standards and recommended practices

Four American Standards

On October 28, 1960, the American Standards Association approved as American Standards PH22.52-, PH22.69-, PH22.70-, and PH22.117-1960. Since PH22.52, PH22.69 and PH22.70 reflect no technical change from the versions previously published, they are not being published here.

PH22.52, Cross-Modulation Tests for 16mm Variable-Area Photographic Sound Prints, is a revision of PH22.52-1954. The standard differs from the previous version, published in the October 1954 *Journal*, in that the title was changed and a reference, the source of which is now out of print, has been deleted.

PH22.69, Sound Records and Scanning Area of Double Width Push-Pull Sound Prints, Normal Centerline Type, and PH22.70, Sound Records and Scanning Area of Double Width Push-Pull Sound Prints, Offset Centerline Type, are revisions of 1948 standards, published in the November 1948 *Journal*, and reaffirmed in 1953. Although the technical content is unaffected, the following changes have been made in both standards: (a) addition of a scope and table of dimensions, (b) clarification of the drawing. The millimeter tolerance conversion of Dimension H in PH22.69 has been corrected from 0.05 to 0.02.

PH22.117, Spectral Diffuse Density of Photographic Sound Record on Three-Component Subtractive Color Films, was published in the December 1959 *Journal* for trial and comment, and has been adopted as an American Standard without change since trial publication.

Copies of these standards are available from the American Standards Association, Incorporated, 10 East 40 St., New York 16, at a nominal cost.—*J. Howard Schumacher*, Staff Engineer

Proposed Revision of American Standard PH22.94–1954

A proposed revision of American Standard Slides and Opaques for Television Film Camera Chains, PH22.94-1954, is published here for a three-month period of trial and criticism.

The Television Committee began their study of the subject standard in April 1959 in accordance with the American Standards Association requirement that all standards be reviewed every five years. This proposal, approved by the Television and Standards Committees, differs from the 1954 standard in that Sections 1.1 and 1.2 have been reworded to further clarify the intent of the standard. The change in Note 1 reflects the omission of the reference to the thickness of opaques.

All comments should be sent to the Staff Engineer prior to March 15, 1961. If no objections are received, the proposal will then be submitted to ASA Sectional Committee PH22 for further processing as an American Standard.—*J.H.S.*

SMPTE Recommended Practice RP 6*

This Recommended Practice originated in the Video Tape Recording Committee. The proposal, approved by the initiating committee and the Standards Committee, was published for trial and comment in the April 1960 *Journal*. The recommendation received final approval by the Society's Board of Governors on October 16, 1960.

Modulation Levels for Monochrome 2-Inch Video Magnetic-Tape Recording

Introduction. In current video-tape recording systems the playback video signal level is dependent upon two independent factors, viz., (a) adjustment of the playback video amplifier gain setting and (b) deviation of the recorded, frequency-modulated, radiofrequency carrier signal. In order to achieve uniformity of playback video signal levels without the accompanying need for readjustment of the playback video amplifier gain, it is essential that all video-tape recordings be made in accordance with the same recommended practice for carrier deviation. This is of particular importance for playback on equipment other than that used for recording, or when the playback tape consists of two or more recordings spliced together.

Recommendations

1. *Scope*

1.1 This recommended practice specifies the recorded modulation levels for monochrome television signals.

2. *Recorded Carrier Frequencies*

2.1 The recorded carrier frequencies corresponding to reference video signal levels shall be as follows:
(a) Reference White Level: 6.8 ± 0.05 mc.
(b) Blanking Level: 5.0 ± 0.05 mc.
(c) Sync Tip Level: 4.28 ± 0.05 mc.

* A copy of this Recommended Practice may be obtained without charge upon request directed to J. Howard Schumacher, Staff Engineer, at SMPTE headquarters.

Proposed American Standard

Slides and Opaques for Television Film Camera Chains

Revision of
PH22.94-1954

Supplement to Z38.7.19-1950

1. Scope

1.1 This standard is intended to guide those preparing slides and opaques for conventional program usage in television transmission. The standard applies only to slides and opaques intended for transmission in the standard fashion via a film camera chain. For other applications, such as background projection, the usual television requirements may not apply.

1.2 This standard is not intended to apply to standard test slides which must have tighter dimensional tolerances in order to facilitate the setup and adjustment of television film chains.

2. Dimensions

2.1 Nominal Size. Only the four nominal sizes listed in Column 1 of the table shall be considered standard for use in television film camera chains.

2.2 Overall Dimensions. The overall dimensions for any nominal size shall comply with the dimensions tabulated in Column 2. (See Note 1.)

2.3 Dimensions of Transmitted Picture. The portion of the slide or opaque intended for transmission shall lie within a centrally located rectangle having the dimensions shown in Column 3. (See Note 2.)

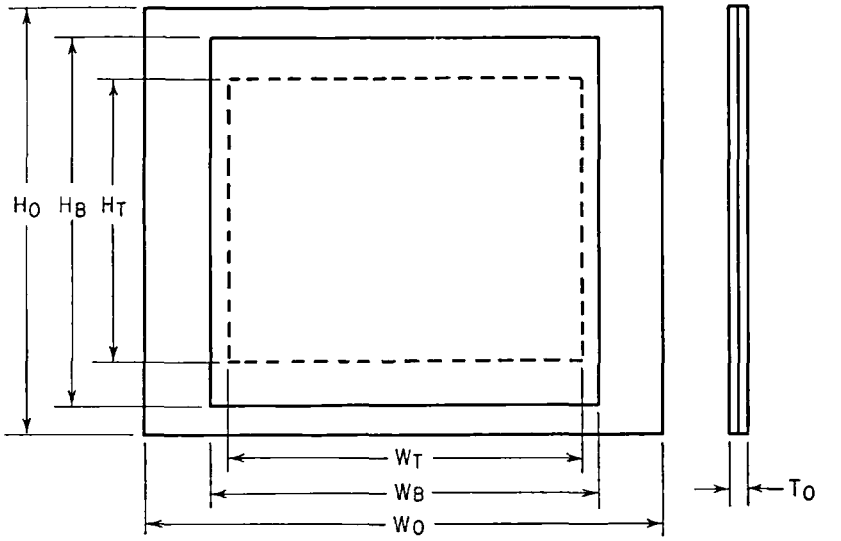
2.4 Dimensions of Picture Background. The background (or the pictorial material) of the slide or opaque shall extend without interruption over a centrally located rectangle having the dimensions shown in Column 4. (See Note 3.)

2.5 Centering Tolerance. The center of the transmitted picture rectangle and the center of the background rectangle shall both lie within a circle having as its center the center of the slide and as its radius the dimension tabulated in Column 5.

Note 1. This standard is intended to supplement American Standard Dimensions for Lantern Slides, Z38.7.19–1950, by including additional specifications required by the television system.

Note 2. The dimensions shown for the transmitted picture are those which will be scanned by a perfectly adjusted film camera chain. To allow for some misadjustment of the film camera chain and an additional misadjustment in the home receiver, it is recommended that all essential information be contained in a centrally located area appreciably smaller than that specified in column 3.

Note 3. In the case of slides, the background rectangle should be defined by an opaque mask to limit the stray light entering the film camera chain. The dimensions specified in Column 4 permit the use of masks which comply with Z38.7.19–1950. For opaques, masking is generally provided by the projection equipment.



Col 1 Nominal	Col 2 Overall			Col 3 Transmitted Picture		Col 4 Picture Background		Col 3 Centering Tolerance
	H_o	W_o	T_o max	H_T max	W_T max	H_B min	W_B min	
2 × 2 slide (double 35)	$2\ ^{+0}_{-1/32}$	$2\ ^{+0}_{-1/32}$	$1/8$	$27/32$	$1\,1/8$	$29/32$	$1\,11/32$	$1/64$
$3\,1/4 \times 4$ slide	$3\,1/4\ ^{+1/64}_{-1/32}$	$4\ ^{+1/64}_{-1/32}$	$5/32$	$2\,1/16$	$2\,3/4$	$2\,3/4$	3	$3/64$
$4\,1/4 \times 4$ opaque	$3\,1/4\ ^{+1/64}_{-1/32}$	$4\ ^{+1/64}_{-1/32}$	$1/32$	$2\,1/16$	$2\,3/4$	$2\,3/4$	3	$3/64$
4×5 opaque	$4 \pm 1/32$	$5 \pm 1/32$	$1/32$	3	4	$3\,3/16$	$4\,1/4$	$1/16$

All dimensions are in inches

American Standard

Spectral Diffuse Density of Photographic Sound Record on Three-Component Subtractive Color Films

ASA
Reg. U.S. Pat. Off.
PH22.117—1960
Supplement to
PH2.19-1959 and PH2.1-1952
*UDC 535.36:778.534.4:778.66

INTRODUCTION

The American Standard Spectral Diffuse Densities of Three-Component Subtractive Color Films, PH2.1-1952, which applies primarily to picture on color film, constitutes the basis for this standard, and Sections 2, 3 and 4 of that standard are to be considered part of the present standard.

The purpose of this standard is to supplement the American Standard Spectral Diffuse Densities of Three-Component Subtractive Color Films, PH2.1-1952, by specifying spectral conditions suitable for determining the sensitometric characteristics of photographic sound record on three-component subtractive color films. The conditions of this standard are intended for, and are applicable to, systems of sound reproduction using the S-1 photosurface, since this photosurface is in common use at the present time. It is recognized that there are other types of photosurfaces sometimes used for photographic sound reproduction that do not fall within the scope of this standard.

In three-component subtractive color films, dyes or color couplers are used to form the photographic image. These color materials are designed primarily for the visual region, but sound-record reproduction via the S-1 photosurface uses the infrared region of approximately 700 mμ (millimicrons) to 900 mμ, which is far enough away from the visual region so that the color materials cannot be used efficiently, but close enough so that they produce a measurable effect. The spectral characteristics of this effect depend on the type of light-absorbing material used for the sound record, and on the manner in which the sound record is processed. Therefore, in order to obtain uniformity of sound record densitometry among different films, and among the different density measuring instruments, it is necessary to specify the spectral conditions under which these density measurements are made. It is the aim of this standard to define these conditions sufficiently to insure reasonable uniformity of density measurements, yet not so rigidly as to make impractical the obtaining of such measurements.

This standard defines a primary condition which shall be the ideal method of taking density measurements of sound record on subtractive color films. This standard also defines a practical condition by means of which it is expected that most density measurements will be made.

If the accuracy required is less than that provided by the practical condition, it does not seem economical to use an instrument designed specifically for sound record. An instrument which measures in the visual region, perhaps with minor modifications to favor the general infrared region, will suffice.

1. Purpose and Scope

1.1 The principal purpose of this standard is to supplement American Standard Diffuse Transmission Density PH2.19-1959, and, further, to supplement American Standard Spectral Diffuse Densities of Three-Component Subtractive Color Films, PH2.1-1952.

1.2 This standard defines conditions suitable for integral spectral density measurement of photographic sound record on three-component subtractive color films.

1.3 It is recognized that there are other useful types of photographic sound-record density measurements that do not fall within the scope of this standard.

2. American Standard Diffuse Density

2.1 The following sections of the American Standard Diffuse Density PH2.19-1959, are part of the American Standard Spectral Diffuse Density of Photographic Sound Record on Three-Component Subtractive Color Films:

2. General Definition of Density

3. Totally Diffuse Density

4. American Standard Diffuse Density

Approved October 28, 1960, by the American Standards Association, Incorporated
Sponsor: Society of Motion Picture and Television Engineers
*Universal Decimal Classification

Printed in U.S.A.
ASA3/M1260/35

3. American Standard Spectral Diffuse Densities of Three-Component Subtractive Color Films

3.1 The following section of the American Standard Spectral Diffuse Densities of Three-Component Subtractive Color Films, PH2.1-1952, is part of the American Standard Spectral Diffuse Density of Photographic Sound Record on Three-Component Subtractive Color Films:

2. Terminology Used in the Densitometry of Color Film

4. Terminology Used in the Densitometry of Photographic Color Sound Records

4.1 *Peak Response.* The peak response of a densitometer is the wavelength to which the densitometer has the greatest response, including such factors as the spectral emission of the light source, the combined spectral transmission of all optical filters in the light path, and the spectral sensitivity of the photosensitive receptor.

4.2 *Bandwidth.* The bandwidth of a densitometer is the range of wavelengths to which the densitometer is sensitive. In a practical densitometer this range of wavelengths is not sharply defined; but for the purposes of this standard, the bandwidth shall be considered to lie between those wavelengths which excite, in the photosensitive receptor, one-half the current which is excited at the wavelength of peak response. These limiting wavelengths are to be measured or computed using the light source, all operating optical filters, and the photosensitive receptor of the densitometer.

4.3 *Overall Response.* The overall response of a densitometer is the integrated response of the densitometer to all wavelengths, including such factors as the spectral emission of the light source, the combined spectral transmission of all optical filters in the light path, and the spectral sensitivity of the photosensitive receptor.

5. Potassium Infrared Diffuse Density

5.1 Potassium infrared diffuse density is diffuse density measured with energy concentrated in the spectral doublet of wavelengths 766.5 and 769.9 mμ of a potassium arc.

6. American Standard Spectral Density of Photographic Sound Record on Three-Component Subtractive Color Films

6.1 American Standard spectral diffuse density of photographic sound record on three-component subtractive color films is American Standard diffuse transmission density measured in any practical instrument with any practical condition which is proven by test to yield densities not significantly different from potassium infrared diffuse density, providing that the peak response of such a practical instrument is 768 ± 5 mμ, that the bandwidth of such an instrument is 20 mμ or less, and that the response of such instrument within the band from 758 to 778 mμ is at least 80 percent of the overall response.