standards and recommended practices

Withdrawal of American Standards

On September 11, 1962 the American Standards Association approved the withdrawal of two American Standards, PH22.66-1948, Scanning-Beam Uniformity Test Film for 35mm Motion-Picture Sound Reproducers (Laboratory Type) and Z22.81-1950, Scanning-Beam Uniformity Test Film for 16mm Motion-Picture Sound Reproducers (Service Type).

The Society's Sound and Standards Committees reviewed the Standards and felt that they were no longer useful since both subjects are well covered by closely related Standards; namely, PH22.65 and Z22.80 which document existing test films presently supplied by the Society.—*A. E. A.*

Approved American Standards

On September 11, 1962, the American Standards Association approved as American Standards four proposals dealing with magnetic sound. These are published here for your information. Three of these standards describe test films for 8mm magnetic sound use: Dimensions of Magnetic Striping of 16mm Prints Having Magnetic-Photographic Sound Records, PH22.127; Specifications for 8mm Flutter Test Film, Perforated 1R-1500, Magnetic Type, PH22.128; Specifications for 8mm Azimuth Test Film, Perforated 1R-1500, Magnetic Type, PH22.129; Specifications for 8mm 400-Cycle Signal Level Test Film, Perforated 1R-1500, Magnetic Type, PH22.130.

Originally published in the Journal as proposals in July 1960, they differ only in minor editorial detail. It is anticipated that the Society will provide test films in accordance with the 8mm standards. An official announcement of the availability of these films will appear in the *Journal* as soon as arrangements for their distribution have been finalized.

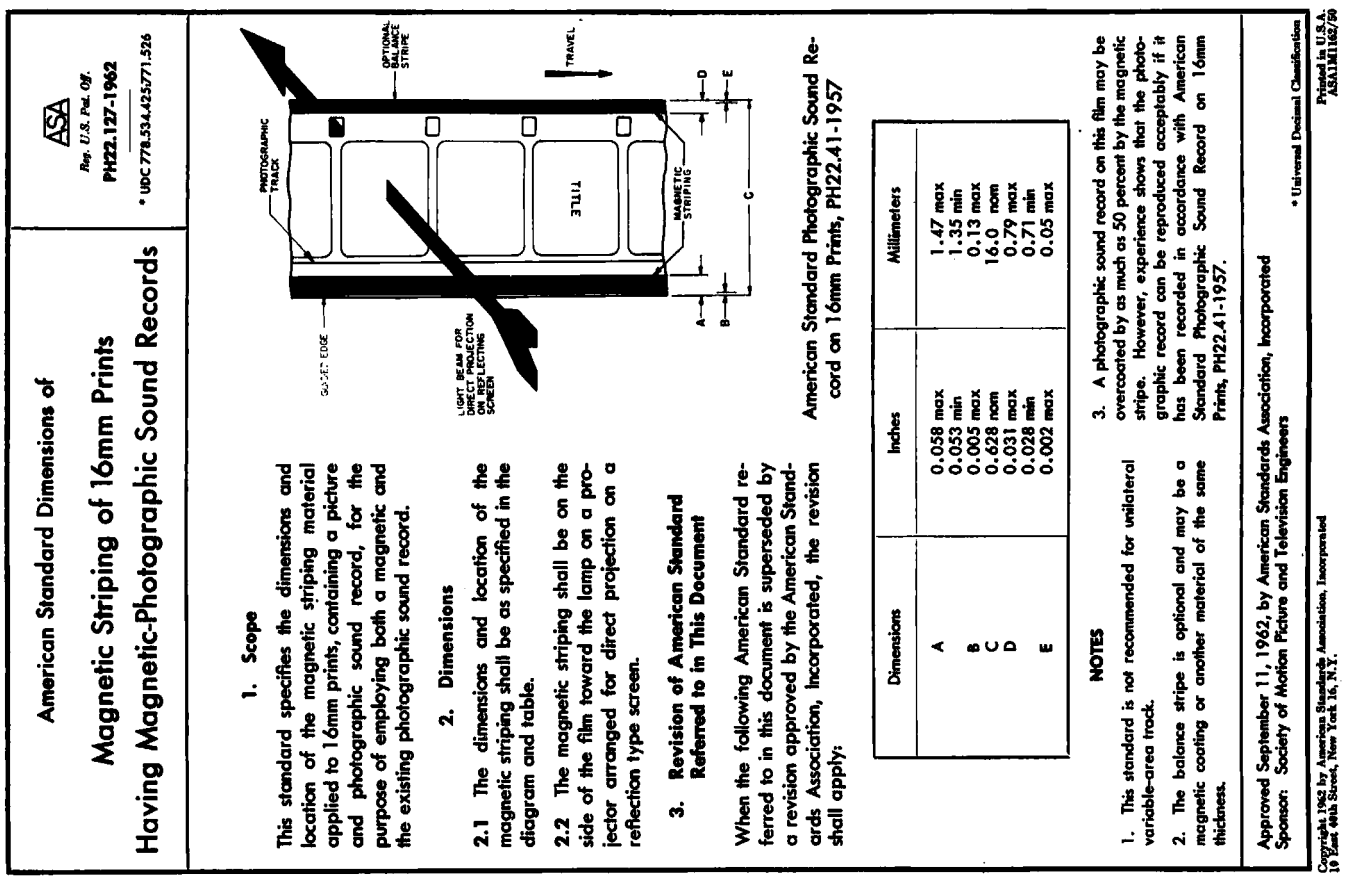
The fourth standard, Dimensions of Magnetic Striping of 16mm Prints Having Magnetic-Photographic Sound Records, PH22.127, was originally published by the Society as Recommended Practice RP2, in May 1955. The American Standard illustrated here differs slightly from the recommended practice. The balance stripe has been reduced to 0.026 in. and the stripe intended for the sound record increased to a width 0.053 in.

The next group of American Standards published here was approved by the American Standards Association on September 26, 1962.

Two of these standards are new 8mm magnetic sound subjects. PH22.131-1962 Specifications for 8mm Multifrequency Test Film, Perforated 1R-1500, Magnetic Type, describes an 8mm test film paralleling the 16mm version which has been supplied by the Society for many years. The Society anticipates making this film available also and will publish an announcement in the Journal when the matter is finalized. PH22.135-1962, Dimensions for Magnetic Sound Record on 8mm Motion-Picture Film, Perforated 1R-1500, is also a new usage standard specifying the position and size of the sound record as well as the picture-sound separation.

The one other standard, PH22.45-1962, Specifications for 16mm 400-Cycle Signal-Level Test Film, Photographic Type, is generally a reaffirmation of the 1955 issue differing in minor changes intended to update and clarify. One technical point has been added—the specification of level of recording (see 2.7).

Copies of these individual standards are available from the American Standards Association, 10 East 40th Street, New York 16, New York.—*Alex E. Alden*, Staff Engineer



ASA
Reg. U.S. Pat. Off.
PH22.127-1962
* UDC 778.534.425:771.526

American Standard Dimensions of
Magnetic Striping of 16mm Prints
Having Magnetic-Photographic Sound Records

1. Scope

This standard specifies the dimensions and location of the magnetic striping material applied to 16mm prints, containing a picture and photographic sound record, for the purpose of employing both a magnetic and the existing photographic sound record.

2. Dimensions

2.1 The dimensions and location of the magnetic striping shall be as specified in the diagram and table.

2.2 The magnetic striping shall be on the side of the film toward the lamp on a projector arranged for direct projection on a reflection type screen.

3. Revision of American Standard Referred to in This Document

When the following American Standard referred to in this document is superseded by a revision approved by the American Standards Association, Incorporated, the revision shall apply:

American Standard Photographic Sound Record on 16mm Prints, PH22.41-1957

Dimensions	Inches	Millimeters
A	0.058 max	1.47 max
	0.053 min	1.35 min
B	0.005 max	0.13 max
C	0.628 nom	16.0 nom
D	0.031 max	0.79 max
	0.028 min	0.71 min
E	0.002 max	0.05 max

NOTES

1. This standard is not recommended for unilateral variable-area track.

2. The balance stripe is optional and may be a magnetic coating or another material of the same thickness.

3. A photographic sound record on this film may be overcoated by as much as 50 percent by the magnetic stripe. However, experience shows that the photographic record can be reproduced acceptably if it has been recorded in accordance with American Standard Photographic Sound Record on 16mm Prints, PH22.41-1957.

Approved September 11, 1962, by American Standards Association, Incorporated
Sponsor: Society of Motion Picture and Television Engineers

* Universal Decimal Classification

Printed in U.S.A.
ASA1M1162/60

American Standard Specifications for

8mm Flutter Test Film, Perforated 1R-1500, Magnetic Type

ASA
Reg. U. S. Pat. Off.
PH22.128-1962
* UDC 778.534.425

1. Scope

This standard specifies a 3000 cps magnetic sound test film for use in determining the presence of flutter in 8mm magnetic sound reproducers.

2. Test Film

2.1 The test film shall have an originally recorded 0.025-in. minimum width magnetic sound record, the location and dimensions of which shall be as specified in the diagram and table.

2.2 With the direction of film travel as shown in the diagram, the magnetic coating shall be on the upper face of the film.

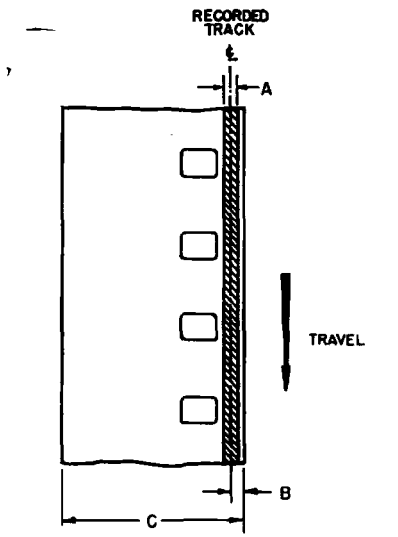
2.3 The recorded frequency shall be 3000 ± 25 cps with a film rate of 24 perforations per second (approximately 18 ft per minute).

2.4 The recorded level shall have an average intensity of 10 gauss with a tolerance of +0 −3 db.

2.5 The total rms flutter of the sound record shall not exceed 0.10 percent and the flutter amplitude, at any single flutter rate, shall not exceed 0.05 percent (as defined in American Standard Method for Determining Flutter Content of Sound Recorders and Reproducers, Z57.1-1954).

3. Film Stock

The film stock shall be of the low-shrinkage safety type, cut and perforated in accordance with American Standard Dimensions for 8mm Motion-Picture Film, PH22.17-1954.



Dimensions	Inches	Millimeters
A	0.025 min	0.64 min
B	0.015 ± 0.001	0.38 ± 0.03
C	0.314 nom	7.98 nom

4. Length of Film

The film shall be supplied in 100-ft lengths, stocked and furnished on reels having a hub of not less than 2 in. in diameter.

5. Identification

The film shall have identification markings at both ends.

Approved September 11, 1962, by American Standards Association, Incorporated
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* Universal Decimal Classification

Printed in U.S.A.
ASA1M1162/50

6. Revision of American Standards Referred to in This Document

When the following American Standards referred to in this document are superseded by a revision approved by the American Standards Association, Incorporated, the revision shall apply:

American Standard Dimensions for 8mm Motion-Picture Film, PH22.17-1954

American Standard Method for Determining Flutter Content of Sound Recorders and Reproducers, Z57.1-1954

APPENDIX

(This Appendix is not a part of American Standard Specifications for 8mm Flutter Test Film, Perforated IR-1500, Magnetic Type, PH22.128-1962, but is included to facilitate its use.)

It is recognized that there are certain desirable features in a test film of this kind that will simplify its use in measuring flutter. Because of the variety of flutter-measuring meters, one such feature is reasonable uniformity of the level of reproduction throughout the length of the test film. Therefore, it is recommended that the variations in the output level throughout the length of the test film, as measured by a VU-type meter, shall be less than ± 1 db. Short-term level variations, as for example those resulting from drop-outs, may cause some difficulty in the use of this film. Since these do not lend themselves to precise manufacturing specifications, maximum care should be exercised in the preparation of this film to minimize these variations.

American Standard Specifications for

8mm Azimuth Test Film, Perforated 1R-1500, Magnetic Type

ASA
Reg. U.S. Pat. Off.
PH22.129-1962
* UDC 778.534.425

1. Scope

This standard specifies a test film having a magnetic sound record to be used for aligning the azimuth of magnetic heads on 8mm magnetic recording and reproducing equipment.

2. Test Film

2.1 The test film shall have an originally recorded 0.025-in. minimum-width magnetic sound record, the location and dimensions of which shall be as specified in the diagram and table.

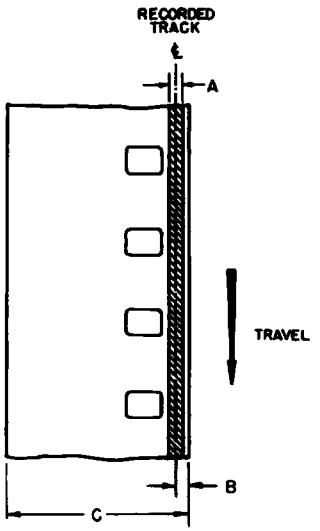
2.2 With the direction of film travel as shown in the diagram, the magnetic coating shall be on the upper face of the film.

2.3 The frequency of the sound record shall be approximately 7000 cps when the film travel rate is 24 perforations per second (approximately 18 ft per minute).

2.4 The sound record shall be recorded at 90° with reference to the edge of the film within ± 3 minutes of arc.

2.5 The recorded level shall have an average intensity of 10 gauss with a tolerance of +0 −3 db.

2.6 The recorded signal steadiness, when reproduced on high quality equipment and measured with a VU meter, shall be held to a tolerance of ± 0.5 db through any 100-ft length of film. Exception may be made for occasional rapid level fluctuations such as may be caused by "drop-outs."



Dimensions	Inches	Millimeters
A	0.025 min	0.64 min
B	0.015 ± 0.001	0.38 ± 0.03
C	0.314 nom	7.98 nom

3. Film Stock

The film stock used shall be of the low-shrinkage safety type, cut and perforated in accordance with American Standard Dimensions for 8mm Motion-Picture Film, PH-22.17-1954.

Approved September 11, 1962, by American Standards Association, Inc.
Sponsor: Society of Motion Picture and Television Engineers

* Universal Decimal Classification

Printed in U.S.A.
ASA1M1162/50

4. Length of Film

The film shall be supplied in 100-ft lengths, stocked and furnished on reels having a hub of not less than 2 in. in diameter.

5. Identification

The film shall have identification markings at both ends.

6. Revision of American Standard Referred to in This Document

When the following American Standard referred to in this document is superseded by a revision approved by the American Standards Association, Incorporated, the revision shall apply:

American Standard Dimensions for 8mm Motion-Picture Film, PH22.17-1954

American Standard Specifications for

8mm 400-Cycle Signal Level Test Film, Perforated 1R-1500, Magnetic Type

ASA
Reg. U.S. Pat. Off.
PH22.130-1962
* UDC 778.534.425

1. Scope

This standard specifies a 400-cycle signal level magnetic test film for use in controlling magnetic sound recording levels and standardizing methods of signal-to-noise measurements on 8mm magnetic sound systems.

2. Test Film

2.1 Dimensions of Sound Record. The test film shall have an originally recorded 0.025-in. minimum-width magnetic sound record, the location and dimensions of which shall be as specified in the diagram and table.

2.2 Magnetic Coating. With the direction of film travel as shown in the diagram, the magnetic coating shall be on the upper face of the film.

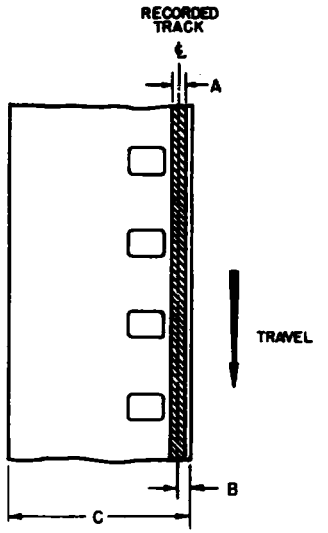
2.3 Test Frequency. The recorded frequency shall be 400 ± 4 cycles per second.

2.4 Mean Film Speed. In reproducing, the film shall pass through the equipment at a rate of 24 perforations per second (approximately 18 ft per minute) with a mean film speed tolerance of ± 0.5 percent.

2.5 Distortion. The total harmonic distortion of the recorded signal frequency shall not exceed 3.0 percent.

2.6 Signal Level Fluctuation. The level fluctuation of the test film shall be within ±1 db.

2.7 Permissible Flutter. The total rms flutter of the sound record shall not exceed 0.1 percent.



Dimensions	Inches	Millimeters
A	0.025 min	0.64 min
B	0.015 ± 0.001	0.38 ± 0.03
C	0.314 nom	7.98 nom

2.8 Recorded Signal Level. The magnetic record shall have a recorded intensity of 10 ± 0.5 gauss which is to be determined by the method of calibration specified in 6.1.

3. Film Stock

The film stock used for the test film shall be cut and perforated in accordance with American Standard Dimensions for 8mm Motion-Picture Film, PH22.17-1954.

Approved September 11, 1962, by American Standards Association, Incorporated
Sponsor: Society of Motion Picture and Television Engineers

* Universal Decimal Classification

Printed in U.S.A.
ASA1M1162/50

4. Length of Film

The film shall be supplied in 100-ft lengths, stocked and furnished on reels having a hub of not less than 2 in. in diameter.

5. Identification

Each test film shall be provided with a suitable leader, title and trailer, and shall be accompanied by a calibration of the level of the frequency recordings.

6. Calibration

6.1 Calibration Method. The film shall be calibrated by comparison with standards for which the signal level has been determined by the inductive loop method as described in the following reference:

Robert Schwartz, "Absolute measurement of signal strength on magnetic recordings: phase II," *Jour. SMPTE*, 66: 119–122, Mar. 1957.

6.2 Calibration Tolerance. The calibration shall be within ± ½ db of the true signal level.

7. Revision of American Standard Referred to in This Document

When the following American Standard referred to in this document is superseded by a revision approved by the American Standards Association, Incorporated, the revision shall apply:

American Standard Dimensions for 8mm Motion-Picture Film, PH22.17-1954

American Standard Specifications for

8mm Multifrequency Test Film, Perforated 1R-1500, Magnetic Type

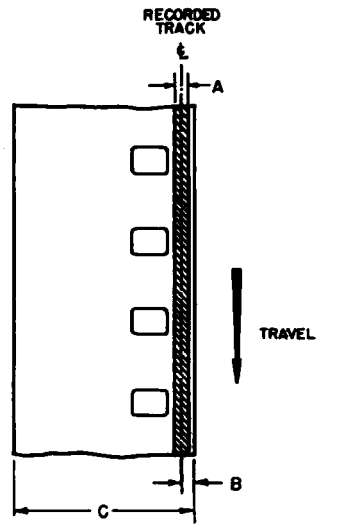
ASA
Reg. U.S. Pat. Off.
PH22.131-1962
* UDC 778.554.425

1. Scope

This standard specifies a multifrequency magnetic sound test film for use in standardizing the replay chain for 8mm magnetic sound film.

2. Test Film

2.1 Dimensions of Sound Record. The test film shall have an originally recorded 0.025-in. minimum-width magnetic sound record, the location and dimensions of which shall be as specified in the diagram and table.



Dimensions	Inches	Millimeters
A	0.025 min	0.64 min
B	0.015 ± 0.001	0.38 ± 0.03
C	0.314 nom	7.98 nom

2.2 Magnetic Coating. With the direction of film travel as shown in the diagram, the magnetic coating shall be on the upper face of the film.

2.3 Film Content. The film shall contain the following recorded frequencies:

Frequency, Cycles	Tone Footage, Feet	Signal Levels* db ref. 10 Gauss	Signal Levels* Absolute Level Gauss	Frequency, Cycles	Tone Footage, Feet	Signal Levels db ref. 10 Gauss	Signal Levels Absolute Level Gauss
7000†	15	+ 2.2		2000	3	0.15	
400	6	—10	3.16	3000	3	1.3	
50	3	—27.7		4000	3	1.7	
100	3	—21.7		5000	3	1.95	
200	3	—15.75		6000	3	2.1	
300	3	—12.3		7000	3	2.2	
500	3	— 8.1		400	6	—10	3.16
1000	3	— 3.15					

*The signal level tolerance shall be within ± 1.5 db.
†For azimuth adjustment.

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Sponsor: Society of Motion Picture and Television Engineers

*Universal Decimal Classification

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2.4 Mean Film Speed. In reproducing, the film shall pass through the equipment at a rate of 24 perforations per second (approximately 18 ft per minute) with a mean film speed tolerance of ±0.5 percent.

2.5 Frequency Tolerance. The recorded frequency signal shall not vary in excess of ±2 percent of the nominal frequency of each portion of the test track.

2.6 Reference Signal Level. The 400-cycle signal shall be −10 db absolute level (3.16 gauss) with reference to American Standard Specification for 8mm 400-Cycle Signal Level Test Film, Perforated IR-1500, Magnetic Type, PH22.130-1962.

2.7 Permissible Flutter. The total rms flutter of the sound record shall not exceed 0.1 percent as measured in accordance with American Standard Method for Determining Flutter Content of Sound Recorders and Reproducers, Z57.1-1954.

2.8 Distortion. The total harmonic distortion at any of the recorded frequencies below 3000 cycles shall not exceed 3.0 percent.

3. Film Stock

The film stock used for the test film shall be cut and perforated in accordance with American Standard Dimensions for 8mm Motion-Picture Film, PH22.17-1954.

4. Length of Film

The film shall be supplied in 100-ft lengths, stocked and furnished on reels having a hub of not less than 2 in. in diameter.

5. Identification

Each test film shall be provided with a suitable leader, title, and trailer.

6. Calibration

6.1 Calibration Method. The film shall be calibrated in accordance with the short-gap method as described in the following references:

J. D. Bick, "Methods of measuring surface induction of magnetic tape," *J. Audio Eng. Soc., 1:* 4, Jan. 1953. Reprinted, *Jour. SMPTE, 60:* 516-525, Apr. (Pt. II) 1953;

E. D. Daniel and P. E. Axon, "The reproduction of signals recorded on magnetic tape," *Proc. IEE, Part III:* 157, May 1953;

Robert Schwartz, Sheldon I. Wilpon and Frank A. Comerci, "Absolute measurement of signal strength on magnetic recordings," *Jour. SMPTE, 64:* 1–5, Jan. 1955.

6.2 Film Calibration. Each test film frequency shall be measured with a calibrated head as described in 6.1. The readings so determined shall be supplied with the test film.

6.3 Calibration Tolerance. The calibration shall be within ±½ db of the true signal level.

7. Revision of American Standards Referred to in This Document

When the following American Standards referred to in this document are superseded by a revision approved by the American Standards Association, Incorporated, the revision shall apply:

American Standard Dimensions for 8mm Motion-Picture Film, PH22.17-1954

American Standard Specification for 8mm 400-Cycle Signal Level Test Film, Perforated 1R-1500, Magnetic Type, PH22.130-1962

American Standard Method for Determining Flutter Content of Sound Recorders and Reproducers, Z57.1-1954

American Standard Dimensions for

Magnetic Sound Record on 8mm Motion-Picture Film, Perforated 1R-1500

ASA
Reg. U.S. Pat. Off.
PH22.135-1962
* UDC 681.84:778.534.4

1. Scope

1.1 This standard specifies the lateral location and dimensions of the magnetic sound record on 8mm motion-picture film.

1.2 This standard specifies the picture-sound separation of 8mm motion-picture film with a magnetic sound record and a 0.030-in. nominal width magnetic stripe.

2. Picture-Sound Separation

The magnetic sound record on the film shall precede the center of the corresponding picture by a distance of 56 ± 1 frame.

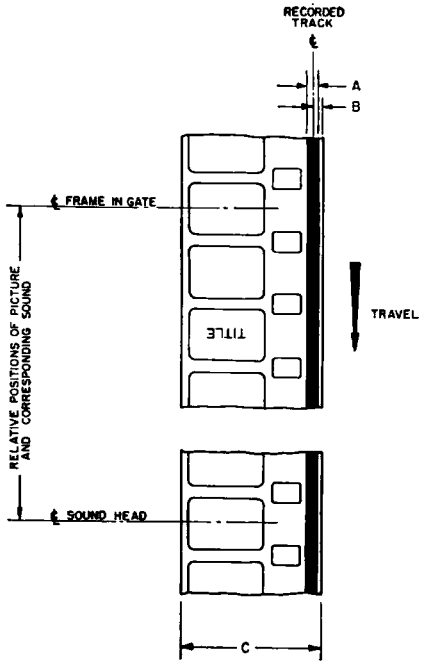
3. Magnetic Striping

3.1 With the direction of film travel as shown in the diagram, the magnetic striping shall be on the upper face of the film.

3.2 The magnetic striping shall be as specified in American Standard Magnetic Coating of 8mm Motion-Picture Film, PH22.88-1956.

4. Dimensions

The dimensions shall be as specified in the diagram and table.



Dimensions	Inches	Millimeters
A*	0.019 min	0.48 min
B	0.015 ± 0.001	0.38 ± 0.03
C	0.314 nom	7.98 nom

* This dimension is for tracks produced in equipment using the same head for recording and reproducing. In commercially produced prints intended for use on a variety of reproducers, it is recommended that a recording head be used capable of producing a 0.025-in. min width track having the same centerline.

5. Revision of American Standard Referred to in This Document

When the following American Standard referred to in this document is superseded by a revision approved by the American Standards Association, Incorporated, the revision shall apply: American Standard Magnetic Coating of 8mm Motion-Picture Film, PH22.88-1956.

Approved September 26, 1962, by the American Standards Association, Incorporated
Sponsor: Society of Motion Picture and Television Engineers

* Universal Decimal Classification

Printed in U.S.A.
ASA1M1162/50

American Standard Specifications for

16mm 400-Cycle Signal-Level Test Film, Photographic Type

ASA
Reg. U.S. Pat. Off.
PH22.45-1962
Revision of PH22.45-1955
* UDC 778.554.427

1. Scope

This standard specifies a 400-cycle signal-level test film for use in testing 16mm sound motion-picture projection equipment.

2. Test Film

2.1 The test film shall have an originally recorded, direct-playback, positive variable-area sound recording at an amplitude of 0.0480 ± 0.0015 in. Each film shall be measured for amplitude and the measurements shall be made at a point approximately mid-length of the film and at points between 5 ft and 10 ft from each end.

2.2 The location and dimensions of the recorded sound track shall be in accordance with American Standard Photographic Sound Record on 16mm Prints, PH22.41-1957.

2.3 The frequency of the recording shall be 400 ± 8 cycles per second.

2.4 The density of the dark portion of the sound track shall be between 1.2 and 1.4. The density throughout the length of the film shall be as uniform as is consistent with the state of the art.

2.5 The combined base and fog density shall be 0.05 ± 0.01, measured as diffuse transmission density in accordance with American Standard Diffuse Transmission Density, PH2.19-1959.

2.6 The total harmonic distortion of the recording shall not exceed 5 percent, and the fluctuation of the recorded level shall not exceed 2 percent.

2.7 Each film shall be run in a calibrated reproducer for the purpose of obtaining the level of recording; this level shall be compared with that of the controlled film of known characteristics and the difference shall be noted in the booklet furnished with each film. The level of the recording, as determined in 2.1 above, is approximately 2 db below the level of a fully-modulated sound track when recorded in accordance with 2.2.

3. Film Stock

The film stock used shall be of the low-shrinkage, safety type, cut and perforated in accordance with American Standard Dimensions for 16mm Film, Perforated One Edge, PH22.12-1953.

4. Identification

Each film shall be marked *ASA—PH22.45—400-Cycle Signal Level*. This marking shall be printed lengthwise in the picture area, and the spacing between consecutive titles shall be approximately 12 in.

5. Film Length

The film shall be supplied in 100-ft lengths.

6. Revision of American Standards Referred to in This Document

When the following American Standards referred to in this document are superseded by a revision approved by the American Standards Association, Incorporated, the revision shall apply:

American Standard Dimensions for 16mm Film, Perforated One Edge, PH22.12-1953

American Standard Photographic Sound Record on 16mm Prints, PH22.41-1957

American Standard Diffuse Transmission Density, PH2.19-1959

Note: A test film in accordance with this standard is available from the Society of Motion Picture and Television Engineers.

Approved September 26, 1962, by the American Standards Association, Incorporated
Sponsor: Society of Motion Picture and Television Engineers

* Universal Decimal Classification

Printed in U.S.A.
ASA1M1162/50