INTERNATIONAL STANDARD 69

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Cinematography — 16 mm motion-picture raw stock film — Cutting and perforating dimensions

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FOREWORD

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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 69 (originally Draft No. 852.2) was drawn up by Technical Committee ISO/TC 36, *Cinematography.*

It was approved in June 1969 by the Member Bodies of the following countries :

Austria	India	Spain
Belgium	Iran	Sweden
Canada	Israel	Switzerland
Czechoslovakia	Italy	Thailand
Egypt, Arab Rep. of	Netherlands	U.S.A.
Germany	New Zealand	
Greece	Peru	

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

France
Japan
United Kingdom
U.S.S.R.

This International Standard cancels and replaces ISO Recommendation R 69-1958.

Printed in Switzerland

Cinematography — 16 mm motion-picture raw stock film — Cutting and perforating dimensions

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the cutting and perforating dimensions for 16 mm motion-picture raw stock film with perforations along one or two edges.

2 REFERENCES

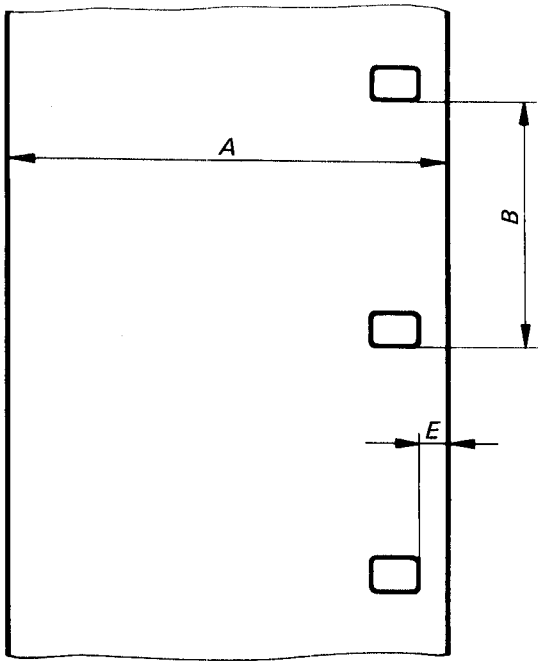
ISO/R 543, *Definition and marking of safety film for motion-picture uses.*

ISO/R 1200, *Motion-picture film perforated along one edge — Direction of winding.*

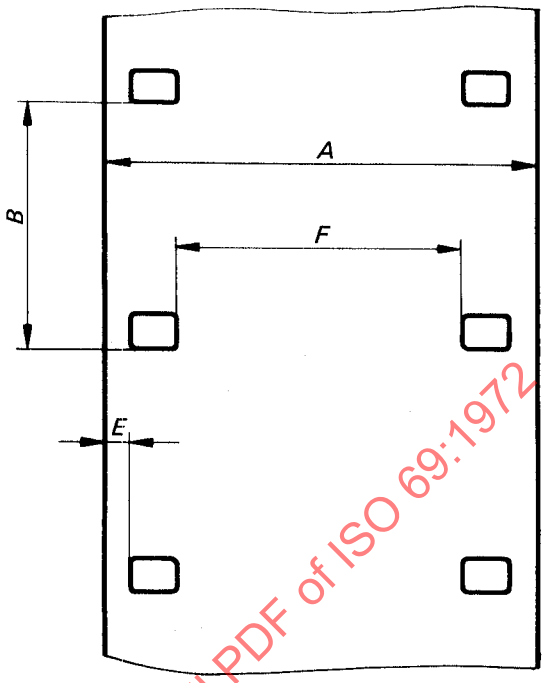
3 DIMENSIONS

The dimensions and tolerances shall be as given in the table accompanying the Figures and apply to safety raw stock film as described in ISO/R 543, immediately after cutting and perforating.

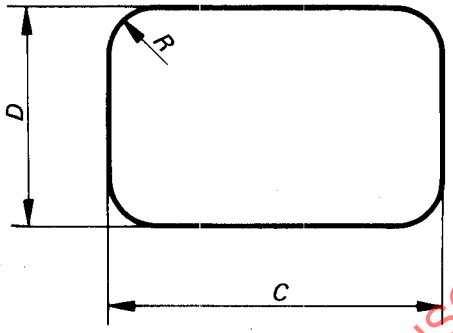
If required by usage, the manufacturer should indicate the atmospheric conditions applied to the dimensional control at the time of cutting and perforating.



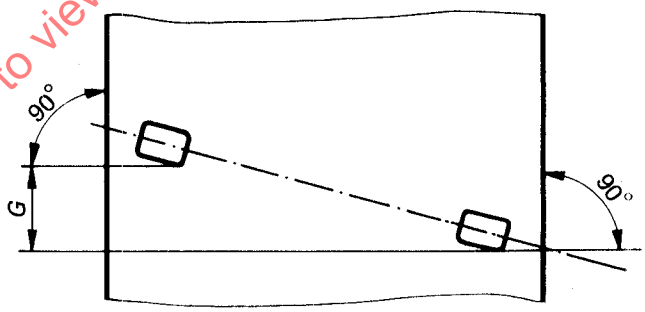
Film with perforations along one edge
Type 1 : 16 mm — 1R



Film with perforations along two edges
Type 2 : 16 mm — 2R



Detail of perforation



Permissible alignment deviation of the rows of perforations

Dimension	Type 1R and 2R 7,620 and 7,605	Type 1R and 2R 3000 and 2994
	mm	in
A	15,95 ± 0,025	0.628 ± 0.001 0
B	7,620 ± 0,010	0.300 0 ± 0.000 4
B_1 •	7,605 ± 0,010	0.299 4 ± 0.000 4
C	1,83 ± 0,010	0.072 ± 0.000 4
D	1,27 ± 0,010	0.050 ± 0.000 4
E	0,900 ± 0,050	0.035 5 ± 0.002 0
F	10,49 ± 0,025	0.413 ± 0.001 0
G	0,025 maximum	0.001 0 maximum
L	762,0 ± 0,8	30.00 ± 0.03
L_1 *	760,5 ± 0,8	29.94 ± 0.03
R	0,25 ± 0,025	0.010 ± 0.001 0

* See Note 3.

NOTES

1 Dimensions L and L_1 represent the length of any 100 consecutive perforation intervals.

2 Dimensions B_1 and L_1 (short perforation pitch) are provided to fulfil the requirements of continuous sprocket contact printing.

3 For film with perforation pitch 7,620 mm = 0.300 0 in on film base with higher shrinkage characteristics than that defined for low-shrink film base (see Z.2 in the Appendix), dimension A should be 15,98 ± 0,025 mm (0.629 ± 0.001 0 in) and dimension B should be 0,91 ± 0,05 mm (0.036 ± 0,002 in).

4 Experience shows that it is common for film to expand when exposed to high relative humidity. Allowance should be made for this factor in equipment design and in no case should equipment fail to accomodate a film width of 16,00 mm (0.630 in).

APPENDIX

Z.1 UNIFORMITY OF PERFORATIONS

The dimensions given in this International Standard represent the practice of film manufacturers in that the dimensions and tolerances are for film stock immediately after perforation. The punches and dies themselves are made to tolerances considerably smaller than those given, but since film is a plastic material, the dimensions of the slit and perforated film stock never agree exactly with the dimensions of the slitters, punches and dies. Film can shrink or swell due to loss or gain in moisture content or can shrink due to loss of solvent. 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 perforation to the next. Actually, it is the maximum variation from one perforation to the next within a small group of consecutive perforations that is important.

Z.2 CHOICE OF WIDTH

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 manufacturer's normal commercial packings for 6 months at 18 to 24 °C (65 to 75 °F);
- exposed;
- processed;
- stored exposed to air for a period not to exceed 30 days at 18 to 24 °C (65 to 75 °F) and 50 to 60 % relative humidity;
- measured under like conditions of temperature and humidity,

shall have shrunk not more than 0,2 % from its original dimension at the time of perforating.

This definition of low-shrinkage film has been found by experience to be useful as a guide to film manufacturers in slitting their film. Departure from this definition should not be cause for rejection of the film.