Appendix

(This Appendix is not part of the American National Standard, but is included for information 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.

SMPTE RECOMMENDED PRACTICE

RP 59–1986

Color and Luminance of Review Room Screens for Viewing Motion-Picture Materials Intended for Slides or Film Strips

1. *Scope*

This practice specifies the luminance (photometric brightness) and color quality of projection illumination in review rooms for prints on motion-picture film intended for ultimate use as slides or film strips.

2. *Luminance Level*

The luminance (photometric brightness) at the center of the screen shall be 16 ± 2 footlamberts (55 ± 7 candelas per square meter), measured within the standard observing area with the projector in complete operation but with no film in the aperture.

3. *Spectral Distribution*

The color quality of the projected light reflected from the screen surface shall approximate the spectral distribution of a black body at a color temperature between 3200 K (x = 0.42, y = 0.40) and 3450 K (x = 0.41, y = 0.41), which is the approximate color quality produced by a 3200 K (incandescent) lamp burned at its rated voltage as modified by normal lamphouse optics and heat-absorbing filter in the projector.

4. *Special Applications*

Prints balanced for higher color temperatures may be requested when use conditions are known to require them for optimum quality (such as for xenon or arc projection or for television). American National Standard for Motion-Picture Film—Screen Luminance and Viewing Conditions—Indoor Theater Projection, ANSI/SMPTE 196M-1986, encompasses the above specifications as part of a broader set of specifications and gives detailed descriptions of methods of measurement and surrounding conditions. SMPTE Recommended Practice RP 41-1983, Evaluation of Color Films Intended for Television, should be used when slides are specifically requested for television.

Appendix

(This Appendix is not part of the SMPTE Recommended Practice, but is included for information only.)

It is the purpose of this practice to specify the brightness and color quality of standard review room conditions for the subjective evaluation of motion-picture prints in the laboratory when the intended use of the prints will be as slides or film strips.

If the viewing conditions used to establish "normal" printing conditions of density and color balance for any laboratory are the same from laboratory to laboratory, there should be greater consistency in "standard" prints from various sources.

Because the conditions of ultimate use may vary greatly in terms of such factors as screen brightness and ambient light, it is quite possible that prints may be ordered at densities greater or less than normal.

Revision of RP 59-1975
Approved 20 August 1986

SMPTE RECOMMENDED PRACTICE — RP 18–1986

Specifications for Test Film for Subjective Checking of 16-mm Motion-Picture Audio Projectors

1. *Scope*

This practice describes a test film and a method for subjective checking and demonstrating 16-mm motion-picture projection and audio performance.

2. *Test Film Specifications*

2.1 Where applicable, the film shall contain the following sections:

2.1.1 Audio Samples

(a) Dynamic wide-range orchestration to check reproduction of music

(b) A recording of piano music having sufficiently sustained notes that a subjective assessment of wow and flutter can be made.

(c) Seven tones (nominally 50, 125, 500, 800, 2000, 3150, and 5000 Hz) recorded at normal program level

(d) A section of male and female actors in dialog as a check for speech intelligibility and synchronization

16-mm photographic audio version only:

(e) A section of buzz-track test film as specified in SMPTE Recommended Practice on Specifications for Buzz-Track Test Film for 16-mm Motion-Picture Sound Reproducers, Photographic Type, RP 67-1983

(f) Three sections of a 5-kHz tone to check for a compromise focus for the photographic audio record: sections one and three in the normal emulsion position and section two in the reverse emulsion position

2.1.2 Picture Samples

(a) General picture steadiness (vertical and horizontal)

(b) Uniform projected picture luminance

(c) General picture quality such as sharpness and contrast

2.2 Each film shall be provided with a leader and trailer. The main title shall include the issue number. Titles or subtitles, as appropriate, shall indicate the particular projector audio and/or picture characteristic to be tested by that portion of the film.

2.3 Each film shall be accompanied by an instruction sheet describing the procedure to be used for checking the projection equipment.

3. *Prints*

3.1 The film stock used shall be cut and perforated in accordance with long-pitch dimensions specified in American National Standard for Motion-Picture Film (16-mm)—Perforated 1R, ANSI/SMPTE 109-1986.

3.2 The audio record dimensions shall comply with American National Standard for Motion-Picture Film (16-mm)—Prints—Photographic Sound Records, ANSI PH22.41-1983; or American National Standard for Motion-Picture Film (16-mm)—100-Mil Magnetic Audio Record, ANSI PH22.112-1983.

3.3 Color prints shall be made with the emulsion toward the lens for direct-projection viewing. The prints shall be in accord with American National Standard for Motion-Picture Film (16-mm)—Projector Usage, ANSI/SMPTE 10M-1985; and American National Standard Dimensions of Projectable Image Area on 16-mm Motion-Picture Film, ANSI PH22.8-1981.

NOTE: Test films conforming to this practice are available from the Society of Motion Picture and Television Engineers.

Revision of RP 18-1981
Approved 29 August 1986

Appendix

(This Appendix is not part of the SMPTE Recommended Practice, but is included for information only.)

A1. Method of Use

With the projector set up for projection of an audio picture print and the loudspeaker(s) properly located in accordance with the instructions furnished with the equipment, proceed as follows:

(a) Pre-set tone control(s) to normal, thread test film into projector, and set volume for comfortable loudness. If the audio optics have adjustable focus, adjust the focus to give the most satisfactory audio quality.

(b) Frame and focus picture for best overall screen image.

A2. Audio and Visual Qualities

As the test sections are projected, observe the following:

(a) Listen for full range of orchestra and overall quality of audio. Note picture steadiness at top and sides. Note picture sharpness across the entire frame. White streaks above or below letters indicate travel ghost.

(b) Look for uniform picture brightness. Listen for smooth, even music; quaver indicates flutter.

(c) Silence or equal loudness of the two tones shows correct lateral positioning of the audio reproducer (photographic record only).

(d) In the photographic audio version, three successive (5000 Hz) tones are included to permit detection of correct photographic audio focus. Emulsion position is reversed for the second (middle) tone. (To compensate for prints which may be projected emulsion to the lens or emulsion away from the lens, a compromise position of the photographic audio-focusing optics must be determined so that the audio level results in equal loudness between the two positions. The difference between the two positions can be considered as the mid-point of the film, 0.0035 in (0.089 mm) below the surface.)

(e) Seven tones are provided having the frequencies of 50 to 5000 Hz. All should reproduce well.

(f) Listen for natural quality of the audio and proper lip synchronization of voices.