

INTERNATIONAL STANDARD

ISO
5655

Second edition
1993-10-15

Photography — Film dimensions — Industrial radiography

Photographie — Dimensions des films — Radiographie industrielle



Reference number
ISO 5655:1993(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 5655 was prepared by Technical Committee ISO/TC 42, *Photography*.

This second edition cancels and replaces the first edition (ISO 5655:1982), of which it constitutes a technical revision.

Annex A forms an integral part of this International Standard. Annexes B and C are for information only.

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Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Photography — Film dimensions — Industrial radiography

1 Scope

This International Standard specifies the nominal sizes and aim dimensions, with their cutting tolerances, of photographic films in sheets and rolls, used for industrial radiography by direct exposure to the radiation beam.

It also specifies the requirements for shape of sheets, core dimensions for film in rolls, and package marking.

In this International Standard, metric units are prime.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1:1975, *Standard reference temperature for industrial length measurements*.

ISO 554:1976, *Standard atmospheres for conditioning and/or testing — Specifications*.

3 Conditions for measurement of dimensions

The dimensions and tolerances specified in this International Standard apply at the time of manufacture, measured under atmospheric conditions of $(23 \pm 2)^\circ\text{C}$ and $(50 \pm 5)\%$ relative humidity, as specified in ISO 554¹⁾ (see annex B).

1) All measuring instrument calibrations should be referred to a temperature of 20°C (as specified in ISO 1) and a relative humidity of 50 %.

4 Films in sheets

4.1 Dimensions

4.1.1 Preferred sizes

Nominal and aim dimensions for preferred sizes shall be in accordance with the values given in table 1.

Table 1 — Preferred sizes of films in sheets

Nominal cm	Aim mm
6 × 24	58,5 × 238
6 × 48	58,5 × 478
9 × 12	88,5 × 118,5
10 × 24	98,5 × 238
10 × 40	98,5 × 398
10 × 48	98,5 × 478
13 × 18 ¹⁾	128 × 178
15 × 40	148 × 398
18 × 24 ¹⁾	178 × 238
18 × 43 ¹⁾	178 × 430
24 × 30	238 × 298
30 × 40	298 × 398
35 × 43 ¹⁾	354 × 430

1) These nominal sizes are the rounded values commonly used for 17,8 cm, 35,6 cm and 43,2 cm, formerly 7 in, 14 in and 17 in, respectively.

4.1.2 Recognized sizes

Nominal and aim dimensions for temporarily recognized sizes shall be in accordance with the values given in table 2.

Table 2 — Recognized sizes of films in sheets

Nominal ¹⁾ cm	Aim mm
8,5 × 30,5 ²⁾	84,3 × 303,2
8,9 × 43	88,1 × 430
11,4 × 25,4	113,5 × 252,8
11,4 × 43	113,5 × 430
20,3 × 25,4	201,6 × 252,8
25,4 × 30,5	252,8 × 303,2
27,9 × 35	278,6 × 354
1) These sizes are metric conversions of nominal inch sizes. See annex A for full information concerning inch sizes and their correspondence with metric sizes.	
2) This size is regionally recognized in the Far East.	

The sizes listed in table 2, with the exception of 8,5 cm × 30,5 cm, are rapidly becoming obsolescent. Equipment manufacturers are advised therefore to design future equipment to accept only the preferred sizes listed in table 1.

4.1.3 Cutting and tolerance rules

For the current sizes shown in table 1 and for new metric sizes, the cutting and tolerance rules shall be as indicated in table 3.

For the sizes given in table 2 (inch origin), there is no cutting rule and the tolerances on the cutting dimensions (aim values) shown in table 2 shall be

- ± 0,4 mm for nominal dimensions up to and including 11,4 cm;
- ± 0,8 mm for nominal dimensions greater than 11,4 cm.

Table 3 — Cutting and tolerance rules for metric sizes of films in sheets

Nominal, <i>N</i> cm	Aim ¹⁾ mm	Tolerance mm
$N \leq 12$	$N - 1,5$	$\pm 0,5$
$12 < N \leq 65$ ²⁾	$N - 2$	± 1
$65 < N$	$N - 2,5$	$\pm 1,5$
1) These cutting rules are not applicable to the sizes in table 2.		
2) For 35 cm and 43 cm nominal, the aim values are obtained by using the nominal values of 35,6 cm and 43,2 cm, respectively.		

4.2 Squareness and edge straightness

Squareness, edge straightness, shape and compliance with the dimensions specified in this International Standard shall be checked at the same time by comparison of any given sheet with two perfect rectangles, independently located, one made to the minimum dimensional tolerance specified in this International Standard and the other to the maximum tolerance. No point on the perimeter of the sheet shall fall within the smaller rectangle nor shall any point fall outside the larger rectangle.

4.3 Corner rounding

If the four corners of the film are rounded, the actual edge of the corner shall be inside the hatched area shown in figure 1.

The corners shall have no steps or sharp features.

NOTE 1 The areas removed by corner rounding are not judged to be in violation of 4.2.

5 Films in rolls

5.1 Width of rolls

5.1.1 Preferred widths

Nominal and aim dimensions for preferred widths, and their tolerances, shall conform to the values given in table 4.

Table 4 — Widths of films in rolls

Nominal mm	Aim mm	Tolerance mm
35	34,5	$\pm 0,5$
60	59,5	$\pm 0,5$
70	69,5	$\pm 0,5$
100	98,5	$\pm 0,5$
300	298	± 1

5.1.2 Slitting and tolerance rules

The slitting and tolerance rules for widths of rolls not shown in table 4, shall conform to the values given in table 5.

Table 5 — Slitting and tolerance rules for roll widths

Nominal, N cm	Aim mm	Tolerance mm
$N \leq 12$	$N - 1,5$	$\pm 0,5$
$12 < N \leq 65$ ¹⁾	$N - 2$	± 1
$65 < N$	$N - 2,5$	$\pm 1,5$

1) For 35 cm and 43 cm nominal, the aim values are to be obtained by using the nominal values of 35,6 cm and 43,2 cm, respectively.

5.2 Length of rolls

For rolls of width up to and including 100 mm nominal, the preferred nominal lengths, exclusive of leaders and trailers, are 100 m and 150 m.

However, lengths of 60 m, 90 m and 305 m are recognized.

For rolls wider than 100 mm nominal, the preferred nominal length, exclusive of leaders and trailers, is 60 m.

5.3 Splices

There shall be no splices in films in rolls.

5.4 Winding

When the emulsion is coated on one side only, it is preferred that the film be wound on the core sensitized side in.

It is preferred that the film not be attached to the core. It is preferred that the film be wound on the core so that the position of the core be symmetrical with respect to the film roll. In no case shall the core be recessed on one side while protruding from the other.

The overall roll width, which includes any withwise winding deviations plus any protrusion of the core from the roll, should not exceed the maximum slitting width plus 1 mm.

The above stipulations are not applicable to pre-packed films for daylight use.

6 Package marking**6.1 Data**

Sufficient data shall be given on the package to ensure correct usage of the product.

Packages are marked for the purpose of identifying

- product name and format;
- conditions of use (such as safelight);
- conditions for shipping and storage.

Any given level of packaging fulfils one or more of these functions and shall be identified accordingly, using appropriate entries from the following list²⁾:

- product name or tradename. For unit packages, this item shall be legible under recommended safelight conditions (other than total darkness);
- name or trademark of the manufacturer;
- manufacturer's catalogue identification number;
- bar code information;
- information to assist recycling of waste packaging;
- quantity of units contained in the package;
- nominal product dimensions, in metric units, with the smaller dimension first (films in sheets) or nominal width and length, in metric units (films in rolls);
- type of screen included in the package, or an indication that no screen is included;
- batch number and/or parent roll number;
- notch code or notch pattern, if any;

2) There can be legal requirements in certain countries for other data to be marked on the package.

- expiration date or "develop before" date or inventory control code;
- manufacturer's recommended safelight conditions³⁾;
- manufacturer's recommended storage conditions³⁾.

6.2 Compliance

If it is desired to indicate compliance of the product with this International Standard, the following wording shall be used:

COMPLYING WITH ISO 5655

Dimensions in millimetres

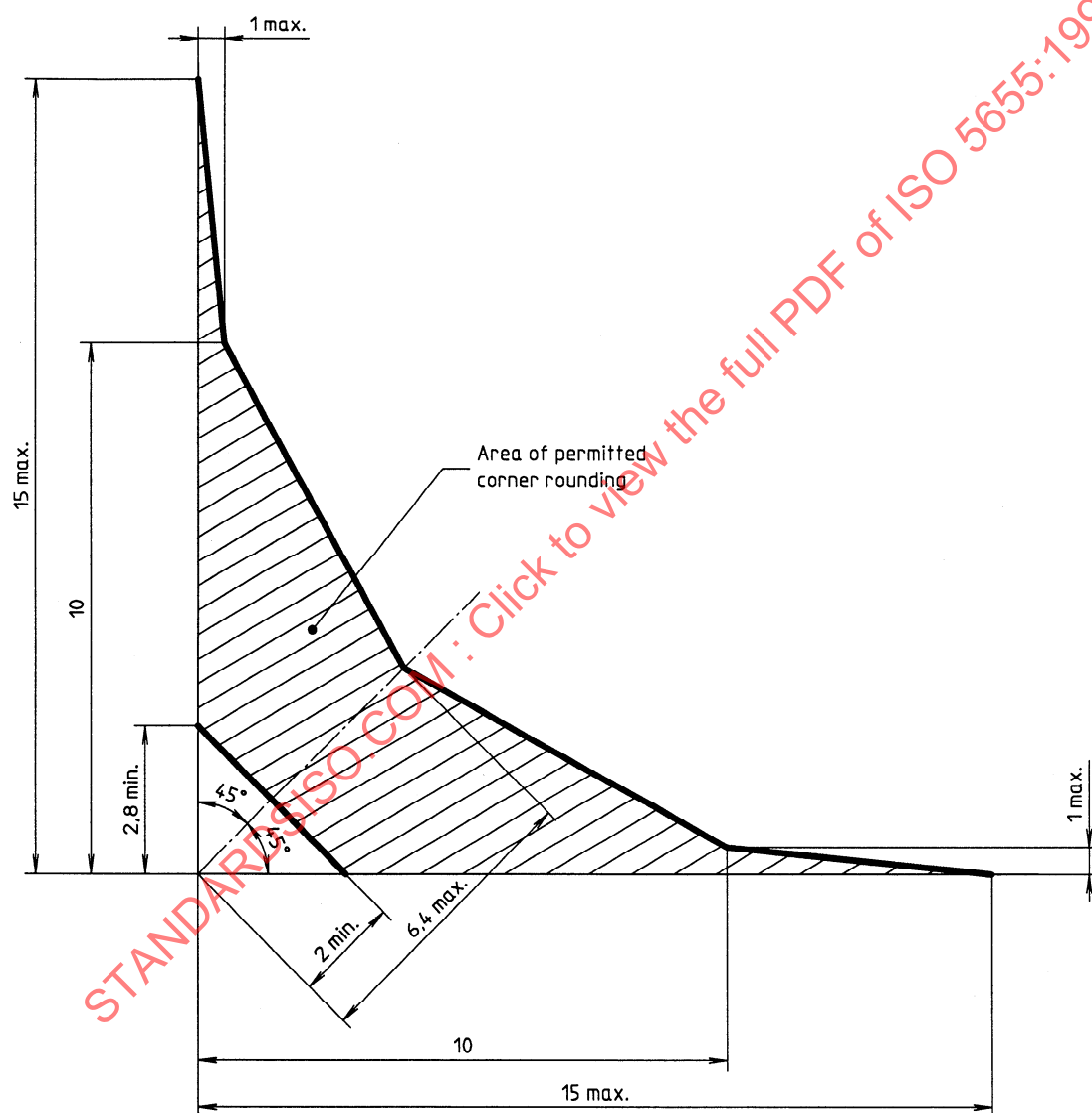


Figure 1 — Corner rounding limits

³⁾ This may be indicated by wording or by a code

Annex A

(normative)

Recognized sizes of film in sheets

Nominal and aim dimensions for temporarily recognized sizes originated in inches shall conform to the values given in table A.1.

The tolerances on the aim dimensions shown in table A.1 shall be

$\pm 0,016$ in ($\pm 0,4$ mm) for aim dimensions up to and including 4,5 in;

$\pm 0,031$ in ($\pm 0,8$ mm) for aim dimensions greater than 4,5 in.

See 4.1.2 and 4.1.3 for the metric conversions of the above values.

Table A.1 — Recognized sizes, originated in inches, of films in sheets

Nominal		Aim	
in	cm	in	mm
3 1/3 × 12 ¹⁾	8,5 × 30,5	3,32 × 11,94	84,3 × 303,2
3 1/2 × 17	8,9 × 43 ²⁾	3,47 × 16,93	88,1 × 430
4 1/2 × 10	11,4 × 25,4	4,47 × 9,95	113,5 × 252,8
4 1/2 × 17	11,4 × 43 ²⁾	4,47 × 16,93	113,5 × 430
8 × 10	20,3 × 25,4	7,94 × 9,95	201,6 × 252,8
10 × 12	25,4 × 30,5	9,95 × 11,94	252,8 × 303,2
11 × 14	27,9 × 35 ²⁾	10,97 × 13,94	278,6 × 354
1) This size is regionally recognized in the Far East. 2) These nominal sizes, 35 cm and 43 cm, are the rounded values commonly used for 35,6 cm and 43,2 cm, that is 14 in and 17 in, respectively.			

Annex B

(informative)

Dimensional stability

The dimensions and tolerances specified apply to the film at the time of manufacture and when measured in equilibrium with the standard atmosphere specified in ISO 554, temperature $(23 \pm 2) ^\circ\text{C}$, relative humidity $(50 \pm 5) \%$.

These dimensions may be altered by permanent ageing shrinkage and by temporary shrinkage or swell since they will change with the moisture content and the temperature of the atmosphere.

Nevertheless, at the time of package opening within the warranty period of the film, dimensions measured under atmospheric conditions of temperature $(23 \pm 2) ^\circ\text{C}$ and relative humidity $(50 \pm 5) \%$ should not depart from those at the time of manufacture by more than

+ 0,08 % to – 0,11 % for films on cellulose ester base;

+ 0,05 % to – 0,08 % for films on polyester base.

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Annex C
(informative)

Quantity packaging for sheets

It is recommended that the number of sheets in a single package or a unit of a multiple package be chosen from the following list:

50 — 100 — 125 sheets.

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