

Cinematography — Photographic-monophonic sound test films — Specifications

1 Scope and field of application

1.1 This International Standard specifies basic technical characteristics for the international exchange of photographic-monophonic sound test films intended for checking, adjusting and measuring motion-picture projector sound systems and sound reproducing channels of motion-picture installations.

1.2 This International Standard specifies types and technical characteristics of test films made on 35 mm, 16 mm and 8 mm Type S motion-picture films.

1.3 This International Standard includes test films intended for the checking, adjusting and measuring of:

- a) focusing and inclination angle (azimuth) of the scanning beam;
- b) scanning beam width and its position relative to the reference edge of the film;
- c) uniformity of the scanning beam illumination;
- d) level output balance of several motion-picture projectors;
- e) frequency response of the sound reproduction channel;
- f) non-uniformity of film travel.

2 References

- ISO 69, *Cinematography — 16 mm motion-picture raw stock film — Cutting and perforating dimensions.*
- ISO 70, *Cinematography — 35 mm negative photographic sound record on 35 mm motion-picture film — Position and width dimensions.*
- ISO 71, *Cinematography — 16 mm negative photographic sound record on 16 mm, 35/16 mm and 35/32 mm motion-picture film — Positions and dimensions.*
- ISO 491, *Cinematography — 35 mm motion-picture film — Cutting and perforating dimensions.*

ISO 1700, *Cinematography — 8 mm Type S motion-picture raw stock film — Cutting and perforating dimensions.*

ISO 2839, *Cinematography — Picture image area and photographic sound record on 35 mm motion-picture release prints — Positions and dimensions.*

ISO 4243, *Cinematography — Picture image area and photographic sound record on 16 mm motion-picture prints — Positions and dimensions.*

ISO 4244, *Cinematography — Photographic sound record on 8 mm Type S motion-picture prints — Position and width dimensions.*

IEC Publication 386, *Method of measurement of speed fluctuations in sound recording and reproducing equipment.*

3 Specifications common for all types of photographic sound test films

3.1 Test films shall be made on motion-picture raw stock films, the cutting and perforating dimensions of which are in accordance with the following International Standards:

- for 35 mm film : ISO 491
- for 16 mm film : ISO 69
- for 8 mm Type S film : ISO 1700

3.2 The location and width dimensions of sound records shall be in accordance with the following International Standards:

- for 35 mm film : ISO 70 and ISO 2839
- for 16 mm film : ISO 71 and ISO 4243
- for 8 mm Type S film : ISO 4244

3.3 Test films shall be splice-free, except where joints are an essential part of the test film.

3.4 Each film shall be intended primarily for use at 24 frames per second; all frequencies and velocity tolerances referring to that velocity. Use at 25 frames per second is admissible. Other test films may be developed for use at other speeds, if the speeds are so stated.

4 Test films for checking and adjusting sound focus and azimuth

Table 1

| Characteristics of test signal | | 35 mm | 16 mm | 8 mm Type S |
|---|--|-------|-------|-------------|
| Frequency, kHz | | 9 | 7,1 | 5 |
| Frequency tolerance, % | | ± 3 | ± 3 | ± 3 |
| Maximum output deviation, dB | | ± 0,3 | ± 0,5 | ± 1,0 |
| Azimuth angle (relative to reference edge), ° (degrees) | | 90 | 90 | 90 |
| Azimuth tolerance, ' (minutes) | | ± 5 | ± 5 | ± 10 |
| Modulation, % of maximum | | > 80 | > 80 | > 80 |
| Minimum duration of signal, s | | 100 | 100 | 100 |

5 Test films for checking and adjusting the lateral position of the film in relation to the scanning beam (buzz track)

5.1 Characteristics of test signals

- Frequency on the picture image side: 300 Hz
- Frequency on the opposite side: 1 000 Hz
- Frequency tolerance: ± 10 %
- Form: square wave
- Minimum duration of signal: 100 s

Signal location and width dimensions (see table 2).

Table 2

| Dimension | 35 mm (see figure 1) | | 16 mm (see figure 2) | | 8 mm Type S (see figure 3) | |
|-----------|----------------------|---------------|----------------------|---------------|----------------------------|---------------|
| | mm | in | mm | in | mm | in |
| A | 5,10 ± 0,03 | 0,201 ± 0,001 | 13,59 ± 0,03 | 0,535 ± 0,001 | 7,25 ± 0,03 | 0,286 ± 0,001 |
| B | 7,23 ± 0,03 | 0,285 ± 0,001 | 15,29 ± 0,03 | 0,606 ± 0,001 | 7,91 ± 0,03 | 0,311 ± 0,001 |
| C | 0,18 mm. | 0,007 min. | 0,30 mm. | 0,012 min. | 0,30 mm. | 0,012 min. |
| D | 0,30 mm. | 0,012 min. | 0,18 mm. | 0,007 min. | 0,08 mm. | 0,003 min. |

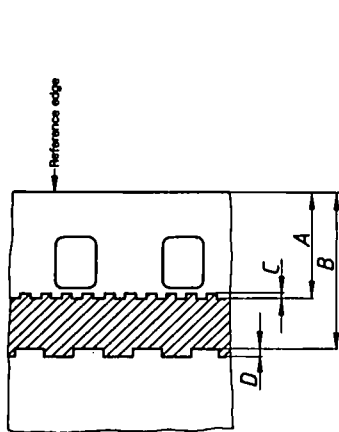


Figure 1 - 35 mm film

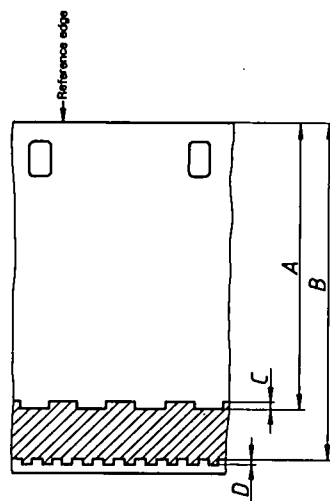


Figure 2 - 16 mm film

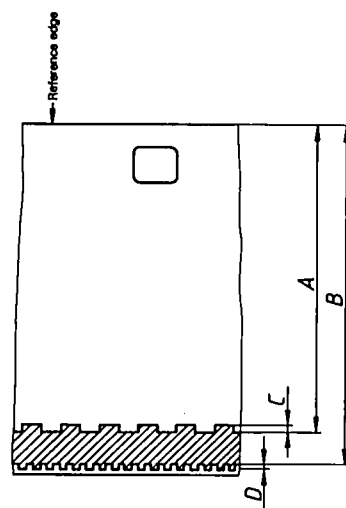


Figure 3 - 8 mm Type S film

6 Test films for checking and adjusting uniformity of the scanning beam illumination (snake track)

6.1 Characteristics of test signal

- Frequency: 1 000 Hz
- Modulation: maximum
- Maximum output deviation along the whole of the test film: ± 0.5 dB
- Duration of signal: the traverse of the snake track shall not be less than 6 s
- Signal location and width dimensions (see table 3).

Table 3

| Dimension | 35 mm (see figure 4) | | 16 mm (see figure 5) | | 8 mm type S (see figure 6) | |
|-----------|----------------------|-------------------|----------------------|-------------------|----------------------------|-------------------|
| | mm | in | mm | in | mm | in |
| A | 5.20 ± 0.03 | 0.205 ± 0.001 | 13.65 ± 0.03 | 0.538 ± 0.001 | 7.20 ± 0.03 | 0.287 ± 0.001 |
| B | 7.13 ± 0.03 | 0.281 ± 0.001 | 15.31 ± 0.03 | 0.603 ± 0.001 | 7.86 ± 0.03 | 0.309 ± 0.001 |
| C | 0,18 max. | 0,007 max. | 0,13 max. | 0,005 max. | 0,10 max. | 0,004 max. |

7 Test films for checking and adjusting sound level

Table 4

| Characteristics of test signal | 35 mm | | 16 mm | | 8 mm Type S | |
|--------------------------------------|------------------------------|----|-----------|----|-------------|----|
| | mm | in | mm | in | mm | in |
| Frequency, Hz | 1 000 | | 1 000 | | 400 | |
| Frequency tolerance, % | ± 3 | | ± 3 | | ± 3 | |
| Form | sinusoidal (for all formats) | | | | | |
| Maximum total harmonic distortion, % | ± 0.5 | | 3 | | 5 | |
| Maximum output deviation, dB | ± 0.5 | | ± 0.5 | | ± 0.5 | |
| Modulation, % | 50 | | 50 | | 50 | |
| Minimum duration of signal, s | 60 | | 60 | | 60 | |

* This item will be replaced at a later stage by a new item stating photo-electric factor.

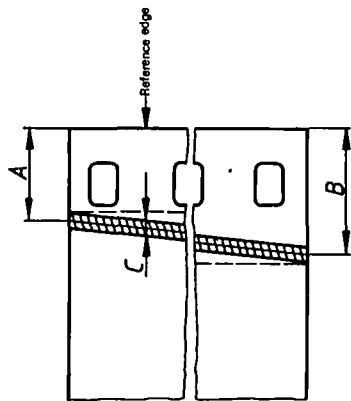


Figure 4 — 35 mm film

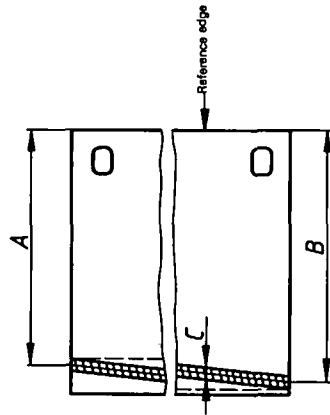


Figure 5 — 16 mm film

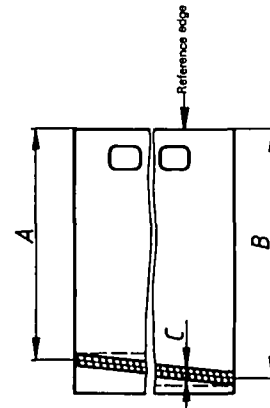


Figure 6 — 8 mm Type S film

8 Test films for the checking and adjusting of frequency tolerance

Table 5

| Frequencies | 35 mm | 16 mm | 8 mm Type S |
|--|---|---|--|
| Reference frequency, Hz | 1 000 | 400 | 400 |
| Frequency series in order of their location in the test film, Hz | 40 63* 125* 250 500 1 000 2 000 3 150 4 000 5 000 6 300 7 100 8 000 9 000 10 000 1 000 | 40 63* 125* 250 500 1 000 2 000 3 150 4 000 5 000 6 300 7 100 8 000 — — — 400 | — 63* 125* 160 250 315 500 1 000 2 000 3 150 4 000 5 000 6 300 — — — 400 |
| Frequency tolerance | | $\pm (3\% + 2 \text{ Hz})$ | |

* In countries where the power mains are operated at 60 Hz, the frequencies of 63 Hz and 125 Hz may be replaced by 50 Hz and 100 Hz to minimize the effects of narrow band noise.

Table 6

| Form | 35 mm | 16 mm | 8 mm Type S |
|--|-----------------|------------------------------|------------------|
| Characteristics of test signal | | sinusoidal (for all formats) | |
| Modulation, % * | 50 | 50 | 50 |
| Maximum output level deviation of the test film at any frequency, when compared with the average output at the reference frequency, dB | ± 0.5 | ± 1.0 | ± 2.0 |
| Maximum output deviation within each frequency, dB | ± 0.3 | ± 0.5 | ± 1.0 |
| Maximum total harmonic distortion at any of the test film frequencies up to the given frequency | 3 % up to 5 kHz | 5 % up to 3 kHz | 10 % up to 2 kHz |
| Azimuth tolerance, ° (minutes) | ± 5 | ± 5 | ± 10 |
| Minimum duration of signal at reference frequency, s | 20 | 20 | 20 |
| Minimum duration of signal at all other frequencies, s | 8 | 8 | 8 |

* If the track format is multi-lateral, care should be taken to ensure that the modulation in each element is equal.

9 Test films for measuring non-uniformity of film velocity of movement (flutter)

Table 7

| Characteristics of test signal | 35 mm * | 16 mm | 8 mm Type S |
|--|------------|---------------------------|-------------|
| Frequency at 24 frames per second, Hz | 3 150 | 3 150 | 3 150 |
| Tolerance on frequency, Hz | ± 25 | ± 25 | ± 25 |
| Form | > 80 | sinusoidal or square wave | > 80 |
| Modulation, not less than % of maximum | ± 0.05 | ± 0.08 | ± 0.15 |
| Maximum total weighted wow and flutter content, measured according to IEC Publication 395, % | ± 1.0 | ± 1.0 | ± 2.0 |
| Maximum output deviation, dB | | | |

* This test film may not be suitable for use with some older flutter meters.