

# INTERNATIONAL STANDARD

**ISO**  
**6200**

Second edition  
1990-12-01

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## Micrographics — First generation silver-gelatin microforms of source documents — Density specifications

*Micrographie — Microformes documentaires gélatino-argentiques de  
première génération — Spécifications des densités*



Reference number  
ISO 6200:1990(E)

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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.

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 6200 was prepared by Technical Committee ISO/TC 171, *Micrographics and optical memories for document and image recording, storage and use*.

This second edition cancels and replaces the first edition (ISO 6200:1979) which has been technically revised.

Annex A of this International Standard is for information only.

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## Introduction

The quality of microforms must be sufficient to guarantee that the information they contain does not give rise to any error of interpretation during operation. It is therefore essential that, on one hand, the documents likely to be reproduced meet the micrographic requirements, and on the other hand, that certain criteria be observed.

Density measurement of films and microimages allows good results to be obtained during operation.

The density is usually measured on sample images. If the densities do not appear to be uniform, it is recommended that further measurements be made at different places.

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# Micrographics — First generation silver-gelatin microforms of source documents — Density specifications

## 1 Scope

This International Standard specifies the method for measuring densities of first generation silver-gelatin microforms. It also lays down the values of densities to be used according to the documents reproduced and the operating means.

It applies to source document negative-appearing microforms only.

It applies neither to microforms for technical drawings which are dealt with in ISO 3272-2, nor to diazo and vesicular films which are the subject of ISO 8126, nor to COM microforms which are dealt with in ISO 8514.

## 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 5-1:1984, *Photography — Density measurements — Part 1: Terms, symbols and notations.*

ISO 5-2:1985, *Photography — Density measurements — Part 2: Geometric conditions for transmission density.*

ISO 5-3:1984, *Photography — Density measurements — Part 3: Spectral conditions.*

ISO 3272-2:—<sup>1)</sup>, *Microfilming of technical drawings and other drawing office documents — Part 2: Quality criteria and control of 35 mm silver gelatin microfilms.*

ISO 6196-1:1980, *Micrographics — Vocabulary — Section 01: General terms.*

ISO 6196-2:1982, *Micrographics — Vocabulary — Section 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:—<sup>2)</sup>, *Micrographics — Vocabulary — Part 06: Equipment.*

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

ISO 8514-1:—<sup>2)</sup>, *Alphanumeric computer output microforms — Quality control — Part 1: Characteristics of the test slide and test data.*

ISO 8514-2:—<sup>2)</sup>, *Alphanumeric computer output microforms — Quality control — Part 2: Method.*

## 3 Definitions

The technical terms relating to micrographics are defined in ISO 6196.

For the purposes of this International Standard, the following definition applies.

1) To be published. (Revision of ISO 3272-2:1978)

2) To be published.

**ISO visual transmission density** (see ISO 5/3): Density obtained when

- a) the spectral products of the density measuring system are the products of the relative spectral energy distribution of CIE standard illuminant *A* and the spectral luminous efficiency, in photopic vision  $V(\lambda)$ ;
- b) the incident flux specified for transmission density measurement is designated  $S_H$  (which is the CIE standard illuminant *A*, modified in the red and infrared region to protect the sample and optical elements from excessive heat).

## 4 Measurement of the visual diffuse density of microforms

### 4.1 Method of measurement

The visual diffuse density shall be measured using a densitometer designed for measuring the ISO standard visual diffuse transmission density, defined in ISO 5/2 and ISO 5/3 (see annex A). According to the functional notation in ISO 5/1, this density reads

$$D_T (90^\circ \text{ opal}; S_H; \leq 10^\circ; V_T)$$

The sampling aperture shall have a diameter between 0,5 mm and 3,0 mm. In order to carry out the measurement, choose the sampling aperture of the densitometer having dimensions compatible with those of a uniform image on the microform. This image may be specially designed for this purpose when the microform is produced.

### 4.2 Values of densities

The following specifications are for all gross densities, and concern microforms on clear base film.

NOTE 1 Some silver films have a tinted base. The difference between the densities of the tinted and untinted base shall be added to all the density values.

Although the base tint does not usually modify the image contrast, these films result in lower brightness images on reader screens, and require slightly longer exposure time on reproduction and duplication devices.

The density of unexposed areas (untinted base + fog) shall not exceed 0,16. This density may be read between frames or simulated by a uniform image, such as the one included in the technical target or in the test target.

The values of background gross density of micro-images shall be between 0,70 and 1,50 ensuring that, for a set of documents, the differences in background densities are as small as possible. In practice, they may be classified into five groups, as in table 1, according to the characteristics of the documents reproduced and the exposure conditions used.

Some characters, such as Chinese and Japanese, require background density values to be decreased by 0,20 with a lower limit of 0,70.

When the content of a document involves different qualities, the density to be achieved shall be dictated by the lowest quality, since high-quality documents can withstand the underexposure necessary for recording extremely faint documents.

**Table 1 — Recommended background densities**

Classification	Description of documents	Background density
Group 1	High-quality, high contrast printed books, periodicals, and black typing	1,30 to 1,50 <sup>1)</sup>
Group 2	Fine-line originals, black opaque pencil writing, and documents with small, high contrast printing	1,15 to 1,40
Group 3	Pencil and ink drawings, faded printing and very small printing, such as footnotes at the bottom of a printed page	1,00 to 1,20
Group 4	Low contrast manuscripts and illustrations, graph paper with faint lines; letters typed with a worn ribbon; poorly printed, pale or coloured documents	0,80 to 1,10
Group 5	Poor contrast documents	0,70 to 0,85 (special exception)

1) When filming the recto and verso of these types of document on rotary cameras, (duplex), these figures should be reduced to 1,00 to 1,30, since image show-through can cause image loss and non-clarity of information. This will be most noticeable when papers having low opacity are microfilmed.

**Annex A**  
(informative)

**Conformity of densitometers with ISO 5**

The conformity of densitometers with ISO 5 should be verified by a qualified organization or laboratory.

Densitometers should also be fitted with zero adjustment and linearity adjustment devices for checking the density scale.

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