

Proposed Revision of American Standards

Published here for a three-month period of trial and criticism are four proposed revisions of American Standards: PH22.3, 35mm Photographic Sound Motion-Picture Film, Usage in Projector; PH22.43, 16mm 3000-Cycle Flutter Test Film, Photographic Type; PH22.51, Intermodulation Tests for 16mm Variable-Density Photographic Sound Prints; PH22.56, Nomenclature for Motion-Picture Film Used in Studios and Processing Laboratories.

All comments should be addressed to Society Headquarters, attention of J. Howard Schumacher, *Staff Engineer*, prior to August 15, 1960. If no adverse comments are received, the proposals will be submitted to ASA Sectional Committee PH22 for further processing as American Standards.—*J.H.S.*

Erratum

For: Proposed SMPTE Recommended Practice RP 7
 Read: . . . RP 6 — Modulation Levels for Monochrome 2-Inch Video Magnetic-Tape Recording, *Jour. SMPTE*, 69: 271, Apr. 1960.

Proposed American Standard Intermodulation Tests for 16mm Variable-Density Photographic Sound Prints

PH22.51
 Revision of
 Z22.51-1946

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rent setting and printed at the same printer light step.

1. Scope

1.1 This standard specifies the technique of measuring, by the intermodulation method, the signal distortion introduced during recording, processing, printing and reproduction of 16mm variable-density sound motion-picture prints.

2.2.2. Section 1 shall be recorded with a combination of a low frequency, nominally 60 cps, and a high frequency, nominally 2000 cps, the complex wave having a peak amplitude of 2.0 ± 0.5 db below full modulation, in which the high-frequency level shall be 12.0 ± 1 db below that of the low frequency. In the following the low and high frequencies shall be as-

2. Test Method

2.1 The test track shall consist of two sections, recorded in sequence at the same lamp-cur-

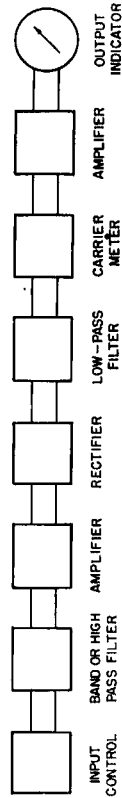


Fig. 1. Arrangement of Intermodulation Test Apparatus to Determine Distortion on Test Track

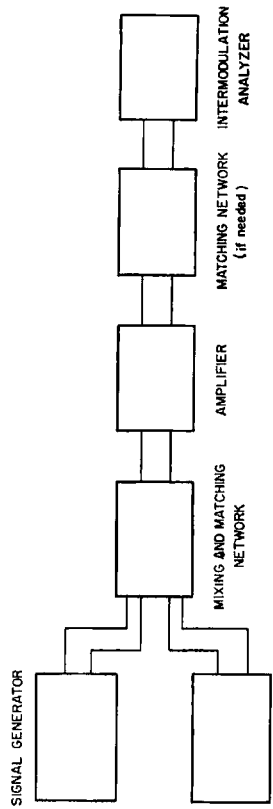


Fig. 2. Arrangement of Intermodulation Test Apparatus to Determine Intermodulation in Amplifier

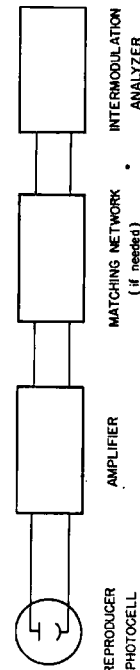


Fig. 3. Block Diagram of an Acceptable Intermodulation Analyzer

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the frequency range of 2000 ± 400 cps. The intermodulation analyzer should have sufficient amplification to measure the high-frequency carrier at an input level of -10 dbm, as for example, in the test described in Appendix E.

References

- J. G. Frayne and R. R. Scoville, "Analysis and measurement of distortion in variable-density recording," *Jour. SMPTE*, 32: 684, June 1939.
- J. G. Frayne and Halley Wolfe, *Sound Recording*, John Wiley & Sons, New York, 1949 (Chapter 21).
- C. J. Lebel, "An experimental study of distortion," *J. Audio Eng. Soc.*, 2: 215-218, Oct. 1954.
- J. Ross Macdonald, "The calibration of amplitude modulation meters with a heterodyne signal," *Proc. I.R.E.*, 42: 1515-1518, Oct. 1954.
- G. W. Reed and R. R. Scoville, "An improved intermodulation measuring system," *Jour. SMPTE*, 50: 162, Feb. 1948.
- W. J. Warren and W. R. Hewlett, "An analysis of the intermodulation method of distortion measurement," *Proc. I.R.E.*, 36: 457-466, Apr. 1948.

Appendix F

Volume indicators such as the Standard Volume Indicator described in American Standard Volume Measurements of Electrical Speech and Program Waves, C16.5-1954, do not indicate true peak values for complex signals such as the combination of 60 cps and 2000 cps. The peak value of the complex signal will be 2.0 db ± 0.5 db below full modulation if the low-frequency signal alone is 4.0 db below full modulation.

Appendix G

Care should be taken that the reproducer photocell and coupling circuit to the reproducer amplifier do not introduce a significant amount of intermodulation distortion. The complete reproducing system should be checked at reasonable intervals to assure acceptable test conditions.

Appendix H

The intermodulation analyzer should measure with frequency discrimination of less than ± 1 db an amplitude modulated signal for a sideband width within

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sumed to be 60 cps and 2000 cps, respectively. The test signals shall be not more than ± 3 percent from the nominal frequencies to be used. Neither frequency shall contain more than 5 percent harmonic distortion. A suitable length for this section is 6 ft, which provides about 10 sec in running time.

2.3 Section 2 shall be an unbiased, unmodulated track of sufficient length for density measurement.

2.4 The test tracks, as described in 2.2 and 2.3, shall be recorded and developed under standard conditions for the process being checked, and a series of prints of both sections 1 and 2 made at suitable printer lights to give a range of print densities above and below the expected optimum density. There shall be sufficient unspliced film ahead of the test track to permit stabilization of printer speed. The intermodulation distortion content of the recorded section of the test-track print shall then be measured using equipment as shown in Fig. 1. In making the measurements, the test-track print shall be run through the soundhead of the film-reproducing device in the proper manner according to the position of the soundtrack.

APPENDICES

(These appendices are not a part of Proposed American Standard Intermodulation Tests for 16mm Variable-Density Photographic Sound Prints, PH22.51, but are included to facilitate its use.)

Appendix A

The intermodulation method is a means of measuring distortion which differs from the harmonic method in that the former employs a low frequency and a high frequency at one-fourth the amplitude of the low frequency, the combination being simultaneously recorded on the sound negative. Any distortion in the overall process causes a change in high-frequency amplitude in portions of the low-frequency cycle. The ratio of the average variation in amplitude of the higher frequency in the reproduced wave to its original amplitude is called the intermodulation distortion. Intermodulation distortion test results are not directly proportional to harmonic distortion measurements.

Appendix B

Through measurements of intermodulation distortion at various print densities, it is possible to choose a print density which will give sound prints having minimum intermodulation distortion and hence optimum quality for the particular method of processing employed. For good results the intermodulation distortion minima should not exceed 10 percent.

Appendix C

In most cases the prints mentioned in 2.4 will be in the density range from 0.4 to 0.7.

Appendix D

The variables mentioned in 2.5 and 2.6 include the films (both sound negative and print), recorder lamp current, negative gamma, positive gamma, spectral-energy distribution of printer light and type of printer (contact or optical). Any type of modulation in the amplitude of the higher frequency at a lower frequency rate, such as may result from variations in the degree of contact between negative and print in the contact printer, will be also measured on an intermodulation analyzer.

Appendix E

A periodical test for spurious variations is recommended, whereby a third section of test track should be recorded as described for section 1 in paragraph 2.2, except that the low-frequency signal is omitted. Intermodulation distortion measured from this recording will be other than that caused by the nonlinearity of the negative exposure-print density characteristic.

Proposed American Standard 16mm 3000-Cycle Flutter Test Film, Photographic Type

PH22.43

Revision of
PH22.43-1953

1. Scope

1.1 This standard specifies a 3000-cycle sound test film for use in determining the amount of flutter in 16mm sound motion-picture projectors.

2. Test Film

2.1 Recording. The test film shall have either an originally recorded, direct-playback positive variable-area sound record or an originally recorded variable-density sound record developed as a toe record.* The recorded frequency shall be within ± 25 cycles of the nominal 3000-cycle frequency. The modulation of the recording shall be 80 ± 5 percent. The output level of the film shall be constant within tolerance of ± 0.0015 in. when recording variable-area sound records with a nominal amplitude of 0.055 in. The recording shall be accomplished in a recorder so constructed as to keep the flutter content to the absolute minimum consistent with the state of the art. The total rms flutter content of the film shall be less than 0.07 percent upon shipment by the test manufacturer, as defined in American Standard Method of Determining Flutter Content of Sound Recorders and Reproducers, Z57.1-1954. The waveform distortion of the recording shall not exceed 5 percent.

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

2.3 Standard Length of Film. The standard length of the flutter test film shall be 380 ft.

2.4 Leader and Trailer. Each test film shall be furnished with a suitable leader, title and trailer.

3. Revision of American Standard Referred to in This Document

3.1 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 Method of Determining Flutter Content of Sound Recorders and Reproducers, Z57.1-1954.

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

*References

Donald Mackenzie, "Straight-line and toe records with the light valve," *Jour. SMPTE*, 17: 172-202, Aug. 1931.

C. R. Keith and V. Pagniarolo, "Direct-positive variable density recording with the light valve," *Jour. SMPTE*, 52: 690-698, June 1949.

35mm Photographic Sound Motion-Picture Film, Usage in Projector

PH22.3

Revision of
PH22.3-1954

1. Scope

1.1 This standard specifies the location of the photographic emulsion, the rate of projection and the relationship between photographic sound and picture of 35mm sound motion-picture film.

2. Position of Emulsion

2.1 Except for special processes, the emulsion shall be toward the light source in the projector as shown in the diagram.

3. Rate of Projection

3.1 The rate of projection shall be 24 frames per second.

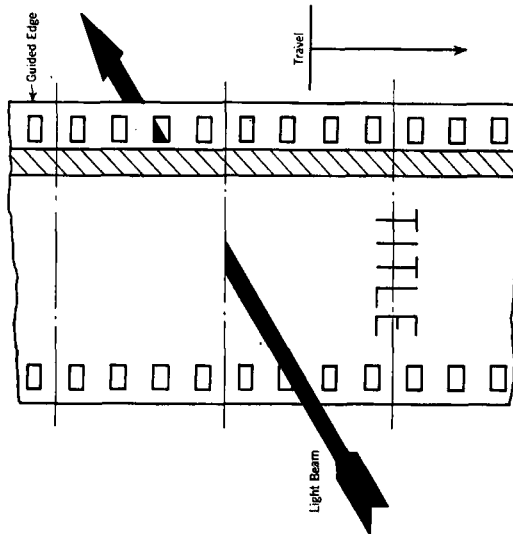
4. Relationship Between Photographic Sound and Picture

4.1 When the photographic sound record is reproduced, the distance from the center of

the projector aperture to the photographic sound scanning point shall be adjusted to bring the picture and photographic sound into synchronism for the average observer. Usually this separation will be 20 frames, and this will provide synchronism for an observer at a distance of 50 ft from the speaker. The location and dimensions of the photographic sound record shall be as specified in American Standard Photographic Sound Record on 35mm Prints, PH22.40-1957.

5. Revision of American Standard Referred to in This Document

5.1 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 35mm Prints, PH22.40-1957.



Drawing shows film as seen from the light source in the projector.

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Nomenclature for Motion-Picture Film Used in Studios and Processing Laboratories

PH22.56

Revision of
PH22.56-1947

1. General

1.1 **Motion-Picture Film.** Motion-picture film is a thin flexible ribbon of transparent plastic having perforations and bearing one or more sensitized layers capable of producing photographic images.

Notes: The term "film" may be applied to unexposed film, to exposed but unprocessed film and to exposed and processed film.

1.1.1 **Raw Stock.** Raw stock is film which has not been exposed or processed.

1.1.2 **Film Base.** Film base is the plastic material upon which a photographic emulsion is coated; namely the support for the emulsion in photographic film.

Notes: All film base manufactured in the United States for motion-picture use since 1952 has been safety base.

1.1.2.1 **Safety Base.** Safety base is the slow-burning film support used for motion-picture films which complies with American Standard Motion-Picture Safety Film, PH22.31-1958.

1.2 **Magnetic Film.** Magnetic film is a film base having perforations along one or both edges and bearing a ferromagnetic coating capable of accepting magnetic records.

Notes: Unperforated materials usually are referred to as magnetic tape.

1.3 **Film Perforations.** Film perforations are the regularly and accurately spaced holes that are punched throughout the length of motion-picture film. These holes are engaged by the teeth of various sprockets and pins by which the film is transported and positioned as it travels through cameras, processing machines, projectors and other film-handling machinery.

1.3.1 **Perforation Pitch.** The perforation pitch is the distance from the bottom edge of one perforation to the bottom edge of the next perforation, measured along the length of the film.

Notes: Perforations are being identified currently by two-letter designations such as BH (Bell & Howell),

KS (Kodak Standard), DH (Dubray-Howell) or CS (CinemaScope). The numeral, such as 1866, designates the pitch in ten-thousandths of an inch. The designation 1R, 2R or 4R, used with films having 16mm perforations, refers to the number of rows of perforations across the narrow dimension of the film.

1.3.2 **35mm Perforation, BH-1866.** The 35mm negative perforation has sharp corners, curved sides, a maximum width of 0.110 in. and a height of 0.073 in. (American Standard Dimensions for 35mm Motion-Picture Short-Pitch Negative Film, PH22.93-1953).

Notes: This perforation is used for negative and some special-purpose 35mm films.

1.3.3 **35mm Perforation, KS-1870.** The 35mm positive perforation is rectangular in shape, with a width of 0.110 in., a height of 0.078 in. and a fillet in each corner with a radius of 0.020 in. (American Standard Dimensions for 35mm Motion-Picture Positive Raw Stock, PH22.36-1954).

Notes: This perforation is used on most positive 35mm film.

1.3.4 **35mm Perforation, DH-1870.** This perforation is rectangular in shape, with a height of 0.073 in., a width of 0.110 in. and a fillet in each corner with a radius of 0.013 in. (American Standard Dimensions for 35mm Motion-Picture Film Alternate Standards for Either Positive or Negative Raw Stock, PH22.1-1953).

Notes: This perforation is used on 35mm color print film.

1.3.5 **35mm Perforation, CS-1870.** This perforation is rectangular in shape, with a height of 0.073 in., a width of 0.078 in. and a fillet in each corner with a radius of 0.013 in. (American Standard Dimensions for 35mm Motion-Picture Films, CS-1870, PH22.102-1956). The outer edge of this perforation is at a different distance from the edge of the film than the other 35mm film perforations listed above.

Notes: This perforation is used mainly on color positive film.

1.3.6 **16mm Perforation.** The 16mm perforation is rectangular in shape, with a height

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of 0.050 in., a width of 0.072 in. and a fillet in each corner with a radius of 0.010 in. It is used on the following films:

1.3.6.1 35mm Motion-Picture Film Perforated 32mm, 2R-2994. This is a 35mm film with 16mm perforations so arranged that if 1/2 mm were slit from each edge of the film and the film were slit down the middle, two 16mm films would result, each having one row of perforations. The perforation pitch (0.2994 in.) is normally used for negative film and some special-purpose films (American Standard Dimensions for 35mm Motion-Picture Film, Perforated 32mm, 2R-2994, PH22.73-1958).

1.3.6.2 35mm Motion-Picture Film Perforated 32mm, 2R-3000. This is a 35mm film with 16mm perforations so arranged that when 1 1/2 mm are slit from each edge of the film and the film is slit down the middle, two 16mm films result, each with one row of perforations. The perforation pitch specified is normally used for positive film and some special-purpose films.

1.3.6.3 32mm Motion-Picture Film, 2R-3000. This is a film 32mm in width which when slit down the middle results in two 16mm films each having one row of perforations (American Standard Dimensions for 32mm Motion-Picture Film, 2R-3000, PH22.71-1957). This perforation pitch is used mainly on positive film.

1.3.6.4 32mm Motion-Picture Film, 4R-3000. This is a film 32mm in width which when slit down the middle results in two 16mm films each having two rows of perforations (American Standard Dimensions for 32mm Motion-Picture Film, 4R-3000, PH22.72-1957). This perforation pitch is normally used on positive film.

1.3.6.5 16mm Motion-Picture Film, 1R-2994. This film is 16mm in width, perforated along one edge only (American Standard Dimensions for 16mm Motion-Picture Film, 1R-2994, PH22.109-1958). This perforation pitch is normally used on negative film.

1.3.6.6 16mm Motion-Picture Film, 1R-3000. This film is 16mm in width, perforated along one edge only (American Standard Dimensions for 16mm Film, Perforated One Edge, PH22.12-1953). This perforation pitch is normally used on positive film.

1.3.6.7 16mm Motion-Picture Film, 2R-2994. This film is 16mm in width, perforated along both edges (American Standard Dimensions for 16mm Motion-Picture Film, 2R-2994, PH22.110-1958). This perforation pitch is normally used on both black-and-white and color camera films.

1.3.6.8 16mm Motion-Picture Film, 2R-3000. This film is 16mm in width, perforated along both edges (American Standard Dimensions for 16mm Film, Perforated One Edge, PH22.12-1953). This perforation pitch is normally used on positive film.

1.4 Photographic Emulsions. A photographic emulsion consists of dispersions of light-sensitive materials in a colloidal medium, usually gelatin, carried as a thin layer on film base.

Note: Photographic materials are usually designated as negative or positive types according to their light sensitivity (speed), or usage, negative emulsions, in general, being more sensitive than positive emulsions.

1.4.1 Black-and-White Film. Black-and-white film carries an emulsion in which brightness values of a scene after processing are reproduced only in tones of the gray scale.

1.4.2 Color Film. Color film carries an emulsion in which brightness values are reproduced in terms of color scales.

1.4.3 Reversal Film. A reversal film is one which after exposure is processed by a first development, a bleach and a redevelopment to produce a positive image. If exposure is made by printing from a negative, a negative image is produced directly.

1.5 Image (Photographic). An image is any photographically obtained likeness on a film emulsion.

1.5.1 Latent Image. A latent image is the invisible image registered on a photographic emulsion due to the reaction produced in the emulsion by exposure to radiant energy.

Note: This image becomes visible after development.

1.5.2 Picture Image. A picture image is a photographically obtained likeness of any object on photographic material.

1.5.3 Sound Image. A sound image is a photographically obtained soundtrack or sound record.

1.7.2 Editorial Synchronism. Editorial synchronism is the relationship between the picture and sound film during the editorial process.

Note: During the editorial process, the soundtrack and corresponding picture, whether on the same or separate films, are kept in alignment and not offset as for projection. Many composite release negatives are supplied in editorial synchronism.

1.7.3 Camera Synchronism. Camera synchronism is the relation between picture and soundtrack in a composite camera original.

Note: Camera synchronism is generally not the same as editorial synchronism. In 16mm single systems the two are normally in projection synchronism but this is not the case for most 35mm single systems (i.e., where picture and sound are recorded on the same film).

1.8 Exposure. Exposure is the process of subjecting a photographic film to suitable intensity of radiant energy for a given time in such manner that it may produce a latent image on an emulsion.

Note: Exposure = intensity \times time.

1.9 Processing. Processing is the generic term applied to the total operation necessary to produce a permanent visible image on an exposed film.

1.9.1 Development. Development is that part of processing which makes visible the latent image of an exposed photographic emulsion.

1.9.2 Fixing (Fixation). Fixing (fixation) is that part of processing which removes the residual sensitive silver halides from a developed film to render the developed image permanent.

Note: During the process of fixation, films are customarily treated to preserve and harden the developed image.

1.9.3 Bleaching. Bleaching is that part of processing which converts a developed silver image into a silver salt.

1.10 Printing. Printing is the operation of exposing raw stock by using the processed image of another film as the light modulator.

1.10.1 Contact Printing. Contact printing is that method of printing in which the raw stock is held in intimate contact with the film bearing the image to be copied.

1.10.1.1 Step Contact Printing. Step contact printing is that method of contact printing in which the film being copied and the raw stock are advanced intermittently frame-by-

1.5.4 Negative Image. A negative image is a photographic image in which the brightness scale is approximately inverted with respect to the brightness scale of the original subject. In color negatives the hue scale is usually, but not necessarily, inverted with respect to the hue scale of the original subject in addition to the inversion of the brightness scale.

1.5.5 Positive Image. A positive image is a photographic replica in which the tones of the gray scale or color values of the originally photographed subject are represented in their natural order.

1.5.6 Black-and-White Image. A black-and-white image is an image produced on a black-and-white film.

1.5.7 Color Image. A color image is an image produced on a color film.

1.5.8 Anamorphic Image. An anamorphic image is an image which has been produced by an optical system having different horizontal and vertical magnifications.

Note: Equal horizontal and vertical magnification is assumed unless the term anamorphic is applied specifically.

1.6 Aspect Ratio. Aspect ratio is the ratio of width to height of a projected picture image.

Note: This is the more common usage, although the term is also applied to photographic images and to camera, printer and projector apertures.

1.7 Synchronism. Synchronism is the relation between the picture and sound with respect either to the physical location on the film or films or to the time at which corresponding picture and sound are seen and heard.

1.7.1 Projection Synchronism. Projection synchronism is the time relation between picture and corresponding sound in a projection print.

Note: The sound record on a projection print is, in most cases, in advance of the corresponding picture. The displacement is specified in picture frames in the following American Standards:

Standard	Soundtrack
A 35mm Photographic	PH22.40-1957
B 16mm Photographic	PH22.41-1957
C 35mm Magnetic*	PH22.103-1957
D 16mm Magnetic	PH22.112-1958
E 8mm Magnetic	†

*In this case, the sound is behind the corresponding picture.

†A standard is now under consideration by the SMPTE Sound Engineering Committee.

frame, being exposed to the printer light only when stationary.

1.10.1.2 Continuous Contact Printing. Continuous contact printing is that method of contact printing by which the light modulating film and the raw stock move at the same contact speed past the printing aperture.

1.10.2 Projection Printing (Optical Printing). Projection printing (optical printing) is printing by projecting the image to be copied through an optical system onto the raw stock.

Notes: The printed image with respect to the projected image may be identical, an enlargement or a reduction or anamorphic image; or additional anamorphosis may be added or removed.

1.10.3 A and B Printing. A and B printing is a method of making composite images, such as fades, dissolves or effects in a release printer without requiring a duplicating process.

Notes: The name comes from the fact that the films are edited into two separate rolls called A and B rolls. The sequences of pictures originally in one roll are in synchronization with opaque leader in the other roll. When these two are printed in a separate operation onto a single roll or raw stock, an opportunity is afforded for the introduction of effects.

1.11 Projection. Projection is the presentation of an enlarged image of the film on a screen for visual review. In addition the sound may be reproduced for aural review.

1.12 Production. Production is the general term used to describe the processes involved in making all the original material that is the basis for the finished motion picture.

1.13 Editorial Process. Editorial process is the term used to describe the combining, cutting, editing and other preparation of material obtained from the original material to make the finished motion picture.

1.14 Re-recording. Re-recording is the electrical process of transferring sound records from one or more films, magnetic tapes or discs to other film, tapes or discs.

Notes: Re-recording may be used to combine different sound records into a single record to adjust the frequency-response characteristic or to adjust the relative levels between different scenes and sequences.

1.15 Release. Release is a generic term used to designate films used or intended for general distribution and exhibition.

1.15.1 Release Negative. A release negative is a complete negative prepared specifically for printing release prints.

Notes: A release negative may consist of separate picture and sound negatives and may be in either projection or editorial synchronization, depending upon the film-processing technique to be employed in making release prints.

1.15.2 Release Print. A release print is a print made from the release negative.

2. Picture Negative Film Black-and-White and Color

2.1 Picture Negative. A picture negative is any processed film that possesses a negative picture image of the subject or film image to which it was exposed. This term is sometimes erroneously used to refer to the raw film before processing, either with or without exposure.

2.1.1 Original Picture Negative. The original picture negative is the negative film that is exposed in a camera and processed to produce a negative image of the original subject.

2.1.2 Background Plate Negative. A background plate negative is a picture negative which is used for printing background plates.

2.1.3 Picture Library Negative. A picture library negative is a picture negative that is usually held in a film library for use in reproducing scenes which would otherwise have to be made as original material for each production.

2.1.4 Title Negative. A title negative is a negative that is exposed to a title card or to both a title card and background.

2.1.5 Picture Duplicate Negative. A picture duplicate ("dupe") negative is a picture negative made from black-and-white, color or separation master positive films.

Notes: It may be used for making additional prints or it may be cut and edited to form a part of the picture release negative.

2.1.5.1 Internegative. An internegative film is a negative derived directly from a color reversal original film.

Notes: All other color duplicating negatives derived from other than reversal film will be known as color duplicate negatives regardless of the generation.

2.1.6 Picture Release Negative. A picture release negative is a cut and edited picture negative used for printing the picture portion of release prints.

Notes: It may consist of intercut original picture negatives, picture dupe negatives, etc., depending

negatives which would be used for printing release prints.

Notes: It is usually made on duplicating positive film and may be in either editorial or projection synchronization.

3.2.6 Foreign-Version Release Prints. Foreign-version release prints are composite prints in projection synchronization and are made specifically for the particular language version involved.

3.2.7 Foreign-Version Trial Composite Prints. Foreign-version trial composite prints are similar to trial composite prints made during release except that they are made for checking the release of the particular language version involved.

4. Reversal Film Black-and-White and Color

4.1 Reversal Original. A reversal original is the film that is originally exposed in a camera or recorder and is processed by reversal to produce a positive image.

Notes: This positive image obtained by the reversal process is not the same as a print from a negative

inasmuch as right and left are transposed; when viewed by projection on an opaque screen, the emulsion side of the print from a negative must face the light source and the emulsion side of a reversal original must face the lens in order for the screen image to have the same lateral orientation as the original scene.

4.1.1 Composite Reversal Original. A composite reversal original is a reversal original which has both picture and corresponding sound on the same film.

4.2 Reversal Print. A reversal print is a reversal-type film that has been exposed to a positive film image, usually a reversal original film, and processed by the reversal process.

4.2.1 Reversal Master Print, 16mm. A reversal master print is a 16mm reversal print made specifically for use in producing other prints.

Notes: It is sometimes referred to as a first generation duplicate, prints from it then being referred to as second generation duplicates.

4.2.2 Reduction Reversal Print, 16mm. A reduction reversal print is a reversal print made on 16mm reversal film from a 35mm positive by reduction printing and development by the reversal process.

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:

- | | |
|---|--|
| PH22.1-1953, Dimensions for 35mm Motion-Picture Film Alternate Standards for Either Positive or Negative Raw Stock. | PH22.72-1957, Dimensions for 32mm Motion-Picture Film, 4R-3000. |
| PH22.5-1953, Dimensions for 16mm Film, Perforated Two Edges. | PH22.73-1958, Dimensions for 35mm Motion-Picture Film, Perforated 32mm, 2R-2994. |
| PH22.12-1953, Dimensions for 16mm Film, Perforated One Edge. | PH22.93-1953, Dimensions for 35mm Motion-Picture Short-Pitch Negative Film. |
| PH22.31-1958, Motion-Picture Safety Film. | PH22.102-1956, Dimensions for 35mm Motion-Picture Film, CS-1870. |
| PH22.36-1954, Dimensions for 35mm Motion-Picture Positive Raw Stock. | PH22.103-1957, 35mm Anamorphic Prints with Magnetic Sound Records, Usage in Projector. |
| PH22.40-1957, Photographic Sound Record on 35mm Prints. | PH22.109-1958, Dimensions for 16mm Motion-Picture Film, 1R-2994. |
| PH22.41-1957, Photographic Sound Record on 16mm Prints. | PH22.110-1958, Dimensions for 16mm Motion-Picture Film, 2R-2994. |
| PH22.71-1957, Dimensions for 32mm Motion-Picture Film, 2R-3000. | PH22.112-1958, Picture-Sound Separation in 16mm Magnetic Sound Projectors. |

upon the choice of available material or the intended use of the release print.

2.1.7 Foreign Picture Release Negative. A foreign picture release negative is a picture release negative prepared specifically for printing foreign version release prints.

Notes: It is almost invariably a duplicate negative.

2.1.8 16mm Picture Release Negative. A 16mm picture release negative is a picture release negative on 16mm film prepared specifically for printing 16mm release prints.

**3. Picture Positive Film
Black-and-White and Color**

3.1 Picture Print. A picture print is a processed film that possesses a positive picture image of the subject or film image to which it was exposed.

3.1.1 Picture Daily Print. A picture daily print is the first picture print made from the original picture negative for use in checking photographic quality, camera technique, actions, etc.

3.1.2 Picture Work Print. A picture work print is a positive print which usually consists of intercut picture daily prints, picture library prints, prints of dissolves, montages, titles, etc., and has synchronization constantly maintained with the corresponding sound work print.

3.1.3 Picture Library Print. A picture library print is a picture print made from a picture library negative.

3.1.4 Background Plate (Background Print Film). A background plate (background print film) is a picture print made specifically for use in projection background or similar process work, and is a print of a background plate negative.

3.1.5 Picture Master Positive. A picture master positive is a print usually made on a special film, for the purpose of producing picture duplicate negatives.

3.1.5.1 35mm Separation Positive. A 35mm separation positive is a black-and-white film with a positive image of the red, green or blue image component of a color negative. It is usually made by printing through suitable filters from a color negative onto a panchromatic black-and-white film.

3.1.5.2 35mm Projection Master Positive. A 35mm projection master positive film is a positive film made from the final cut and edited black-and-white or color release negative. In case of damage to the release negative, a duplicate negative could be made from this projection master positive. In the case of color, this projection master positive may be a set of three black-and-white separation master positives or a color master positive.

3.1.5.3 35mm Panchromatic Master Positive. A 35mm panchromatic master positive is a black-and-white print made on a panchromatic film from a color negative for the purpose of making a black-and-white duplicate negative.

3.2 Composite Print. A composite print is a positive film having both picture and corresponding sound on the same film which may be in editorial or projection synchronization.

3.2.1 Composite Daily Print. A composite daily print is made from an original composite negative or original sound and picture negatives, and is used for checking photography, sound quality, action, etc. It is in projection synchronization.

3.2.2 First Trial Composite Print. The first trial composite is the first composite print made from the picture and sound release negatives for the purpose of checking and correcting picture and sound quality, negative cutting and assembly, etc. It is in projection synchronization.

3.2.3 Second, Third, Etc., Trial Composite Print. The second, third, etc., trial composite print is similar to the first trial composite print, but has successive corrections incorporated as a result of viewing the previous trial composite prints.

3.2.4 Final Trial Composite. A final trial composite is a composite print, approved for release, in which all corrections found necessary in previous trial composite prints have been incorporated.

Notes: The final trial composite may be any one of the various trial composite prints, depending upon the type and extent of corrections required.

3.2.5 Composite Master Positive. A composite master positive is a composite print usually made for the purpose of producing composite or picture and sound duplicate

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