blancas y negras, y manchas de alta luz. Una verdadera falla en la máquina reveladora puede resultar a causa de indeseable, pero prevenible acumulación de partículas. Ha sido demostrado que un uso correcto del blanqueador y de la formulación química en conjunción con un tratamiento adecuado después del blanqueamiento podrían eliminar estos problemas. Se recomiendan nuevas condiciones de abastecimiento del blanqueador. Además, se presenta información con relación al revelado a alta temperatura y el uso de blanquedores especialmente formulados.

Progreso en normas de cinta-video-Un informe del Comité

ROBERT M. MORRIS [488]

Este informe abarca el estado actual de las labores del Comité de Grabaciones de Cinta-Video de la SMPTE (Sociedad de Ingenieros de Cinematografía y Televisión) y pone al día el informe de C. E. Anderson, publicado en junio de 1960. Está siendo estudiado extensamente el asunto de énfasis previo y posterior. Las normas propuestas que está considerando la ASA se refieren a la velocidad y a las dimensiones de la cinta, a las especificaciones de la guía de la cinta y a las características de las grabaciones de audio. Han sido adopatas las prácticas recomendadas en lo que respecta a niveles de modulación, radio y posición de la guía de vacío y especificaciones de la señal. Las prácticas concernientes a los empalmes de parche y la grabación de pista de control están en manos del Comité de Normas. Una norma especificando las dimensiones de los carretes está esperando la aprobación final y otra norma acerca de las dimensiones para grabación de video, de audio y de control está siendo revisada. Asimismo está en estudio el desarrollo y perfeccionamiento en grabaciones a razón de 7½ pulgadas por segundo, y también la pista sesgada o los grabadores helicoidales y las señales en color. La CCIR está considerando las recomendaciones de la Sociedad con respecto a la adopción internacional de las normas.

Netzanschlussgeräte für Transistor-Fernsehkameras

R. MATCHELL, R. B. HALE und G. E. HAYDEN-PIGG [455]

Die ausschliessliche Anwendung von Transistoren vermindert beträchtlich die gesamte Leistung benötigt bei Fernsehkameras. Jedoch, die allgemeine hohe Potentiale, sowie Abtast- und Fokussierungsleistungen erforderlich für die 4½" Orthikon-Röhre, stellen ganz besondere Probleme vor, wenn die Kamera, aus einer entfernter Stelle, leistungsfähig von der Kontrollstelle zu ernähren ist. Diese besondere Probleme werden beschrieben und einige Auflösungen werden gegeben. (*Üb. Alex Quiroga*)

Optische Messungen am Telstar-Nachrichten-satelliten zur Bestimmung der Orientierung der Drallachse sowie der Drallgeschwindigkeit

J. S. COURTNEY-PRATT, J. W. MCLAUGHLIN und J. H. HETT [462]

Am Telstar-Satelliten wurden ein Planarspiegel und zwei Facettenspiegel angebracht. Ein photoelektrisches Fernrohr wurde auf einem Radar-Antennensockel montiert. Die erforderlichen Registriergeräte wurden gebaut. Das photoelektrische Cassegrain-Fernrohr mit einem Objektivdurchmesser von 30 cm konnte nach einer auf Magnetband registrierten Bahnvorausberechnung direkt auf den Satelliten gerichtet werden, und es war gelegentlich möglich, die Richtgenauigkeit durch Einstellung auf den vom Satelliten gesendeten Mikrowellenstrahl oder durch Korrekturen auf Grund von visueller Beobachtung mit anderen Fernrohren mit bis zu 15 cm Objektivdurchmesser zu verbessern. Es war möglich, die von den am Telstar angebrachten Spiegeln reflektierten Sonnenlichtblitze auf Schrägentfernungen bis zu 6000 km wahrzunehmen. Aus gepaarten Beobachtungen dieser Art oder durch Kombination dieser Beobachtungswerte mit Fernmessdaten von den Sonnensensoren des Satelliten konnte die Orientierung der Drallachse des Telstar bestimmt werden und ihre zeitliche Änderung untersucht werden. Diese normale Präzession der Drallachse ergibt sich hauptsächlich aus dem Zusammenwirken des magnetischen Restmoments des Satelliten mit dem Magnetfeld der Erde. Auch war es möglich, zu ermitteln, was für Bewegungen die Drallachse bei Betätigung der Drehmomentspule ausführte.

Die Drallgeschwindigkeit des Satelliten sowie ihre zeitliche Abnahme wurden gemessen. Die Drallgeschwindigkeit wird in etwa 750 Tagen auf 1/10 ihres ursprünglichen Wertes gesunken sein.

Die Sonnenblitze wurden photographisch festgehalten, und es wird gegenwärtig untersucht, ob es durchführbar ist, eine präzise photoelektrische Erfassung der Auftrittszeit der Blitze mit einer hochpräzisen photographischen Beobachtung der Momentanposition des Satelliten relativ zum Fixsternhintergrund zu verbinden.

Das Schwefelsäure-Kaliumbichromat-Bleichbad im Schwarz-Weiss Umkehrverfahren

J. W. ZUIDEMA [485]

Obwohl das Bleichbad eine relativ einfache Funktion hat, kann es doch in der Entwicklung von schwarzweissen Umkehrfilmen zahlreiche praktische Schwierigkeiten verursachen, wie z.b., Silberbehaltung, schwarz-weisse Flecken und Verfärbung der Lichtfeldstellen. Versagen von automatischen Entwicklungsanlagen kann durch unerwünschte, aber durchaus vermeidbare Sinkstoffablagerung hervorgerufen werden. Es ist erwiesen, dass diese Schwierigkeiten durch fehlerfreie Anwendung des Bleichbades und der chemischen Zusammensetzung sowie durch ausreichende Nachbehandlung vermieden werden können. Neue Ergänzungsverhältnisse für das Bleichbad werden empfohlen. Ausserdem sind Unterweisungen in Bezug auf Entwicklung bei höherer Temperatur und Gebrauch von besonders zusammengesetzten Bleichbädern angegeben.

Fortschritte in Videobandnormung: Ein Komiteebericht

ROBERT M. MORRIS [488]

Der Bericht gibt einen Überblick über den gegenwärtigen Arbeitsstatus des SMPTE-Komitees für Videobandaufnahmen und bringt den Bericht von C. E. Anderson vom Juni 1960 auf den heutigen Stand. Vor- und Nachentzerrungen werden eingehend untersucht. Die dem ASA vorgeschlagenen Normen betreffen Bandgeschwindigkeit und Abmasse, Bandvorspanndaten und Eigenschaften von Audioaufnahmen. Die vorgeschlagenen Methoden für Modulationspegel, Vacuumführungsradius und Lage, und Signaldaten werden adoptiert. Methoden für Bandklebungen und Kontrollaufnahmen sind in den Händen des Standardkomitees. Die Norm für Spulenabmessungen steht kurz vor der Adoption und Normen für Abmessungen von Video- und Audiokontrollaufnahmen sind unter Betrachtung. Entwicklungen für 7,5 Zoll/Sek.-Aufnahmen, Schrägspur oder Helicalrecorder, und Farbaufnahmen werden zur Zeit untersucht. Die CCIR betrachtet die SMPTE-Vorschläge mit Hinblick auf International-Normung.

standards and recommended practices

Approved American Standards

On March 28, 1963 the American Standards Association approved the following group of three proposed revisions of American Standards and three proposed American Standards: PH22.57, Specifications of 16mm Buzz-Track Test Film, Photographic Type; PH22.88, Dimensions of Magnetic Striping of 8mm Motion-Picture Film, Perforated 1R-1500, and PH22.101, Dimensions of Magnetic Striping of 16mm Motion-Picture Film, Perforated 2R-3000, are all reaffirmations of earlier issues differing only in a minor editorial manner.

PH22.133, Screen Luminance and Viewing Conditions for 35mm Review Rooms, is a new companion standard to PH-22.124 for 35mm projection dealing specifically with review rooms. It should be pointed out that for the first time the color temperature of the light reflected from the screen is specified. PH22.132, Specifications of 16mm 400-Cycle Signal Level Test Film, Perforated 1R-3000, Magnetic Types, is an addition to the set of test film standards covering the test materials currently supplied by the SMPTE.

PH22.136, Dimensions of Magnetic Striping of 16mm Motion-Picture Film, Perforated 8mm, 2R-1500, is a companion standard to PH22.88 which specifies the striping of 8mm film. PH22.136 is intended for use in those cases where the striping is done prior to the slitting of the original film.

Copies of these standards are available from the American Standards Association, 10 East 40 St., New York 16, N. Y., for a nominal fee. — *A.E.A.*

American Standard Specifications of

16mm Buzz-Track Test Film, Photographic Type

ASA
Reg. U.S. Pat. Off.
PH22.57-1963
Revision of PH22.57-1955
* UDC 778.534.427

1. Scope

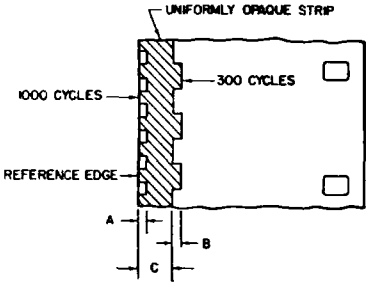
This standard specifies a buzz-track test film used for checking the lateral position of the sound scanning beam in 16mm motion-picture sound reproducers.

2. Test Film

2.1 The test film shall have originally recorded 300-cycle and 1000-cycle signal tracks on opposite sides of the central exposed strip as shown in the figure.

2.2 The position of the tracks, weave in running film on the recorder included, shall be in accordance with the dimensions given in the table.

2.3 The central exposed strip and the exposed portions of the two signal tracks shall have a density of 1.0 + 0.4 − 0.0.



Dimensions	Inches	Millimeters
A	0.0200 + 0.0005 − 0.0000	0.508 + 0.013 − 0.000
B	0.018 ± 0.001	0.46 ± 0.03
C	0.0960 + 0.0000 − 0.0005	2.438 + 0.000 − 0.012

3. Film Base

The film base used shall be of the low-shrinkage safety type, cut and perforated in accordance with American Standard Dimensions for 16mm Film, Perforated One Edge, PH-22.12-1953.

4. Identification

Each film shall be marked "ASA—PH22.57—Buzz-Track." This marking shall be printed lengthwise in the picture area, the spacing between consecutive titles to be approximately 12 in.

5. Film Length

The film shall be supplied in 100-ft lengths.

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

Approved March 28, 1963, by the American Standards Association, Incorporated
Sponsor: Society of Motion Picture and Television Engineers
* Universal Decimal Classification

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ASA1M663/50

American Standard Dimensions of

Magnetic Striping of 8mm Motion-Picture Film, Perforated 1R-1500

ASA
Reg. U.S. Pat. Off.
PH22.88-1963
Revision of PH22.88-1956
* UDC 778.534.425:771.526

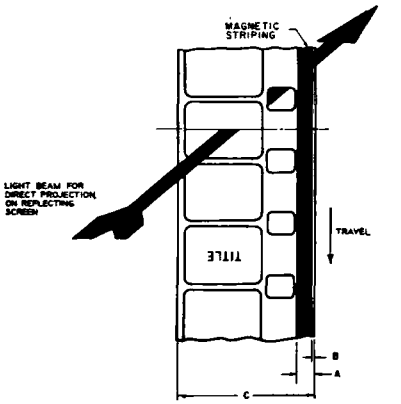
1. Scope

This standard specifies the location and dimensions of the magnetic striping material applied to 8mm motion-picture film to be used for both picture and sound.

2. Magnetic Striping

2.1 The location and dimensions of the magnetic striping shall be as given in the figure and table.

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



3. Film

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

Dimensions	Inches	Millimeters
A	0.031 max 0.028 min	0.79 max 0.71 min
B	0.000 + 0.005 − 0.000	0.00 + 0.13 − 0.00
C	0.314 nom	7.98 nom

APPENDIX

(This Appendix is not a part of American Standard Dimensions of Magnetic Striping of 8mm Motion-Picture Film, Perforated 1R-1500, PH22.88-1963, but is included to facilitate its use.)

The outer edge of the magnetic striping ideally should be coincident with the edge of the film, and for this reason the dimension B is given as zero. The tolerance listed is based upon practical considerations of present striping techniques and film handling mechanisms. Every effort should be made to reduce this tolerance as far as possible, consistent with the best uniformity of stripe thickness and flatness of stripe profile.

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American Standard Dimensions of

Magnetic Striping of 16mm Motion-Picture Film, Perforated 2R-3000

ASA
Reg. U.S. Pat. Off.
PH22.101–1963
Revision of PH22.101-1956

*UDC 778.534.425:771.526

1. Scope

This standard specifies the location and dimensions of the magnetic striping material applied to 16mm motion-picture film with perforations along both edges to be used for both picture and sound.

2. Magnetic Striping

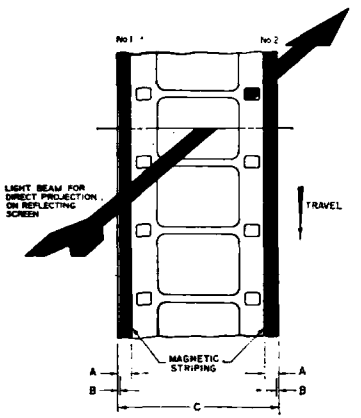
2.1 The location and dimensions of the magnetic striping shall be as given in the figure and table.

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

2.3 The No. 1 magnetic stripe is intended for the sound record.

3. Film Base

The film base used shall be of the low-shrinkage safety type, cut and perforated in accordance with American Standard Dimensions for 16mm Film, Perforated Two Edges, PH22.-5-1953.



Dimensions	Inches	Millimeters
A	0.031 max 0.028 min	0.79 max 0.71 min
B	0.000 + 0.005 − 0.000	0.00 + 0.13 − 0.00
C	0.628 nom	15.95 nom

NOTE: The No. 2 stripe is an optional balance stripe and may be a magnetic coating or another material of the same thickness.

APPENDIX

(This Appendix is not a part of American Standard Dimensions of Magnetic Striping of 16mm Motion-Picture Film, Perforated 2R-3000, PH22.101–1963, but is included to facilitate its use.)

The outer edge of the magnetic striping ideally should be coincident with the edge of the film, and for this reason the dimension B is given as zero. The tolerance listed is based upon practical considerations of present striping techniques and film handling mechanisms. Every effort should be made to reduce this tolerance as far as possible, consistent with the best uniformity of stripe thickness and flatness of stripe profile.

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* Universal Decimal Classification

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American Standard Specifications of

16mm 400-Cycle Signal Level Test Film, Perforated 1R-3000, Magnetic Type

ASA
Reg. U.S. Pat. Off.
PH22.132–1963

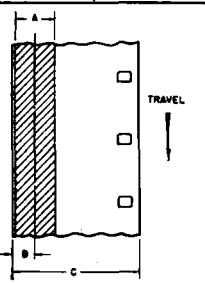
*UDC 778.534.425

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 16mm magnetic sound systems.

2. Test Film

2.1 Dimensions of Sound Record. The location and dimensions of an originally recorded sound record shall be in accordance with American Standard 200-Mil Magnetic Sound Record on 16mm Film Base Perforated One Edge, PH22.97-1956. (See figure and table of dimensions.)



Dimensions	Inches	Millimeters
A	0.200 ± 0.002	5.08 ± 0.05
B	0.103 ± 0.002	2.62 ± 0.05
C	0.630 nom	16 nom

2.2 Test Frequencies. The recorded frequency shall be 400 ± 4 cycles per second.

2.3 Mean Film Speed. The recording and reproducing film speed shall be at a mean film rate of 24 perforations per second (approximately 36 ft per minute) with a tolerance of ±1 percent.

2.4 Distortion. The total harmonic distortion of the recorded frequency shall not exceed 1 percent.

2.5 Permissible Flutter. The total rms flutter of the sound record shall not exceed 0.07 percent, as measured in accordance with American Standard Method for Determining Flutter Content of Sound Recorders and Reproducers, Z57.1-1954.

2.6 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 3.1.

2.7 Film Stock. The film stock used for the test film shall be cut and perforated in accordance with American Standard Dimensions for 16mm Film, Perforated One Edge, PH22.12-1953.

2.8 Film 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.

3. Calibration

3.1 Calibration Method. The film shall be calibrated in accordance with 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.

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

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

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Sponsor: Society of Motion Picture and Television Engineers

* Universal Decimal Classification

Printed in U.S.A.
ASA1M663/50

American Standard

Screen Luminance and Viewing Conditions for 35mm Review Rooms

ASA

Reg. U.S. Pat. Off.

PH22.133–1963

*UDC 778.2

1. Scope

This standard specifies the luminance (brightness) of the projection screen and viewing conditions for all 35mm review rooms.

2. Definitions

2.1 The measurements of screen luminance and of color of projection light are made with the projector in complete operation but with no film in the aperture.

2.2 The measurement of stray light is made by projecting onto the center of the screen an image of an opaque test object placed at the center of the projector aperture. The test object preferably should have a diameter of 0.050 in. (5 percent of frame width) and should not exceed 0.100 in. The balance of the projected beam is attenuated by any suitable neutral density film that produces through the normal projection system an average screen luminance equal to 10 percent of the luminance of the screen as measured in 2.1. All sources of illumination in the auditorium, such as exit and aisle light, shall be used in their normal manner. The stray light level on the screen is the measured luminance in the sharply focused image of the opaque test object.

3. Luminance Level

3.1 The screen luminance distribution shall be symmetrical about the geometric center of the screen.

3.2 The luminance at the center of the screen shall be 16 ± 2 foot-lamberts (55 ± 7 nits) and shall be uniform over the standard observing area (as defined in 4.1).

3.3 The luminance at a distance 5 percent of the screen width from the side edges of the screen, and on its horizontal axis, shall be 80 ± 10 percent of the center luminance as prescribed and measured in 3.2 above.

3.4 Light reflected from the screen shall approximate black-body spectral distribution at a color temperature of 5400K ± 400K.

3.5 The stray light level on the screen measured as described in 2.2 shall be no more than 0.4 percent of the screen luminance at the center of the screen.

4. Viewing Conditions

4.1 The standard observing area, within which all observers shall be seated during use of the facilities as a review room, shall be:

(1) Within the limits of 15 degrees on each side of a perpendicular to the midpoint of the screen as a center, in both the horizontal and vertical planes;

(2) Within the limits of 3 ± 1 picture heights from the screen.

4.2 No stray light or illuminated area with a luminance in excess of 1 foot-lambert (3.4 nits) shall be visible from the standard observing area.

4.3 Observers should have an accommodation period of 5 minutes to the brightness level of normal stray light in the review room.

5. Measurement

Screen luminance shall be measured with a photometer having the spectral sensitivity of a standard observer as specified by the International Commission on Illumination in 1931. The acceptance angle of the photometer shall be as small as is practical, and shall be so used that it accepts light from a screen area no larger than a circle whose diameter is 10 percent of the screen width.

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Sponsor: Society of Motion Picture and Television Engineers

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ASA1M663/59

APPENDIX

(This Appendix is not a part of American Standard Screen Luminance and Viewing Conditions for 35mm Review Rooms, PH22.133–1963, but is included to facilitate its use.)

A1. Review Rooms

During the preparation of motion pictures the producer, the motion-picture film laboratory personnel, and others examine the film many times from the original test shots through many stages to the final release prints. The films are projected in a specialized theater known as a "review room." These installations are designed to permit judgments of projected picture quality and determinations of the suitability and acceptability of release prints, daily and work prints, production tests, printer and processing tests, etc. The rooms are constructed to accommodate a small reviewing group of usually 10–20 people. The actual picture size may be small or large depending upon the space available, but the viewing conditions are chosen to duplicate as nearly as possible actual theater viewing from the most desirable seating locations. All of the viewing conditions are capable of precise control and it is generally practical in review rooms to hold these variables to a minimum tolerance.

A2. "Normal Print"

To provide interchangeability in motion-picture projection, it is desirable that print quality conform to that of a "normal print" so that theaters can be set to operate at known projection conditions, and will thereby be able to exhibit projected pictures of good pictorial quality. It has not been possible to specify this "normal print" in terms of its optical density and other objective measurements because of the difficulties of specifying artistic quality in scientific terms. Accordingly, the "normal print" is defined as that print which conveys the desired artistic impression when projected under review room conditions as described by this standard.

A3. Theatrical Projection

Standards for theater screen luminance, such as American Standard Screen Luminance for Indoor Theaters, PH22.124-1961, and others under study are intended to reproduce for the theater audience the same artistic impression given in the review room. It is anticipated that there shall be only one review room condition, but that there may be several theater conditions—providing identical pictorial impressions under such widely different viewing conditions as exist in indoor theaters, drive-in theaters, auditoriums, etc.

A4. Drive-In Theater Projection

In the case of drive-in theater application, it is recognized that lighter prints are desirable.

A5. Meter Acceptance Angle

The maximum permissible acceptance angle of the luminance photometer will depend upon the instrument design and method of use, the size of the screen, and other factors. The acceptance angle of a suitable instrument must be such that a reduction in this angle (followed by necessary recalibration) does not change the magnitude of any reading specified in Section 2 by more than ± 5 percent. The limiting conditions for the reliable use of such meters should be included in the manufacturer's specifications.

A6. Stray Light

Stray light, as defined in 2.2, includes non-image-forming light, such as lens flare, rereflected projection light, ambient light, etc. Since the factors responsible for such stray light do not change unexpectedly, it will usually be sufficient to make stray light measurements at intervals. The two measurement procedures recommended for securing the proper screen image are as follows: (1) prepare a test film with an average light transmission of 10 percent, having in the center of each frame a black, circular test object of density 3.0 or greater, or (2) mount in the projector an opaque heat-resisting disk as a test object, locating it at the center of the aperture, between the aperture plane and the projection lens and within $^1/_{16}$ in. or less of the film plane; simultaneously project a film which has been printed to give a uniform transmission of 10 percent.

A7. Conversion of Units

Screen luminance in the U.S. is customarily measured in foot-lamberts, although in international usage, the nit is the preferred unit. One nit = 0.2919 foot-lamberts; 1 foot-lambert = 3.426 nits.

A8. Image Luminance

Note that this standard specifies screen luminance with the projector operating and no film in the aperture. When films are projected, the average image luminance will be considerably below this level, and will approximate the conditions of 2.2 for measurement of stray light.