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Document imaging applications — Recommendations for the creation of original documents

Applications en imagerie documentaire — Recommandations pour la création des documents originaux

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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 10196 was prepared by Technical Committee ISO/TC 171, *Document imaging applications*, Subcommittee SC 2, *Application issues*.

This second edition cancels and replaces the first edition (ISO 10196:1990), which has been technically revised.

Introduction

The expanding use of modern means for managing, conserving, safeguarding and exchanging documents requires the creation of original documents of high quality. At the time of its creation, it is not always known whether a document will be microfilmed or scanned. The requirements of this International Standard should be taken into account in the preparation of any document, to ensure that the document is of a quality that will reproduce well in case it has to be microfilmed or scanned.

These recommendations should be part of the current practice of companies, in particular concerning the creation and duplication of documents.

The quality of the original document has a direct effect upon the quality of a microimage or of a scanned image. Recording operations carried out therefore greatly depend on certain characteristics of the original document, which are essential for the production of quality reproduction.

The progress made in the field of micrographics leads to the use of increasingly greater reduction ratios, which correspondingly makes the creation of originals more important.

Likewise for scanning, the existence of high-performance equipment also leads to creating quality originals. In addition, the increasing frequent use of optical character or image-recognition techniques (OCR or ICR), demands that the text be legible in order to be efficacious.

Document imaging applications — Recommendations for the creation of original documents

1 Scope

This International Standard provides guidance on the creation of printed documents so that they may be easily reproduced as microforms or scanned images.

Although studies were based more specifically on the Latin alphabet, the general principles may be used as guidelines for the production of documents using other alphabets or ideograms.

This International Standard does not apply to technical drawings for which requirements are given in ISO 5457 and ISO 6428. It also does not apply to special micrographics or scanning-related applications (scanning of bank cheques or bar codes).

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 5-3:1995, *Photography — Density measurements — Part 3: Spectral conditions*

ISO 5-4:1995, *Photography — Density measurements — Part 4: Geometric conditions for reflection density*

ISO 216:—[1)], *Writing paper and certain classes of printed matter — Trimmed sizes — A and B series*

ISO 2470:1999, *Paper, board and pulps — Measurement of diffuse blue reflectance factor (ISO brightness)*

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

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

ISO 6196-3:1997, *Micrographics — Vocabulary — Part 3: Film processing*

ISO 6196-4:1998, *Micrographics — Vocabulary — Part 4: Materials and packaging*

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

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

ISO 12651:1999, *Electronic imaging — Vocabulary*

1) To be published. (Revision of ISO 216:1975)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6196 and ISO 12651 and the following apply.

3.1
basic detail
d
smallest element, whether black or white, necessary for the recognition of an individual character (see Figure 1)

EXAMPLE width of the stroke (in particular of the upstroke), space within a symbol, separation between symbols.

Figure 1 — Example of a basic detail

3.2
document
combination of a medium and the information recorded on or in it

NOTE In this International Standard, "document" means visually readable, typewritten or handwritten texts, and illustrations.

3.3
character font
set of characters of the same style, weight and size, in sufficient quantity to enable typographic composition

NOTE A font is characterized by its type-face family and size e.g. Univers 55, size 2,13 mm.

3.4
optical class
C
number, representative of the geometrical design of a type of character, used for calculating its legibility and reproducibility limits

3.5
object-image ratio
r
relationship between the dimensions of the object and the corresponding dimensions of the image

EXAMPLES source document/microimage; source document/image on the screen; screen image/image reproduced on paper

3.6
off-format document
oversized document
documents of which the length or width, or both, are greater than the format which can be scanned by the scanner or microfilmed by the camera

4 Physical characteristics of the paper

4.1 Sizes

The documents should be printed on paper having trimmed sizes in accordance with ISO 216.

As many micrographics or scanning systems are equipped with autofeed, it is preferable to use the most common formats, A4 or A3.

4.2 Quality of paper

Paper with a grammage greater than 60 g/m^2 should be used. Papers with heavy base weights, (over 150 g/m^2) can be unsuitable for equipment with document-autofeed systems or for rotary cameras.

The opacity of paper should be sufficient to minimize show-through. A method for evaluating opacity is described in Annex A.

The paper shall be suitable for use with the type of material or machinery to be used in document preparation.

Avoid the use of paper incorporating fluorescent agents.

4.3 Colour of paper

A white base paper with uniform optical density should preferably be used, having a reflectance factor of at least 75 %, measured in accordance with ISO 2470. If the document needs coloured areas (e.g. forms with areas to be filled), the colour shall only be weak. Preferably, marking of special areas should be made in some other way than coloured areas (e.g. frames).

In the case of scanning, the use of coloured paper is possible if the colour of the paper is perceived by the scanner as white.

4.4 Translucent paper

The use of translucent paper is not recommended. When a translucent paper is used, its visual diffuse reflection density should be less than 0,25 measured in accordance with ISO 5-3 and ISO 5-4.

5 Printing characteristics

5.1 Colour of print

Dense black ink should be used for print.

In the case of scanning and microfilming, it is possible to use coloured inks. The latter should preferably be detected as a black colour. In order to determine those colours which can be accepted by the scanner, it is recommended to use the test target defined in ISO 12653. Coloured paper/coloured ink combinations should be carefully studied.

5.2 Choice of a character font

5.2.1 General

Annex B gives guidance as regards the choice of a character font. The requirements in 5.2.2 and 5.2.3 should be taken into account.

5.2.2 Typeface

Characters should be easily recognizable. Character fonts with ornate, condensed or narrow characters, or letters and numerals that are similar in appearance should be avoided (see Figure 2). “Standard” type fonts (Arial, Swiss) are a good example of acceptable character fonts.

Serif Sanserif

Figure 2 — Examples of letter E

5.2.3 Character size

Character sets, of which the minimum height of the lower case “e” is 1,4 mm for scanning and 1,8 mm for micrographics, should be used. The use of smaller characters can cause problems.

The ratio of heights between upper- and lower-case characters should be 3 to 2.

The width to height ratio of the lower case “e” should be between 0,9 and 1,1.

The line width of character should be at least 0,18 mm, preferably 0,25 mm or more.

The line width to height ratio of the lower case “e” should be less than 0,20.

Figure 3 shows how to measure the characters.

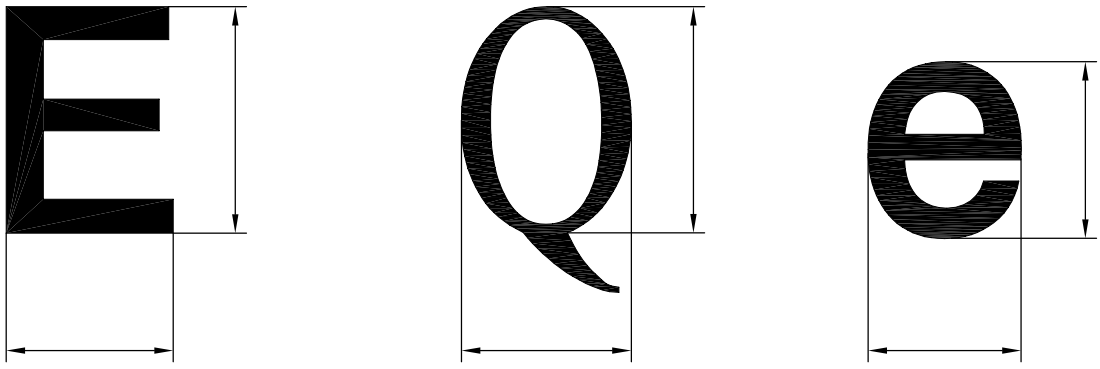

Figure 3 — Examples of character measurement

5.3 Line space

The space between two base lines of characters should be at least equal to 1,5 times the height of the upper-case letter, measured as shown by Figure 4.

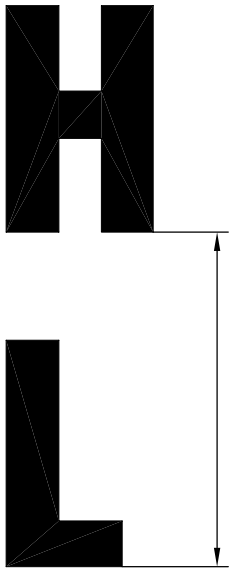

Figure 4 — Measurement of line spacing

5.4 Contrast

The contrast of all information, including frames, markings, handwritten text, etc., should be as great as possible.

5.5 Print quality

In order to obtain high-quality printing, high-gloss inks and techniques that impair the flatness of the medium should be avoided. The choice of ink should minimize penetration, smudging and spreading. The adhesion of the ink to the medium shall be good.

In particular, in the case of scanning, followed by an optical-character recognition, some difficulties can appear if dot matrix printers are used, or again, in the case of used inking ribbons or insufficient developing ink in laser printers.

5.6 Reversed print

The writing of text in light-coloured characters on dark-coloured or black backgrounds is not recommended, particularly in the case of optical character recognition, as scanners are often optimized in order to detect black dots on a white background and not the contrary.

5.7 Background tint

The use of a background tint should be avoided.