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INTERNATIONAL STANDARD ISO 4238

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Cinematography — Optical printing ratios for enlargement and reduction of motion-picture film images — Specifications

Cinématographie — Rapports d'agrandissement et de réduction d'image pour le tirage optique des films cinématographiques — Spécifications

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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 4238 was drawn up by Technical Committee ISO/TC 36, *Cinematography*, and was circulated to the Member Bodies in October 1975.

It has been approved by the Member Bodies of the following countries :

Austria	Italy	Spain
Belgium	Japan	Sweden
Canada	Korea, Rep. of	Switzerland
Czechoslovakia	Mexico	Turkey
Denmark	Netherlands	United Kingdom
France	Poland	U.S.A.
Germany	Romania	U.S.S.R.
India	South Africa, Rep. of	

No Member Body expressed disapproval of the document.

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Cinematography — Optical printing ratios for enlargement and reduction of motion-picture film images — Specifications

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the required ratios for optical enlargement and reduction of motion-picture film images in intermittent and continuous printing operations in transferring film formats from one to another.

2 REFERENCES

ISO 74, *Cinematography — Image area produced by camera aperture and maximum projectable image area on 8 mm Type R motion-picture film — Positions and dimensions.*

ISO 466, *Cinematography — Image produced by 16 mm motion-picture camera aperture — Position and dimensions.*

ISO 2467, *Cinematography — 65 and 70 mm motion-picture film — Image area produced by camera aperture and projectable image area.*

ISO 2906, *Cinematography — 35 mm motion-picture film — Image area produced by camera aperture.*

ISO 3645, *Cinematography — Image area produced by 8 mm Type S motion-picture camera aperture and maximum projectable image area — Positions and dimensions.*

3 SPECIFICATIONS

3.1 The optical enlargement or reduction ratios shall be as specified in the table.

3.2 The ratios specified in the table are intended as guidelines and shall not supersede the image dimensions specified in the fundamental standard for the particular format concerned.

NOTES

1 An enlargement ratio in optical printing implies the ratio of the resulting image size to that of the image size of the original film which is being reproduced.

2 If the operation results in reduction of the image area, the ratio of enlargement is less than one.

3 The ratios specified in the table are based on the use of unshrunk films.

4 To reduce losses of picture information in printing when transferring films from one format to another, the image enlargement ratios in intermittent optical printing should be as close as possible to the minimum values given in the table unless cropping of the image in the original is required.

Variant	Original material			Film print obtained			Enlargement ratio			
	Image			Image			in intermittent printing, minimum		continuous printing, nominal	
	film width mm	character	dimensions	film width mm	character	dimensions	width	height	width	height
1	65 or 70	non-anamorphotic	ISO 2467	35	anamorphotic	ISO 2906	0,42	0,80	0,42	0,802
2				35	non-anamorphotic	ISO 2906	0,70		—	—
3	35	anamorphotic	ISO 2906	70	non-anamorphotic	ISO 2467	2,40	1,24	2,40	1,253
4				35	non-anamorphotic	ISO 2906	1,70	0,86	—	—
5		non-anamorphotic	ISO 2906	16	non-anamorphotic	ISO 466	0,465		—	
6				8R	non-anamorphotic	ISO/R 74	0,23		—	
7				8S	non-anamorphotic	ISO 3645	0,26		—	
8	16	non-anamorphotic	ISO 466	35	non-anamorphotic	ISO 2906	2,18		—	
9				8R	non-anamorphotic	ISO/R 74	0,50		0,501	
10				8S	non-anamorphotic	ISO 3645	0,55		0,557	