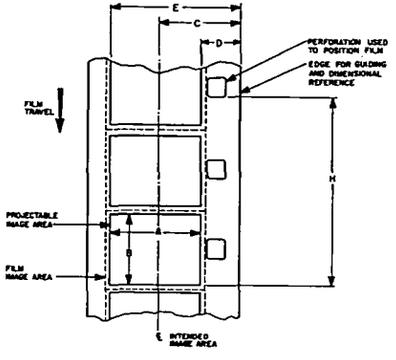
Approved May 11, 1982 Secretariat: Society of Motion Picture and Television Engineers

1. Scope

This standard specifies the maximum dimensions of the film image area intended for projection from 8-mm Type S motion-picture film, and the placement of this area relative to the perforations and the reference edge of the film.

2. Dimensions

2.1 The dimensions shall be as given in the figure and table.



Film as Seen from Projector Light Source Looking toward Lens; Emulsion Away from Observer

Dimensions	Inches	Millimeters
A	0.209 ref	5.31 ref
B	0.158 max	4.01 max
C*	0.170 ref	4.32 ref
D	0.063 min	1.60 min
E	0.278 max	7.06 max
H†	0.389 nom	9.88 nom

*See Appendix.
†See Note 6.

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2.2 The angle between the horizontal edges of the image area and the reference edge of the film shall be 90° ± ½°.

2.3 Dimension H is measured lengthwise along the path of the film from the bottom of the maximum image area projected by the aperture to the bottom of the frame-positioning perforation (two perforations above the perforation adjacent to the projected image).

3. Relationship to Other Standards

3.1 This standard may be used as the basis for establishing picture areas from original photography for final viewing because it presents a description of the picture area on the projection print that is usable for the indicated purposes of the print (which is of primary importance because the projection print is the most commonly interchanged item).

3.2 The following American National Standards define image areas for other important phases of motion-picture operations, and are consistent with this standard and with one another under currently acceptable commercial practice:

Dimensions of Printed Area on 16-mm Motion-Picture Film Perforated 8-mm Type S (Super 8), (1-4), ANSI PH22.153-1979

Dimensions of Camera Aperture Image on Super 8 Motion-Picture Film, ANSI PH22.157-1971 (R1977)

NOTE 1: Camera and Printer Apertures. The actual image on the film is significantly larger than the maximum area intended for projection, so that in placement of the images throughout the sequence of films the tolerance is not restrictive of commercial practice. Upper limits have been established through consideration of good practice in avoiding frame overlap, encroachment upon areas reserved for sound records, flare from perforation edges, etc. Lower limits are similarly related to the avoidance of image effects at a defined edge, tolerances in film positioning, etc.

NOTE 2: Projector Aperture. Dimensions B, D, and E define the maximum image area on the film that is available for projection. They do not define the opening in the aperture plate of a projector. The size of this opening may differ from Dimensions A and B, for example, because of the physical separation necessary between the aperture plate and the film to avoid scratching the film, the slant of the marginal rays accepted by the projection lens, etc.

NOTE 3: Actual Projected Area. It is recognized that, in many cases, the actual film image area that is projected may be smaller than the projectable maximum, and in some cases, may be nonrectangular (for example, an irregular four-sided figure bound by either straight or curved lines). Such departures may result from equipment considerations, such as slight inconsistencies among lenses, screen sizes, etc.; from geometric limitations such as the screen surface being at an angle other than 90° from the projection axis, or being nonplanar, or both; and from aesthetic considerations such as pictorial composition within more restrictive image limits. In the absence of specific instructions to the contrary, it is intended that the actual projected film image area be the largest appropriately-shaped figure that can be inscribed within the specified dimensions.

When the picture outline on the screen is defined by the projector aperture, it is customary to round the corners of the projected film area. A maximum corner radius of 0.010 in (0.25 mm) at the film plane is recommended.

NOTE 4: Film Perforations. Film intended for projection with this image area is normally perforated as specified in American National Standard Dimensions for 8-mm Motion-Picture Film Perforated 8-mm Type S, 1R, ANSI PH22.149-1981.

NOTE 5: Print Preparation. Prints conforming to this standard are prepared for use as specified in American National Standard Specifications for Projector Usage of 8-mm Type S (Super 8) Motion-Picture Film, ANSI PH22.155-1976.

NOTE 6: Dimension H. In this format, the positioning of the projectable image with respect to the film perforations has been established by the nominal value H, together with limitations on image positioning given in American National Standards ANSI PH22.153-1979 and ANSI PH22.157-1971 (R1977).

Appendix

(The Appendix is not a part of this American National Standard, but is included for information purposes only.)

The centerlines of the image area are given for convenience in interpreting the standard, facilitating such applications as the optical design of equipment, and assisting in the understanding of suitable mechanical embodiments related to projectable image area. Note that the centerline of the projectable image area is displaced from the centerline of the film by 0.013 in (0.33 mm) nominal.

ANSI PH22.156M-1982
Revision of ANSI PH22.156-1976

American National Standard
specifications for camera usage of 8-mm type S motion-picture film

Approved May 11, 1982 Secretariat: Society of Motion Picture and Television Engineers

1. Scope

This standard specifies the emulsion position, the frame rate of exposure and the orientation of the area on 8-mm Type S film being exposed in a motion-picture camera.

2. Emulsion and Film Position

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

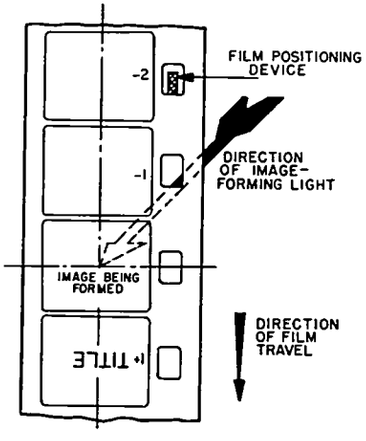
2.2 The perforation used for the film-positioning device shall be two perforations above the perforation adjacent to the image being formed when a positioning device is at the bottom of its stroke (the —2 position). This location coincides with that of the vertical positioning device required for the projected image and thereby improves steadiness through cancellation.

3. Exposed Image Area

The dimensions of the camera aperture image and its position relative to the film-positioning perforation shall be as specified in American National Standard Dimensions of Camera Aperture Image on Super 8 Motion-Picture Film, ANSI PH22.157-1971 (R1977).

4. Frame Rate

4.1 A frame rate of 24 frames per second shall be used for films intended for (a) professional use with a sound record which was recorded for 24-frame projection, (b) 24-frame projection, or (c) enlargement to 16-mm or other formats.



Film as Seen from Inside Camera Looking Toward Lens

4.2 A frame rate of 18 frames per second shall be used for non-professional films using single-system sound or post-processed magnetically-striped film when the film is intended for projection at 18 frames per second.

NOTE: Professional films may be photographed at any rate from time-lapse to high-speed but are generally intended for projection at 24 frames per second, except when special study is desired.

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ANSI PH22.164-1982
Revision of ANSI PH22.164-1975

American National Standard
position, dimensions and reproducing speed of magnetic sound record on 8-mm type S motion-picture film

Approved May 11, 1982 Secretariat: Society of Motion Picture and Television Engineers

1. Scope

1.1 This standard specifies the position, dimensions and reproducing speed of the magnetic sound record on 8-mm Type S motion-picture film having a nominal 0.027-in (0.69-mm) width magnetic stripe.

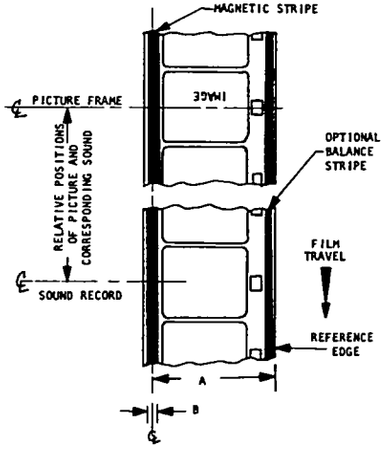
1.2 This standard also specifies the longitudinal picture-sound displacement on the film.

2. Sound Record

2.1 The lateral location and width of the magnetic sound record shall be as specified in the figure and table.

2.2 The recording shall be made so that the azimuth of the record is at an angle of 90° ± 5′ to the reference edge of the film. (The 90° angle is established from a datum guide or rail 6 pitches in length.)

2.3 With the direction of travel as shown in the figure, the magnetic striping shall be on the surface of the film facing toward the projector lamp for direct front projection with conventional optics.



Dimensions	Inches	Millimeters
A	0.298 ± 0.001	7.57 ± 0.03
B*	0.019 min	0.48 min

*See Appendix A2.

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