42

INTERNATIONAL STANDARD

ISO 6407

First edition
1992-01-15

Photography — Film dimensions — Graphic arts

Photographie — Dimensions des films arts graphiques

Reference number
ISO 6407:1992(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 6407 was prepared by Technical Committee ISO/TC 42, *Photography*.

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

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Photography — Film dimensions — Graphic arts

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 graphic arts.

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

It does not apply to films for documentary reproduction.

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 216:1975, *Writing paper and certain classes of printed matter — Trimmed sizes — A and B series.*

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 ± 2) °C, and (50 ± 5) % relative humidity, as specified in ISO 554[1] (see annex B).

4 Films in sheets

4.1 Dimensions

4.1.1 Preferred sizes

Nominal and aim dimensions for preferred sizes shall conform to the values given in tables 1 and 2.

Table 1 lists preferred sizes currently in use.

Table 2 lists "A" sizes derived from writing paper series, specified in ISO 216, and which will be used increasingly in the future. The "A + margin" series is described in annex A.

Table 1 — Preferred sizes of films in sheets

Nominal cm	Aim mm
9 × 12	88,5 × 118,5
13 × 18	128,0 × 178,0
18 × 24	178,0 × 238,0
24 × 30	238,0 × 298,0
30 × 40	298,0 × 398,0
40 × 50	398,0 × 498,0
50 × 60	498,0 × 598,0

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

Table 2 — "A" sizes of sheet films

Nominal cm	Aim[1] mm
14,8 × 21 (A5)	146,0 × 208,0
21 × 29,7 (A4)	208,0 × 295,0
29,7 × 42 (A3)	295,0 × 418,0
42 × 59,4 (A2)	418,0 × 592,0
59,4 × 84,1 (A1)	592,0 × 838,5

1) Aim dimensions used in film manufacturing are smaller than those used for paper manufacturing.

4.1.2 Cutting and tolerance rules for preferred sizes

The cutting and tolerance rules for preferred sizes of sheets shown in tables 1 and 2, and for new metric sizes, shall be as given in table 3.

Table 3 — Cutting and tolerances rules for preferred sizes of films in sheets

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

4.1.3 Recognized sizes

Nominal and aim dimensions for temporarily recognized sizes and their tolerances shall conform to the values given in table 4.

Equipment manufacturers are encouraged, however, to design future equipment to accept only the preferred sizes listed in tables 1 and 2.

4.2 Squareness and edge straightness

Squareness, edge straightness, shape and compliance with dimensions 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 Identification of the sensitized side

Notches may be used to indicate the sensitized side.

When a film in sheets is held with the longer edge in a vertical position, notches shall be in the shorter edge, near the upper right-hand corner or the lower left-hand corner, when the sensitized side is facing the observer.

The shape and number of notches shall be left to the discretion of the manufacturer. They can additionally be used as a code to identify the type of film.

Notches shall not exceed 2,5 mm in depth.

NOTE 1 Any areas removed by notching are not judged to be in violation of 4.2.

Table 4 — Recognized sizes of films in sheets

Nominal		Aim		Tolerance	
cm[1]	in	mm	in	mm	in
10,2 × 12,7	4 × 5	99,6 × 125,4	3,92 × 4,94	± 0,4 × ± 0,8	± 0,02 × ± 0,03
20,3 × 25,4	8 × 10	201,6 × 252,8	7,94 × 9,95	± 0,8	± 0,03
25,4 × 30,5	10 × 12	252,8 × 303,2 [2]	9,95 × 11,94	± 0,8	± 0,03
27,9 × 35,6	11 × 14	278,6 × 354,8	10,97 × 13,97	± 0,8	± 0,03
30,5 × 45,7	12 × 18	304,0 × 456,4	11,97 × 17,97	± 0,8	± 0,03
35,6 × 43,2	14 × 17	354,8 × 431,0	13,97 × 16,97	± 0,8	± 0,03
40,6 × 50,8	16 × 20	405,6 × 507,2	15,97 × 19,97	± 0,8	± 0,03
47,5 × 61	18 × 24	456,4 × 608,8	17,97 × 23,97	± 0,8	± 0,03
50,8 × 61	20 × 24	507,2 × 608,8	19,97 × 23,97	± 0,8	± 0,03

1) These sizes were originated in inches.
2) Traditionally accepted value.

5 Films in rolls

5.1 Width of rolls

5.1.1 Preferred widths

Nominal and aim dimensions for preferred widths shall conform to the values given in table 5.

Table 5 — Preferred widths of films in rolls

Nominal cm	Aim mm
12	118,5
18	178,0
24	238,0
40	398,0
46	458,0
50	498,0
61	608,0

5.1.2 Slitting and tolerance rules for preferred widths

The slitting and tolerance rules for preferred widths of rolls shown in table 5, and for new metric widths, shall be as given in table 6.

Table 6 — Slitting and tolerance rules for preferred widths of rolls

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

5.1.3 Recognized widths

Nominal and aim dimensions for temporarily recognized widths, and their tolerances, shall conform to the values given in table 7.

Equipment manufacturers are encouraged, however, to design future equipment to accept only the preferred sizes listed in table 5.

5.2 Length of rolls

Nominal lengths of rolls shall be 10 m, 20 m, 30 m, 45 m, 60 m or 120 m. Actual length, at the time of cutting, shall not be less than the nominal length.

Table 7 — Recognized widths of films in rolls

Nominal		Aim		Tolerance	
cm[1)]	in	mm	in	mm	in
22,9	9	228,2	8,98	$\pm$ 0,4	$\pm$ 0,02
30,5	12	304,0	11,97	$\pm$ 0,8	$\pm$ 0,03
35,6	14	354,8	13,97	$\pm$ 0,8	$\pm$ 0,03
45,7	18	456,4	17,97	$\pm$ 0,8	$\pm$ 0,03
50,8	20	507,2	19,97	$\pm$ 0,8	$\pm$ 0,03
—	24[2)]	—	23,97	—	$\pm$ 0,03
76,2	30	761,2	29,97	$\pm$ 0,8	$\pm$ 0,03
91,4	36	913,6	35,97	$\pm$ 0,8	$\pm$ 0,03
106,7	42	1 066,0	41,97	$\pm$ 0,8	$\pm$ 0,03

1) These sizes were originated in inches.

2) No metric size is shown as comparable to the "24 in" width because this size already appears as 61 cm in table 5 as a preferred size, which requires different tolerance values from those in this table.

5.3 Splices

There shall be no splices in films in rolls.

5.4 Core

5.4.1 Core length

The aim length of the core shall equal the aim width of the film minus 1 mm with a tolerance of ± 1 mm.

5.4.2 Core internal diameter

The preferred internal diameter of the core is 71,2 mm ± 0,3 mm.

The core internal diameter of 71,9 mm ± 0,5 mm is, however, recognized[2].

5.5 Winding

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 recede on one side and protrude from the other.

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

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:

a) product name and format;

b) conditions of use (such as safelight);

c) conditions of shipping and storage.

Any given level of packaging fulfils one or more of these functions and shall be identified accordingly, using the appropriate entries from the following list[3]:

— product name or trade name[4];

— name or trade mark of the manufacturer;

— manufacturer's catalogue identification number;

— bar code information, if applicable;

— quantity of units contained in the package;

— nominal width and length, in metric units, showing the width first;

— batch number and/or parent roll number;

— notch code or notch pattern, if any;

— expiration date or "develop before" date or inventory control code;

— manufacturer's recommended safelight conditions[5];

— manufacturer's recommended storage conditions[5];

— indication of non-preferred winding, if applicable[4][5].

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 6407"

2) Manufacturers of equipment and sensitized goods should be aware of a possible future preference for an internal diameter and tolerance of 71,9 mm ± 0,3 mm.

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

4) For unit packages, this item should be legible under recommended safelight conditions (other than total darkness).

5) This may be indicated by wording or by a code.

Annex A
(normative)

"A + margin" sizes of sheet films

The "A + margin" series of sizes is made to provide trimming and working margins for printing any register mark and working symbols, or as a gutter between two documents reproduced on the same sheet.

The "A + margin" sizes shall conform to the values given in table A.1.

The cutting and tolerance rules for "A + margin" sizes of sheets shall be as given in table 3.

Table A.1 — "A + margin" sizes of sheet films

Nominal cm	Aim mm
24 × 33	238 × 328
33 × 46	328 × 458
46 × 64	458 × 638

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 ± 2) °C, relative humidity (50 ± 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.

Normally, dimensionally stable films are used for graphic arts products. At the time of package opening within the warranty period of the film, dimensions measured under atmospheric conditions of temperature (23 ± 2) °C and relative humidity (50 ± 5) % should not depart from those at the time of manufacture by more than + 0,02 % to − 0,04 %.