ANSI PH22.169-1980
Revision of PH22.169-1974

American National Standard dimensions for 35-mm motion-picture film perforated 8-mm type S, 2R-1664 (1-0)

Approved October 6, 1980

Secretariat: Society of Motion Picture and Television Engineers

1. Scope

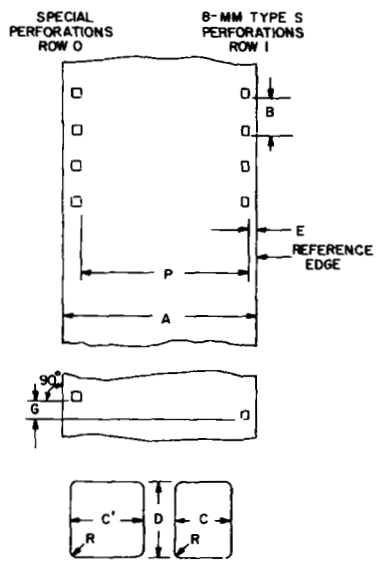
This standard specifies the cutting and perforating dimensions for 35-mm motion-picture film with one row of 8-mm Type S perforations and one row of special perforations having a perforation pitch of 0.1664 in (4.227 mm). The film stock described in this standard is intended for use as an intermediate film in the production of prints.

2. Dimensions

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

2.2 The dimensions pertain to a safety film as defined in American National Standard Specifications for Motion-Picture Safety Film, ANSI PH22.31M-1980.

2.3 The dimensions apply at the time of cutting and perforating for film adjusted to a temperature of 23 ± 1°C (nominally converted to 73 ± 2°F) and a relative humidity of 50 ± 2 percent. The manufacturer may indicate other nominal temperature and humidity conditions under which the dimensions apply.



	Dimensions	Inches	Millimeters
A	Film width	1.377 ± 0.001	34.975 ± 0.025
B	Perforation pitch	0.1664 ± 0.0004	4.227 ± 0.010
C	Perforation width	0.0360 ± 0.0004	0.914 ± 0.010
C'	Special perforation width	0.0450 ± 0.0004	1.143 ± 0.010
D	Perforation height	0.0450 ± 0.0004	1.143 ± 0.010
E	Edge to perforation	0.050 ± 0.002	1.27 ± 0.05
G	Perforation misalignment	0.0015 max	0.038 max
L	100 consecutive perforation pitches	16.640 ± 0.017	422.66 ± 0.43
P	Lateral perforation displacement	1.251 ± 0.001	31.78 ± 0.03
R	Radius of perforation fillet	0.005 ± 0.001	0.13 ± 0.03

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NOTE 1: The title of this standard was established by the application of a nomenclature system developed for all film dimension standards: Each title provides an indication of the film width, a code designation for the perforation shape (BH, KS, DH, or CS) or the number of rows of perforations (1R, 2R, etc.), depending upon which is the significant factor, or the perforation pitch without the decimal point.

NOTE 2: The metric conversion of Dimension A is purposely chosen and shown to three decimal places to prevent the maximum width dimension from exceeding 35 mm.

NOTE 3: As indicated in the Scope, the film for which this standard applies will normally be used as an intermediate and, therefore, will not be slit into smaller width strips at any stage of its use. The special row of perforations has a lesser edge-to-perforation spacing relative to the row of 8-mm Type S perforations. The perforations in the special row also are larger than the latter.

Appendix

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

A1. The user is reminded that, as a plastic, film can change dimensions temporarily due to moisture or temperature, or permanently due to solvent loss or strain effect.

A2. Film for positive use has a longitudinal pitch 0.2 percent longer than its companion negative. Shrinkage of the negative during aging and processing prior to printing will generally not exceed 0.2 percent. Thus, the negative stock is expected to be 0.3 ± 0.1 percent shorter than the positive. This difference will minimize slippage between the two on the 12-in (305-mm) circumference sprocket of the printer, assuming a film thickness of 0.0055 to 0.0065 in (0.140 to 0.165 mm).

A3. The uniformity of pitch, hole size, and margin (Dimensions B, C, D, and E) is an important variable affecting steadiness. Variations in these dimensions, from roll to roll, are of little significance compared to variations from one perforation to the next within any small group of consecutive perforations. As an example, the uniformity of the margin is uniquely critical for optical printing. During the printing process, the placement of the image on the film is usually with respect to successive lateral pairs of perforations at one-frame intervals. During subsequent projection, however, the portion of the image projected is usually located, not by these perforations, but by the edge of the film. The lateral steadiness of the projected image is, therefore, directly related to the frame-to-frame uniformity of the margin.

A4. For historical background on the development of this standard, refer to A. J. Miller and A. C. Robertson, "Motion-picture film—its size and dimensional characteristics," Jour. SMPTE, 74: 3-11, Jan. 1965.