

American National Standard dimensions for 16-mm motion-picture film perforated 2R

Approved October 6, 1980
Secretariat: Society of Motion Picture and Television Engineers

Page 1 of 2 pages

1. Scope

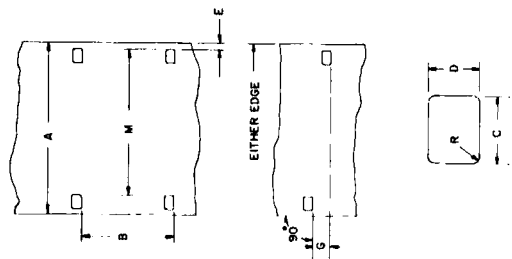
This standard specifies the cutting and perforating dimensions for 16-mm motion-picture film with perforations along both edges and a perforation pitch of either 0.2994 or 0.3000 in (7.605 or 7.620 mm).

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 $23 \pm 1^\circ\text{C}$ (nominally converted to $73 \pm 2^\circ\text{F}$) 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	0.628 ± 0.001	15.95 ± 0.03
B Perforation pitch (long)	0.3000 ± 0.0004	7.620 ± 0.010
B' Perforation pitch (short)	0.2994 ± 0.0004	7.605 ± 0.010
C Perforation width	0.0770 ± 0.0004	1.829 ± 0.010
D Perforation height	0.0500 ± 0.0004	1.270 ± 0.010
E Edge to perforation	0.0355 ± 0.0020	0.902 ± 0.051
G Perforation misalignment	0.001 max	0.03 max
L 100 consecutive perforation pitches (long)	30.00 ± 0.03	762.0 ± 0.8
L' 100 consecutive perforation pitches (short)	29.94 ± 0.03	760.5 ± 0.8
M Lateral perforation displacement	0.485 ± 0.001	12.32 ± 0.03
R Radius of perforation filler	0.010 ± 0.001	0.25 ± 0.03

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American National Standards Institute, 1430 Broadway, New York, N.Y. 10018

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Page 2 of 2 pages

NOTE: 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.

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.

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.