International Standard 486

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Cinematography — 16 mm motion-picture film perforated 8 mm Type R — Cutting and perforating dimensions

Cinématographie — Film cinématographique 16 mm perforé 8 mm type R — Dimensions de coupe et de perforation

Second edition — 1982-08-01

UDC 771.531.352 : 77.021.17 **Ref. No. ISO 486-1982 (E)**

Descriptors : cinematography, motion-picture film, motion-picture film 8 mm, perforating, cutting, dimensions.

Price based on 3 pages

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 486 was developed by Technical Committee ISO/TC 36, *Cinematography*, and was circulated to the member bodies in April 1981.

It has been approved by the member bodies of the following countries :

Austria	Germany, F. R.	South Africa, Rep. of
Belgium	Italy	Spain
Canada	Japan	Sweden
Czechoslovakia	Korea, Dem. P. Rep. of	United Kingdom
Denmark	Korea, Rep. of	USA
Egypt, Arab Rep. of	Mexico	USSR
France	Poland	

No member body expressed disapproval of the document.

This second edition cancels and replaces the first edition (i.e. ISO 486-1974).

Printed in Switzerland

Cinematography — 16 mm motion-picture film perforated 8 mm Type R — Cutting and perforating dimensions

1 Scope and field of application

This International Standard specifies the cutting and perforating dimensions for 16 mm motion-picture film which is perforated 8 mm Type R, as well as the width of motion-picture film after processing and slitting.

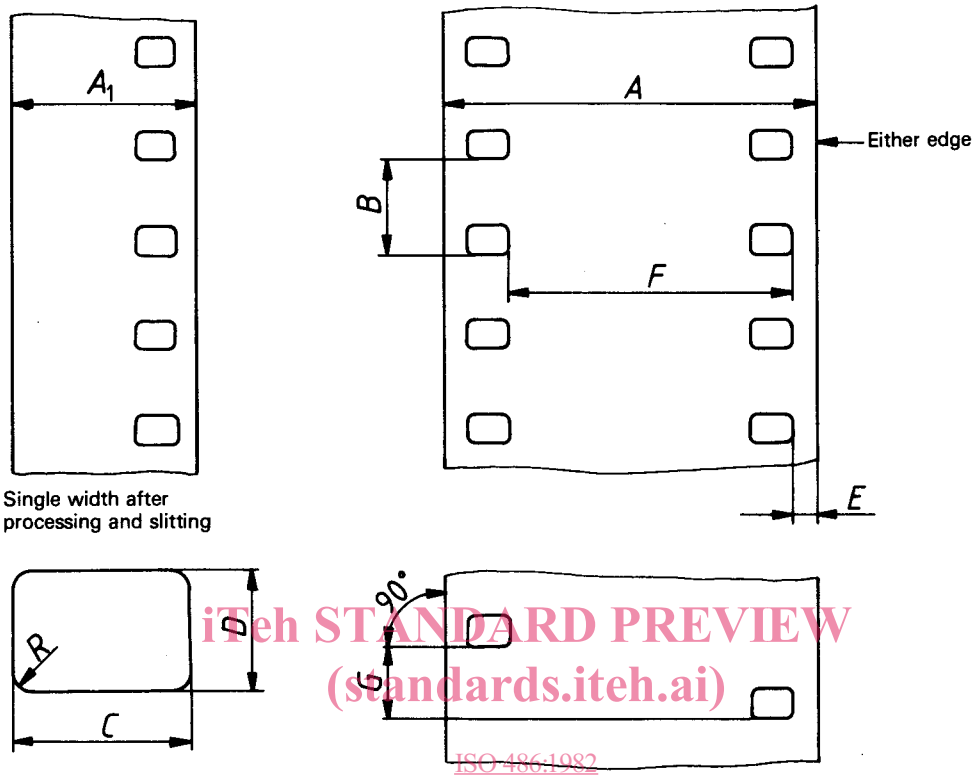
NOTE — Film perforated in accordance with this International Standard is also referred to as "double 8 mm motion-picture film".

2 Reference

ISO 543, *Cinematography — Motion-picture safety film — Definition, testing and marking.*

3 Dimensions

The dimensions shall be as shown in the figure and given in the table.



Figure

Table — Dimensions

Dimension	mm	in
A	15,95 ± 0,03	0.628 ± 0.001
A_1	7,975 ± 0,050	0.314 0 ± 0.002 0
B	3,810 ± 0,013	0.150 0 ± 0.000 5
C	1,83 ± 0,01	0.072 0 ± 0.000 4
D	1,27 ± 0,01	0.050 0 ± 0.000 4
E	0,90 ± 0,05	0.035 ± 0.002
F	12,32 ± 0,03	0.485 ± 0.001
G	0,025 max.	0.001 max.
L	381,00 ± 0,40	15.000 ± 0.016
R	0,25 ± 0,03	0.010 ± 0.001

NOTES

1 These dimensions and tolerances, except dimension A_1, apply to safety unexposed motion-picture film as specified in ISO 543 immediately after cutting and perforating. If required by usage, the manufacturer should indicate the atmospheric conditions applied to the dimensional control at the time of cutting and perforating.

2 Dimension L represents the length of any 100 consecutive perforation levels.

3 The dimensions apply to low-shrunk film base, as defined in clause A.2 of the annex. For film with higher shrinkage characteristics, dimension A should be 15,98 ± 0,025 mm (0.629 ± 0.001 in), and E 0,91 ± 0,05 mm (0.036 ± 0.002 in).

4 The inch dimensions follow the practice of those countries using the imperial system and in some instances are not exact conversions from the metric dimensions.

Annex

(This annex does not form part of the standard.)

A.1 Uniformity of perforations

The dimensions given in this International Standard represent the practice of film manufacturers in that the dimensions and their tolerances are for film stock immediately after perforation. The punches and dies themselves are made to tolerances considerably smaller than those given, but since the film is a plastic material, the dimensions of the slit and perforated film stock never agree exactly with the dimensions of the slitter knives, punches and dies. Film can shrink or swell due to loss or gain in moisture content, or can shrink due to loss of solvent or plasticizer. These changes invariably result in changes in the dimensions during the life of the film. The change is generally uniform throughout a roll.

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 sprocket hole to the next. Actually, it is the maximum variation from one sprocket hole to the next within any small group of consecutive perforations that is important.

A.2 Choice of width

The width for 16 mm films is controlled by the shrinkage characteristics of the films involved. Thus, there have been standards for the width of 16 mm stock of the "usual" shrinkage and for stock of "low-shrinkage" characteristics. The purpose was to obtain films of approximately the same width, regardless of the type of film base, during their useful life. This International Standard is based on the values adapted to "low-shrinkage" film base since nearly all films now manufactured meet the definition given below :

For the purpose of choice of width, low-shrinkage film base is film base which :

- when coated with emulsion and any other normal coating treatment,
- perforated,
- kept in the manufacturer's normal commercial packing for 6 months at 18 to 24 °C (64 to 75 °F),
- exposed,
- processed,
- stored exposed to air for a period not to exceed 30 days at 18 to 24 °C (64 to 75 °F) and 50 to 60 % relative humidity,
- measured under like conditions of temperature and humidity,

has shrunk not more that 0,2 % from its original dimensions at the time of perforating.

This definition of low-shrinkage film stock has been found by experience to be useful as a guide to film manufacturers in slitting their stock. Departure from this definition shall not be cause for rejection of the stock. Note that this definition of shrinkage differs from the criterion applying to choice of longitudinal pitch, where greater periods of time are involved and where short-time tests can be deceptive.

Allowance has been made in arriving at these values for the common tendency of film to expand when exposed to high relative humidity. Allowance should be made for this factor in equipment design and in no case should the equipment design fail to accommodate a film of 16,00 mm (0.630 in) width.