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Writing paper and certain classes of printed matter — Trimmed sizes — A and B series, and indication of machine direction

Papiers à écrire et certaines catégories d'imprimés — Formats finis — Séries A et B, et indication du sens machine

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 216 was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*.

This second edition cancels and replaces the first edition (ISO 216:1975), which has been technically revised. The principal change is the addition of a method for the indication of the machine direction.

Writing paper and certain classes of printed matter — Trimmed sizes — A and B series, and indication of machine direction

1 Scope

This International Standard specifies the trimmed sizes of writing paper and certain classes of printed matter.

It applies to trimmed sizes of paper for administrative, commercial and technical use, and also to certain classes of printed matter, such as forms, catalogues, etc.

It does not necessarily apply to newspapers, published books, posters or other special items which may be the subject of separate International Standards.

This International Standard also specifies the method for the indication of the machine direction for trimmed sheets.

NOTE In some countries, particularly in North America, different sizes of cut-size office papers are commonly used. For these paper sizes, refer to Reference [1] in the Bibliography.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 187, *Paper, board and pulps — Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
cross direction
CD
direction in the plane of a paper or board perpendicular to the machine direction

3.2
machine direction
MD
direction in the plane of a paper or board parallel to the direction of travel of the web on the paper or board machine

3.3
trimmed size
final dimensions of a sheet of paper or board

3.4
long-grain sheet
LG sheet
sheet having its longest sides parallel to the machine direction

3.5
short-grain sheet
SG sheet
sheet having its shortest sides parallel to the machine direction

4 Underlying principles

4.1 Basic principles (regularly derived sizes)

This system of paper sizes is built on the following basis: each normal series (regularly derived sizes) consists of a range of sizes formed in such a manner that each size is achieved by dividing the size immediately above it into two equal parts, the division being parallel to the shorter side (the halving principle). Consequently, the areas of two successive sizes are in the ratio 2:1 (see Figure 1).

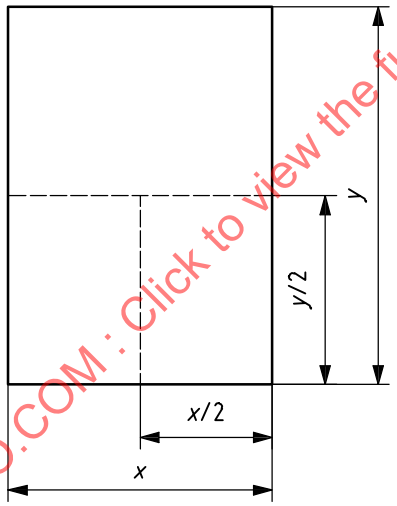

Figure 1 — The halving principle

All the sizes in each series are geometrically similar to one another (the principle of similarity) (see Figure 2). This requirement, combined with that explained in the preceding paragraph, gives the following equation for the sides x and y of a given size (see Figure 3):

$$y : x = \sqrt{2} : 1 = 1{,}414 \quad (1)$$

In other words, the ratio between the sides x and y is equal to the ratio between the side and the diagonal of a square.

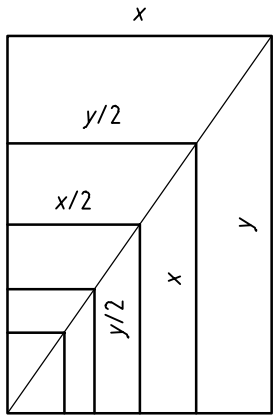

Figure 2 — The similarity principle

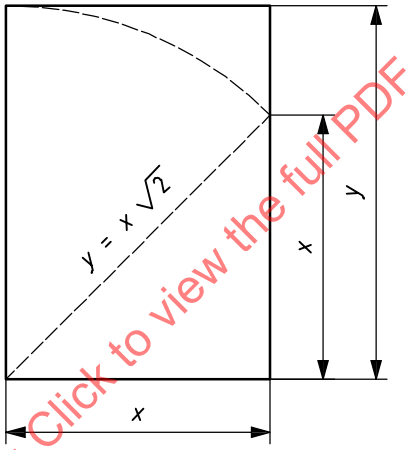

Figure 3 — The proportionality principle

4.2 System of measurement

These sizes are based on the metric system of measurement.

4.3 Main series (ISO-A series)

The basic size of the A series (A0) has an area of 1 m^2; the following equation therefore applies:

$$x \times y = 1\ m^2 \quad (2)$$

Equations (1) and (2) give the following lengths of the sides for the basic size of the A series:

$x = 0{,}841$ m

$y = 1{,}189$ m

The main series of sizes is arrived at by taking the basic size described above and applying the principles explained in 4.1.

This series is designated the ISO-A series.

4.4 Subsidiary series (ISO-B series)

A subsidiary series of sizes is obtained by placing the geometrical means between adjacent sizes of the A series in sequence.

This series is designated the ISO-B series.

4.5 Long sizes (specially derived)

Long sizes are obtained by dividing any appropriate regularly derived sizes from the two series previously mentioned into 3, 4 or 8 equal parts, parallel with the shorter side, in such a manner that the ratio between the longer and the shorter side is greater than $\sqrt{2}$.

5 Designation of trimmed sizes and machine direction

5.1 Main and subsidiary series

Each trimmed size in the main and the subsidiary series is designated by a letter followed by a number. The letter (A or B) indicates the series of sizes, and the number indicates the number of divisions that have been made (according to the rules of 4.1), starting from the basic size which has been given the number 0.

5.2 Indication of machine direction

For the purposes of identifying the machine direction, the sheet's dimensions shall be expressed in millimetres, such as 594 mm × 841 mm. The second dimension shall be that which is parallel to the machine direction.

In addition, if the sheet is long grain, having its longest sides parallel to the machine direction, then the notation LG may be added to its identification. If the sheet is manufactured with its shortest sides parallel to the direction of machine travel, the notation SG may be added. For example, a short-grain sheet with dimensions 297 mm × 210 mm may be identified as 297 mm × 210 mm SG.

Alternatively, sheets may be identified through the use of the ISO designation as shown in Table 1 and Table 2. For example, a short-grain sheet measuring 594 mm × 420 mm may be identified as A2 SG.

5.3 Trimmed long sizes

Trimmed long sizes are designated by the original size preceded by the fraction into which it has been divided. The machine direction of trimmed long sizes is identified in the same manner as for the main and subsidiary series.

For example, 1/4 A4 SG is derived from size A4 LG divided into four equal parts parallel to the 210 mm side as described in 4.5. The 1/4 A4 SG sheet may also be identified as 210 mm × 74 mm SG.

6 Trimmed sizes

6.1 Main series of trimmed sizes (ISO-A series)

The trimmed sizes of the A series are intended for all kinds of stationery and printed matter as specified in Clause 1. These sizes are as follows:

Table 1 — Main series of trimmed sizes (ISO-A series)

Designation	Dimensions mm
A0	841 × 1 189
A1	594 × 841
A2	420 × 594
A3	297 × 420
A4	210 × 297
A5	148 × 210
A6	105 × 148
A7	74 × 105
A8	52 × 74
A9	37 × 52
A10	26 × 37
NOTE The rarely used sizes which follow also belong to this series:	
4A0	1 682 × 2 378
2A0	1 189 × 1 682

6.2 Subsidiary series of trimmed sizes (ISO-B series)

The trimmed sizes of the B series are intended for use only in exceptional circumstances, when sizes are needed intermediate between any two adjacent sizes of the A series. These sizes are as follows:

Table 2 — Subsidiary series of trimmed sizes (ISO-B series)

Designation	Dimensions mm
B0	1 000 × 1 414
B1	707 × 1 000
B2	500 × 707
B3	353 × 500
B4	250 × 353
B5	176 × 250
B6	125 × 176
B7	88 × 125
B8	62 × 88
B9	44 × 62
B10	31 × 44

6.3 ISO trimmed long sizes

As far as possible, trimmed long sizes shall be produced from the regularly derived sizes of the A series (see Table 3 and Figure 4).

They are used for labels, tickets and certain other purposes.

Table 3 — Examples of ISO trimmed long sizes

Designation	Dimensions mm
1/3 A4	99 × 210
1/4 A4	74 × 210
1/8 A7	13 × 74

Dimensions in millimetres

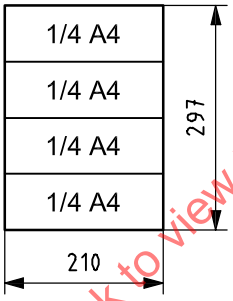

Figure 4 — Example of trimmed long sizes (1/4 A4) derived from the size A4

7 Tolerances

7.1 Permissible tolerances

For the purposes of this International Standard, the tolerance for a given sheet size is the range outside of which a sheet cannot be regarded as being of a given size. This tolerance differs from a manufacturing or process tolerance. The process tolerance depends on the sheet usage, and is likely to be more stringent than the range given within this International Standard; manufacturing tolerances should be agreed individually between trading partners.

Unless closer tolerances are specified at the time of ordering, the permissible tolerances on the dimensions are as follows:

a) for dimensions ⩽ 150 mm:

— upper limit +1,5 mm

— lower limit −1,5 mm

b) for dimensions > 150 mm but ⩽ 600 mm:

— upper limit +2 mm

— lower limit –2 mm

c) for dimensions > 600 mm:

— upper limit +3 mm

— lower limit –3 mm

7.2 Measurement conditions

The dimensions shall be measured under the standard atmosphere for testing specified in ISO 187.