INTERNATIONAL STANDARD

ISO 9923

First edition
1994-05-01

Micrographics — Transparent A6 microfiche — Image arrangements

Micrographie — Microfiche transparente de format A6 — Dispositions d'images

Reference number
ISO 9923:1994(E)

Contents

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

Annexes

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 9923 was prepared by Technical Committee ISO/TC 171, *Micrographics and optical memories for document and image recording, storage and use*.

This first edition cancels and replaces ISO 2707:1980, ISO 2708:1980 and ISO 5126:1980.

The most significant technical changes from these standards are the following:

— source document microfiche, of uniform and of variable formats, and COM microfiche are now covered by a single standard;

— the image arrangements of 49, 98, 270 and 420 frames and the single microfiche are part of the standard;

— uniform formats with image arrangements of 30, 60, 63, 84, 208, 210 and 325 frames and variable formats with image arrangements of 2, 4, 8, 16, 32 and 64 frames are dealt with in an annex;

— the image arrangements of 270 and 420 frames can be used for the microfilming of source documents (reduction ratio 1:48);

— the index pagination method has been changed.

Annexes A, B and C of this International Standard are for information only.

Micrographics — Transparent A6 microfiche — Image arrangements

1 Scope

This International Standard specifies the characteristics of transparent A6 size microfiche, from both source documents and COM, intended for international interchange of information and for micropublishing.

It is applicable to microfiche of uniform format with image arrangements of 49, 98, 270 and 420 frames and a single frame microfiche.

Depending on requirements, the microfiche may be negative-appearing or positive-appearing.

An annex specifies the characteristics of microfiche of uniform format with image arrangement of 30, 60, 63, 84, 208, 210 and 325 frames and microfiche of variable divisions of 2, 4, 8, 16, 32 and 64 frames used for certain applications.

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 446:1991, *Micrographics — ISO character and ISO test chart No. 1 — Description and use.*

ISO 543:1990, *Photography — Photographic films — Specifications for safety film.*

ISO 3334:1989, *Micrographics — ISO resolution test chart No. 2 — Description and use.*

ISO 4330:1987, *Photography — Determination of the curl of photographic film.*

ISO 5123:1984, *Documentation — Headers for microfiche of monographs and serials.*

ISO 5466:1992, *Photography — Processed safety photographic films — Storage practices.*

ISO 6148:1993, *Photography — Film dimensions — Micrographics.*

ISO 6196-1:1993, *Micrographics — Vocabulary — Part 01: General terms.*

ISO 6196-2:1993, *Micrographics — Vocabulary — Part 02: Image positions and methods of recording.*

ISO 6196-3:1983, *Micrographics — Vocabulary — Part 03: Film processing.*

ISO 6196-4:1987, *Micrographics — Vocabulary — Part 04: Materials and packaging.*

ISO 6196-5:1987, *Micrographics — Vocabulary — Part 05: Quality of images, legibility, inspection.*

ISO 6196-6:1992, *Micrographics — Vocabulary — Part 06: Equipment.*

ISO 6196-7:1992, *Micrographics — Vocabulary — Part 07: Computer micrographics.*

ISO 6199:1991, *Micrographics — Microfilming of documents on 16 mm and 35 mm silver-gelatin type microfilm — Operating procedures.*

ISO 6200:1990, *Micrographics — First generation silver-gelatin microforms of source documents — Density specifications.*

ISO 8126:1986, *Micrographics — Diazo and vesicular films — Visual density — Specifications.*

ISO 8514-1:1992, *Micrographics — Alphanumeric computer output microforms — Quality control — Part 1: Characteristics of the test slide and test data.*

ISO 8514-2:1992, *Micrographics — Alphanumeric computer output microforms — Quality control — Part 2: Method.*

ISO 9878:1990, *Micrographics — Graphical symbols for use in microfilming.*

ISO 10196:1990, *Micrographics — Recommendations for the creation of original documents.*

ISO 10602:1993, *Photography — Processed silver-gelatin type black-and-white film — Specifications for stability.*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 6196 apply.

4 Basic characteristics of microfiche

4.1 Physical characteristics

4.1.1 Raw film

The film used for exposure and duplication can be either roll film, which will then be cut to the dimensions for the microfiche, or sheet film. It shall conform to ISO 543, ISO 6148 and ISO 10602.

4.1.2 Dimensions of the microfiche

The external dimensions of the processed microfiche, when measured from the reference corner, shall be

$105\ ^{0}_{-0,75}$ mm × $148\ ^{0}_{-1}$ mm

The dimensions shall be measured when the film has come to equilibrium, after processing, at a temperature of 23 °C ± 2 °C and a relative humidity within the range 45 % to 55 %.

Size variations due to raw stock finishing have been considered in determining the tolerances. Additional size changes can occur during ageing, especially for film coated on cellulose ester base. Temporary size changes due to temperature and humidity changes are also possible (see annex B and ISO 6148).

Microfiche cut to the A6 sheet size before processing can be out of the tolerances quoted after processing because the high temperature required for processing can cause stretching and shrinking.

4.1.3 Identification of the sensitised side of sheet film

To facilitate microfiche-to-microfiche copying, a notch or a corner cut may be used to identify the sensitised layer of the microfiche, as follows:

When a sheet of raw film or microfiche is held with the long sides in a vertical position and the notch or corner cut in the upper right-hand corner, the sensitised side shall be towards the observer.

When a notch is used, it shall be made in the shorter side of the sheet, near the appropriate corner. The notch may be of any shape, but it shall not penetrate more than 1,6 mm inward from the edge of the microfiche.

When a corner cut is used, it shall be made only in the appropriate corner of the heading area. The nominal dimensions of the cut are 4 mm along the longer side of the microfiche and 4 mm along the shorter side.

4.1.4 Squareness

The deviation from squareness and edge straightness of any microfiche cut to A6 size after processing shall be limited by two separate perfect rectangles, 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 large rectangle. (See 4.2.1 for dimensions.)

NOTE 1 Certain duplicating processes, such as thermal, may be unable to meet these requirements, in which case the microfiche may be unsuitable for automated devices.

4.1.5 Thickness

The thickness of the film used for the microfiche shall not be greater than 0,22 mm or less than 0,10 mm.

4.1.6 Corner rounding

The corners of the microfiche may be rounded, the exception being that corner which has been subjected to a corner cut. When corners are rounded, the process shall not remove more than 3 mm of either of the two edges forming the corner.

4.1.7 Curl and bow

Place a fully processed microfiche cut to distribution size convex side down on a flat surface for at least 6 h in an atmosphere in which the temperature is 23 °C ± 2 °C and the relative humidity (50 ± 5) %. Thereafter, no part of the microfiche shall be more than 6,5 mm above the surface (see ISO 4330:1987, test method C).

4.2 Heading

4.2.1 Heading area

The heading area of the microfiche, situated above the image area, shall be reserved for heading area coating, eye-legible identification and references. The dimensions of the heading area for various formats are indicated in tables 1 and A.1.

If extra space is needed, the space allocated to the whole of the following row(s) of images may be used. In this case, the identification of the remaining image frames as defined in 4.3 shall remain unchanged.

4.2.2 Arrangement of the heading

The heading area may be divided into three distinct areas in the sequence shown in figure 1. The length of each section is not fixed and is determined by the user (see ISO 5123).

4.2.2.1 Identification area

This area shall be used for identification of the microfiche and any reference to the confidentiality of the microfiche.

4.2.2.2 Bibliographic area

This area is reserved for bibliographical references specifying the contents of the microfiche.

When more complete information is necessary for other purposes, such as classification and cataloguing, use the first frames of the microfiche.

Copyright details shall be included at the bottom of this area.

4.2.2.3 Sequential area

Machine-readable characters and optical codes shall be placed in the upper right portion of this area, with the length not exceeding the maximum heading area widths specified in table 1 (see figures 3 to 6).

The sequential numbering of the microfiche in a series is placed in this area. When machine-readable characters and optical codes are used, sequential numbers shall be placed in the upper left part.

Microfiche in a series shall be numbered sequentially. This numbering can be in the form of a fraction, of which the numerator represents the position in the series and the denominator the total number of microfiches in the series (for example 1/5, 2/5, ... 5/5). The denominator can be replaced by a dash (-) when the total number of microfiches is unknown.

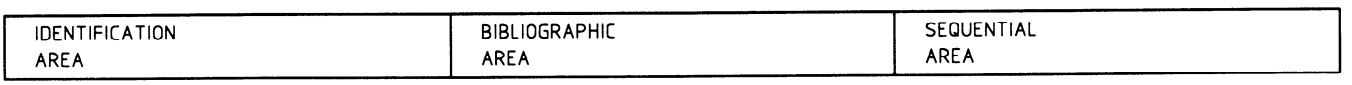

Figure 1 — Presentation of the heading area

Table 1 — Microfiche layout

Dimensions in millimetres

Number of frames	Image area[1]	Frame dimensions[2]	Number of rows	Number of columns	Maximum heading area width	Lower margin	Left margin	Figure number
49	87,5 × 140	12,5 × 20	7	7	12,25	4 ± 0,5	4 ± 0,5	3
98	87,5 × 140	10 × 12,5	7	14	12,25	4 ± 0,5	4 ± 0,5	3
270	93,75 × 139,5	6,25 × 7,75	15	18	6	4 ± 0,5	4 ± 0,5	4
420	93,75 × 140	5 × 6,25	15	28	6	4 ± 0,5	4 ± 0,5	5
1	95 × 133	95 × 133	—	—	8,25	$0,5\ ^{+0,2}_{0}$	7,5 ± 0,25	6

1) Image area does not include heading.

2) Single and double frames can be used on the same microfiche.

When the last microfiche of the series is produced, its denominator shall correspond to the total number of microfiches contained in the series (for example 1/-, 2/-, ... 12/12). The denominator may be replaced by the letter F, which stands for "finish" or "fin" (for example 12/F).

4.2.3 Characters of the heading

The heading can be written on a light background with dark lettering (positive-appearing) or on a dark background with light lettering (negative-appearing).

All the text in the heading shall be right-reading, upright and visible to the naked eye. The characters shall have a minimum height of 1,6 mm.

4.2.4 Colour stripe

The application of a coloured stripe on the back of the heading area is optional. If it is applied, it shall not increase the thickness of the microfiche by more than 0,01 mm.

NOTE 2 The colour stripe can prevent the duplication of the heading.

4.3 Identification of the image frames

When coordinates are used to identify the position of microimages, the rows should be identified by letters and the columns by numbers.

Beginning from the top row under the heading area, the first row should be identified by A, unless it is occupied by an extended heading area, in which case the first row under the heading area will be B, etc. Beginning from the left-hand corner, the first column should be numbered 1, the second 2, etc. (see figures 3 to 5).

Coordinates may be given on the microfiche. If so, they shall be in the margins (letters in the left margin and numbers in the lower margin) or in the lower part of the heading area. Coordinates may be placed in or below image areas.

NOTE 3 If the coordinates are placed in the lower margin, they can interfere with the operation of automatic cutters and duplicators.

4.4 Cut mark

When the microfiche contains a cut mark providing for automatic cutting of roll film into microfiche, this cut mark shall be a minimum of 3 mm square. The centre of the square shall be located 32 mm ± 0,2 mm from the reference corner of the microfiche to be cut, with the bottom edge of the square within 0,2 mm of the bottom edge of the microfiche (see figures 3 to 5).

5 Frame formats of 49 and 98 (most commonly used for source documents)

5.1 Dimensions and image arrangements

Dimensions and image arrangements for 49 and 98 frame formats shall be as shown in table 1 and figure 3.

5.2 Lower and side margins

The lower margin and the left margin of the microfiche shall be 4 mm ± 0,5 mm wide, as indicated in table 1.

5.3 Microimage placement and orientation

The first microimage frame should be placed in the upper left-hand corner of the image area and the succeeding image frames shall appear either in sequence from left to right and top to bottom from one row to the next (horizontal pagination), or in sequence from top to bottom and left to right from one column to the next (vertical pagination). It is possible to microfilm two or more pages simultaneously from adjacent pages or vertically placed originals, when filming horizontal or vertical pagination.

When producing microfiche of source documents, vertical pagination can occasionally be appropriate. However, in general, vertical pagination is not recommended for source documents. In the case of languages which read from right to left or for oriental style arrangements, the first microimage of the first page shall be placed in the upper right-hand corner of image area.

When the microfiche is held so that the heading is right-reading and upright, microimages shall be right-reading, except when it is not possible to record a document in its upright position. In such a case, text shall appear on the microfiche rotated 90° anticlockwise from the upright position.

A margin of at least 0,12 mm shall be left between the information area and the frame boundary.

5.4 Reduction ratio

The reduction ratio used for microfilming source documents should be 1:24, although 1:48 is becoming more frequently used for suitable documents and with high quality cameras and duplicators. Other reduction ratios may be chosen in accordance with the size of the original document, the dimensions of the characters, and the general quality of the original document.

5.5 Technical target

Each source document microfiche shall include a test target unless the inclusion of a target would make it necessary to add a trailer microfiche to accommodate the original document. The target shall contain

— an ISO test chart No. 1 or No. 2 conforming to ISO 446 or ISO 3334;

— an indication of the reduction ratio to be used for microfilming (for example 1:24), preferably visible to the naked eye.

It may also contain

— a metric graduation scale;

— 90 %, 50 % and 6 % reflectance patches producing images of at least 2 mm × 2 mm;

— any useful information.

This target shall be recorded in the image frame following the last image of the document recorded, or in the first frame.

5.6 Index

When the microfiche contains an index, the first page of the index should occupy the frame at the bottom right corner. If additional pages are required, they shall follow in sequence to the left or above the bottom right frame, depending on the mode of pagination.

NOTE 4 This index pagination method is now in common use and differs from the original method given in ISO 2707.

5.7 Microfilming large documents

A document which is too large to be accommodated in a single frame may be filmed in a double frame.

When a document is too large to be recorded in one exposure, it can be recorded in sequence, with an overlap area of approximately 25 mm, in accordance with either method A, method B or method C, illustrated in figure 2.

5.8 Symbols

Symbols used to prepare original documents, to indicate abnormalities in the originals or in the microfiche, and to give the necessary instructions for use shall conform with ISO 9878.

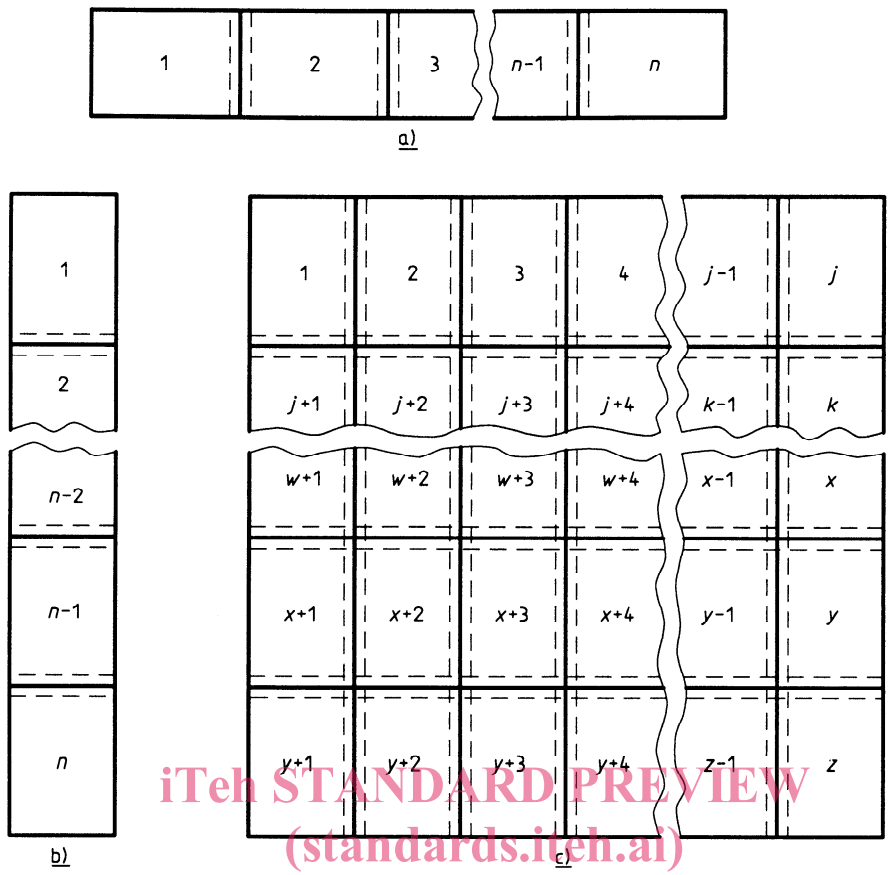

Figure 2 — Standard sequences for sectionalising large documents

6 Frame formats of 270 and 420 (most commonly used for COM)

6.1 Dimensions and image arrangements

Dimensions and image arrangements for 270 and 420 formats shall be as shown in table 1 and figures 4 and 5. See annex A for additional formats.

6.2 Lower and side margins

The lower margin and the left margin of the microfiche shall be 4 mm ± 0,5 mm wide, as indicated in table 1 and figure 5.

6.3 Microimage placement and orientation

The first microimage frame should be placed in the upper left-hand corner of the image area. The succeeding image frames shall appear either in sequence from left to right and top to bottom from one row to the next (horizontal pagination), or in sequence from top to bottom and left to right from one column to the next (vertical pagination). Vertical pagination is typically used in computer output microfilming.

When the microfiche is held so that the heading is right-reading and upright, microimages shall be right-reading and upright.

A margin of at least 0,12 mm shall be left between the information area and the frame boundary.

6.4 Reduction ratio

The effective reduction ratio used for computer output microfilming in 270 and 420 frame formats shall be 1:48 (see annex C).

6.5 Index

When the microfiche contains an index, the first page of the index should occupy the frame at the bottom right corner. If additional pages are required, they shall follow in sequence to the left or above the bottom right frame, depending on the mode of pagination.

7 Single-frame format (most commonly used with cartography and large drawings)

7.1 Dimensions

Dimensions for single-frame format shall be as shown in table 1 and figure 6.

7.2 Lower and side margins

The margin of the lower edge shall be 0,5 $^{+0,2}_{0}$ mm.

The margins of the left and the right edges of the microfiche shall be 7,5 mm ± 0,25 mm wide.

8 Processing and storage

Conditions for processing and storage are defined in ISO 5466 and ISO 10602.

9 Control of microimage quality

When the microfiche is examined as described in ISO 446 or ISO 3334, the test chart characters in the technical target shall be legible, in conformance with table 2, for the first and second generations and for the distribution copy. The distribution copy is a microfiche from which it should be possible to obtain a hard copy which meets the required quality standards.

9.1 Microfiche of source documents

Information on methods of establishing minimum legibility (resolution) in microimages of documents are defined in the quality index method and optical class described in ISO 6199:1991, annexes C and D.

The quality of the microimages is also related to the quality of the original documents. Recommendations regarding the creation of original documents are given in ISO 10196.

9.2 COM microfiche

The quality of computer output microfiche shall be checked in accordance with ISO 8514-1 and ISO 8514-2.

10 Density

Specifications for the density of microfiches are covered in ISO 6200 and ISO 8126.

Table 2 — Minimum legibility (resolution values)

Reduction ratio			Number of the character in the ISO test chart No. 1 to be read			Pattern in the ISO test chart No. 2 to be read		
Nominal	Minimum	Maximum	1st generation	2nd generation	Distribution copy	1st generation	2nd generation	Distribution copy
1:10	1:9	1:11	45	50	56	9,0	8,0	7,1
1:12	1:11	1:14	50	56	63	8,0	7,1	6,3
1:16	1:14	1:17	56	63	71	7,1	6,3	5,6
1:18	1:17	1:20	63	71	80	6,3	5,6	5,0
1:22	1:20	1:23	71	80	90	5,6	5,0	4,5
1:24	1:23	1:28	80	90	100	5,0	4,5	4,0
1:30	1:28	1:33	90	100	112	4,5	4,0	3,6
1:36	1:33	1:38	100	112	125	4,0	3,6	3,2
1:40	1:38	1:44	112	125	140	3,6	3,2	2,8
1:48	1:44	1:52	125	140	160	3,2	2,8	2,5