INTERNATIONAL STANDARD **ISO** 435

Documentary reproduction — ISO conventional typographical character for legibility tests (ISO character)

Reproduction documentaire — Caractère typographique conventionnel ISO pour essais de lisibilité (caractère ISO)

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0 INTRODUCTION

No documentary reproduction process can avoid giving a more or less impaired image of the characters and illustrations of the original document.

The user is sensitive to this impairment of the legibility of the image, the effects of which range from the impossibility of identifying certain details to the fatigue caused by prolonged reading.

Introduced in this way, the concept of *legibility* may seem subjective, and therefore more difficult to define than are the characteristics usually taken into consideration in this connection by photographers and opticians : for example, resolving power of optical devices, blurring of networks of parallel lines, graininess of the image. But users are less directly conscious of such characteristics, and it seemed desirable to endeavour to make legibility accessible to experiment and even, up to a point, measurable, by specifying with great accuracy a recommended *conventional typographical character for legibility tests.*

This character, which may vary in orientation and size, is mainly used for making *legibility mires* or *legibility test objects* comparable to the typographic mires or test objects used in printing practice. Microcopies are made from these test objects and are known as *micromires* or *micro-test objects.*

The main practical applications of the ISO character are based especially on the following experimental properties :

    a) If, from a group of test characters of a certain height, a particular documentary reproduction process produces an *identifiable image,* it can be assumed that the same process will produce, from a printed text of comparable typeface size, a *satisfactory image* and, in particular, one sharp enough to be read for a certain time without undue fatigue for the reader.

    b) In general, the identification of one and the same group of ISO characters by different observers gives substantially identical results.

The use of test objects and micro-test objects gives manufacturers of reading apparatus, operators and users useful means of investigation on the one hand, and on the other hand the elements of a common language for judging the quality of their apparatus or work.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the characteristics of the ISO conventional typographical character (ISO character) and its use in legibility tests.

2 REFERENCES

ISO 3, *Preferred numbers — Series of preferred numbers.*

ISO 446, *Microcopying — ISO No. 1 mire — Description and use in photographic documentary reproduction.*

ISO 689, *Microcopying — ISO micromire — Description and use for checking a reading apparatus.*

3 NATURE OF ISO CHARACTER

The ISO character is a conventional typographical character, similar to printing typeface and accurately defined as to shape and size.

4 DESCRIPTION

4.1 Shape

The ISO character consists of a regular octagon with two interior parallel stripes, as shown in figure 1.
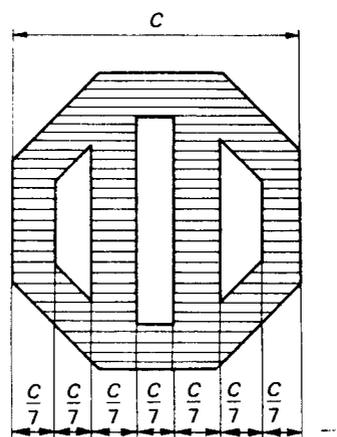

FIGURE 1 — **Enlarged drawing of the ISO conventional typographical character for legibility tests**

The dark stripes and the clear spaces between them are of the same width and can be oriented in four different ways (vertically, horizontally, 45° to the right, 45° to the left).

4.2 Sizes

4.2.1 *Sizes of characters for mires (test objects)*

The standard sizes (see 5.1) of the ISO character to be used for *mires* (test objects) (see 6.3) are, in *hundredths* of a millimetre,

50	63	80	100	125	160

This range can be extended at each end in terms of the R 10 series of preferred numbers (see ISO 3).

4.2.2 *Sizes of characters for micromires (micro-test objects)*

The standard sizes of the ISO character to be used for *micromires* (micro-test objects) (see 6.3.3) are, in *thousandths* of a millimetre,

50	63	80	100	125	160

This range also can be extended at each end.[1]

4.3 Bases, colours, contrasts

The details of the bases, the colours of the stripes and the contrasts shall be specified for each separate application. (See ISO 446 and ISO 689.)

5 DESIGNATION

An ISO character is designated by

— its size (face size) (term borrowed from printers' language);

— the orientation of its stripes.

5.1 Size (face size)

The size (face size) of an ISO character is its height, expressed

— in hundredths of a millimetre for mire characters (test object characters),

— in thousandths of a millimetre for micromire characters (micro-characters).

5.2 Orientation

The orientation of the stripes of an ISO character is defined by one of the following terms :

vertical
horizontal
right-inclined
left-inclined

5.3 Examples of designation

ISO character, size (face size) 63, vertical.

ISO micro-character, size (face size) 80, right-inclined.

6 GROUPING ISO CHARACTERS INTO "WORDS", "LINES" AND "TEXTS"

ISO characters are not used singly, but are grouped into "words".

6.1 Standard two-word groups

The standard group shall consist of two "words", each of four characters, separated by a space. The eight characters in question shall all be of the same size (face size). They shall be oriented indiscriminately, so that the orientation of a character cannot be guessed from that of the adjacent characters. Most words of four characters, however, should preferably contain the four orientations.

6.2 Lines

The words shall be grouped into "lines". In principle, all the words in a given line shall consist of characters of the same size (face size), which should preferably be indicated on each line in fairly large figures (63, 80, etc.) so that they can be reproduced legibly, even if the characters on the line are blurred.

6.3 Texts (mires or test objects)

Arrangements of successive lines suitably graded by character size (face size) form a "text" which can be used as a mire (test object).

6.3.1 *Printed mires (test objects)*

It is recommended that all printed mires (test objects)

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1) Mires (test objects) or micromires (micro-test objects) may also include characters graded according to the following range, taken from the R 20 series of preferred numbers :

56	71	90	112	140

It will be noted that the approximate ratio 1,4 : 1 ($\sqrt{2}$: 1 being the ratio length : width in the "A" series of paper sizes) is shown by the following pairs of characters :

71 and 50	90 and 63	112 and 80	140 and 100
80 and 56	100 and 71	125 and 90	