

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 689

MICROCOPIES
LEGIBILITY TESTS

DESCRIPTION AND USE OF THE ISO MICROMIRE (ISO micro test object)
FOR CHECKING A READING APPARATUS

1st EDITION
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BRIEF HISTORY

The ISO Recommendation R 689, *Microcopies – Legibility tests – Description and use of the ISO micromire (ISO micro test object) for checking a reading apparatus*, was drawn up by Technical Committee ISO/TC 46, *Documentation*, the Secretariat of which is held by the Deutscher Normenausschuss (DNA).

Work on this question by the Technical Committee began in 1951 and led, in 1963, to the adoption of a Draft ISO Recommendation.

In April 1964, this Draft ISO Recommendation (No. 648) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Argentina	France	Norway
Australia	Germany	Poland
Belgium	Hungary	Portugal
Canada	India	Romania
Chile	Ireland	Spain
Colombia	Italy	Sweden
Czechoslovakia	Japan	United Kingdom
Denmark	Korea, Rep. of	U.S.A.
Finland	New Zealand	U.S.S.R.

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council which decided, in March 1968, to accept it as an ISO RECOMMENDATION.

MICROCOPIES
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DESCRIPTION AND USE OF THE ISO MICROMIRE (ISO micro test object)
FOR CHECKING A READING APPARATUS

SCOPE

This ISO Recommendation describes the characteristics and use of the ISO micromire (ISO micro test object), referred to in clause 4.3.3 of ISO Recommendation R 435, *ISO Conventional typographical character for legibility tests (ISO character)*.

1. DESCRIPTION OF THE ISO MICROMIRE (ISO MICRO TEST OBJECT)

1.1 Micromire element

An ISO micromire element is essentially a 1/10 scale reduction of ISO mires as defined in ISO Recommendation R 446, *Microcopies – Legibility tests – Description of the ISO mire (ISO test object) and its use in photographic document reproduction*.

1.1.1 The ISO mires, before 1/10 scale reduction, are arranged as shown in Figure 1, page 4.

1.1.2 The adopted radiant and diagonal arrangement has the advantage of permitting the study of legibility as a function of the distance from the centre.

1.1.3 The numbers identifying the face sizes are in thousandths of a millimetre.

1.1.4 The background of the micromire (micro test object) is squared and referenced to permit positioning, if required.

1.2 Micromire (micro test object)

A micromire (micro test object) consists of two micromire elements arranged side by side on a 35 mm microfilm strip of 230 mm length, as shown in Figure 2, page 5.

1.2.1 A micromire (micro test object) is either positive or negative with, in both cases, the following silver image densities, (measured under white directional light, 2900 to 3000 °K) :

negative	blacks	:	1.6 ± 0.3
	whites	:	0.05 ± 0.02
positive	blacks	:	1.6 ± 0.3
	whites	:	0.05 ± 0.02

1.2.2 A micromire (micro test object) may be described as an *ISO micromire* (ISO micro test object) only if it complies in every respect with this ISO Recommendation and if a qualified laboratory has verified that it provides in every respect a correct reproduction of the ISO mire test *characters*.

1.2.3 The strip with the micromire (micro test object) should show reference marks of the laboratory that made it.

MICROMIRE ISO

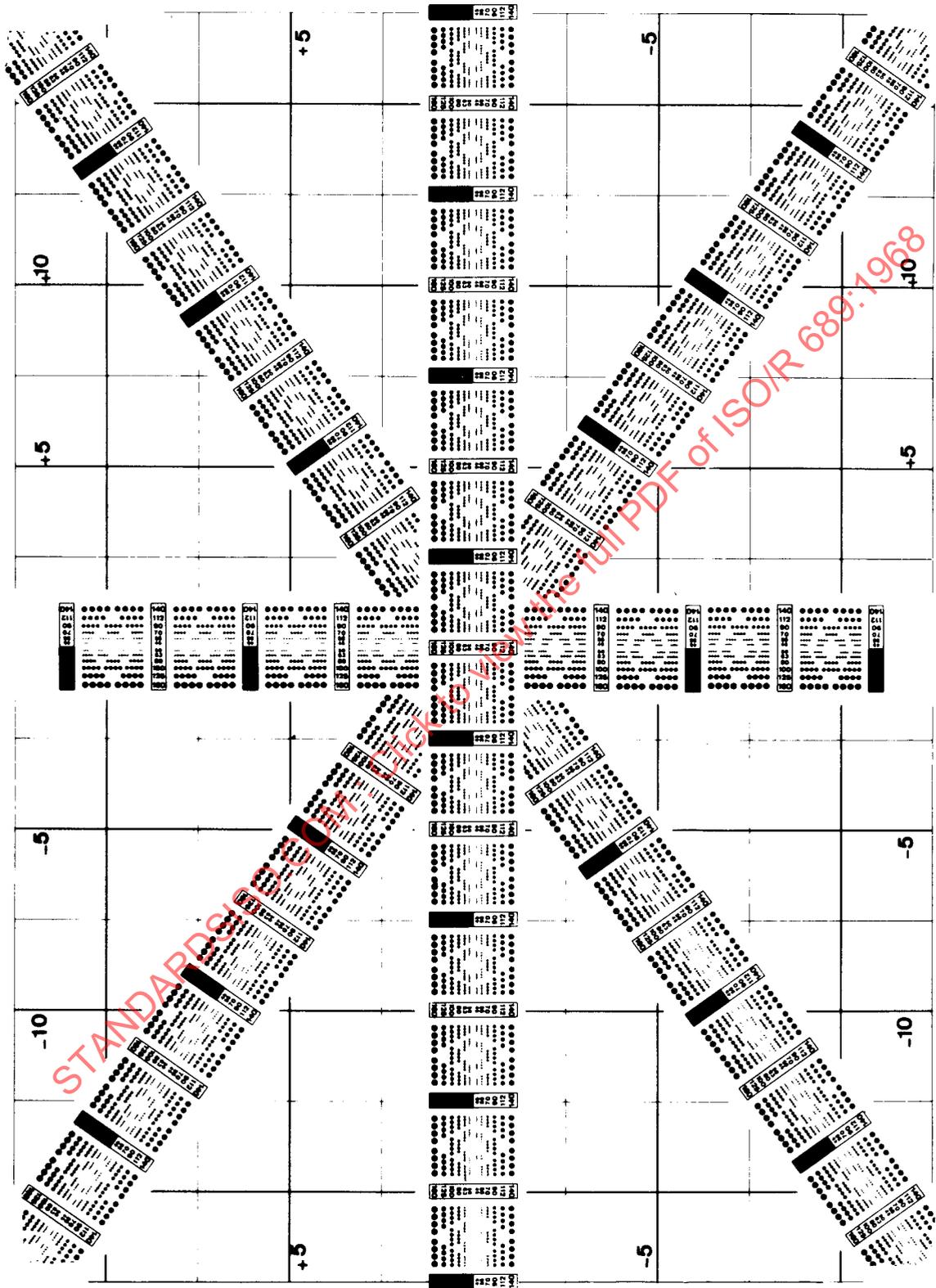


FIG. 1 – Enlarged view of an ISO micromire (ISO micro test object)

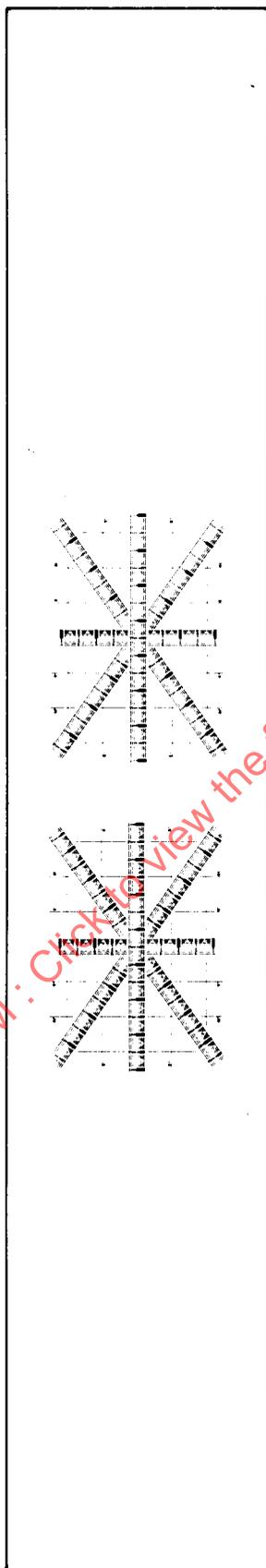


FIG. 2 – Micromire (micro test object)

2. USE OF THE ISO MICROMIRE (ISO MICRO TEST OBJECT)

2.1 Principle

- 2.1.1 The capacity of a reading apparatus to provide, on a screen, an identifiable image of another image existing on a microcopy, can be judged by reading an ISO micromire (ISO micro test object) in this reading apparatus.

NOTE. — This ISO Recommendation considers the image obtained only from the point of view of legibility, regardless of any other characteristics (brilliance, contrast, distortion, etc.).

2.2 Procedure

- 2.2.1 A positive or negative ISO micromire (ISO micro test object) should be arranged in the reading apparatus, previously adjusted, and the numbers of the face sizes considered as "read" should be determined in various areas of the field.

- 2.2.1.1 An ISO character of a given number will be considered as "read" in a given area of the field, if at least seven out of the eight characters of a group of two *ISO words* are identified in this area.

NOTE. — It is sufficient to identify the *orientation* (|, —, /, \), even if the image is imperfect.

- 2.2.2 The *actual presence* on the screen of an identifiable image of a given character should be ascertained in darkness, if necessary using a magnifying glass or any similar instrument that eliminates reading difficulties due to the observer's position or visual acuity.

The advantage of this procedure is that it eliminates differences in individual appreciation resulting from characteristics of vision peculiar to the observer and thus facilitates counter-checking. It may have the disadvantage of not allowing for the visual adaptability or unadaptability of the reading apparatus itself.

- 2.2.3 The examination made in accordance with clause 2.2.2 can be supplemented by noting the observer's personal appreciation of his own practical ability to identify a character of a given number, without using a magnifying glass, in the reading position called for by the design of the apparatus or by the special service he may require of it. This type of examination is a less accurate way than the former for checking results.

2.3 Interpretation of results

2.3.1 Theoretical reading capability

When the procedure described under clause 2.2.2 has been followed, one of the principal optical properties of the reading apparatus, i.e. its ability to provide sharp images, can be designated by a micromire (micro test object) number.

- 2.3.1.1 It can be stated that No. 45 on a micromire (micro test object), corresponding to an ISO character of 45 microns, represents substantially the smallest image obtainable, in the present state of technical progress, on a commercial emulsion for microcopies. Any reading apparatus providing a satisfactory image of this character on the whole area of its screen will, in practice, show up every detail of all ordinary microcopies placed in it; this, however, without prejudice as to any advantages of a physiological nature which may result from a still higher optical quality.

- 2.3.1.2 Any reading apparatus which does not permit character 160 of the micromire (micro test object) to be read over the whole area of its screen, can be considered to be of a level incompatible with present technical possibilities.

- 2.3.1.3 Having regard to the foregoing particulars, it is for the producer and the user to come to an agreement, depending on the purpose and price of the reading apparatus under consideration.