INTERNATIONAL STANDARD

**ISO 3272-5**

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# Microfilming of technical drawings and other drawing office documents —

## Part 5:
Test procedures for diazo duplicating of microfilm images in aperture cards



*Micrographie des dessins techniques et autres documents de bureau d'études —*

*Partie 5: Procédures d'essai pour la duplication diazoïque d'images de microfilm dans les cartes à fenêtre*



Reference number
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# Contents







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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 3272-5 was prepared by Technical Committee ISO/TC 171, *Document imaging applications*, Subcommittee SC 2, *Application issues*.



ISO 3272 consists of the following parts, under the general title *Microfilming of technical drawings and other drawing office documents*:

— *Part 1: Operating procedures*

— *Part 2: Quality criteria and control of* 35 mm *silver gelatin microfilms*

— *Part 3: Aperture card for* 35 mm *microfilm*

— *Part 4: Microfilming of drawings of special and exceptional elongated sizes*

— *Part 5: Test procedures for diazo duplicating of microfilm images in aperture cards*

Annex A of this part of ISO 3272 is for information only.

# Microfilming of technical drawings and other drawing office documents —

# Part 5:
Test procedures for diazo duplicating of microfilm images in aperture cards

## 1 Scope

This part of ISO 3272 specifies requirements for the production and use of test charts for measuring the quality of performance of class A type diazo aperture card duplicators. Two types of test target aperture cards are specified, one to determine evenness of illumination and the other to determine loss of resolution.

## 2 Normative references



The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 3272. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 3272 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 5-2:1991, *Photography — Density measurements — Part 2: Geometric conditions for transmission density*.

ISO 5-3:1995, *Photography — Density measurements — Part 3: Special conditions*.

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

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

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

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 6196-3:1997, *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 6196-8:1998, *Micrographics — Vocabulary — Part 08: Application*.

ISO 6196-10:—[1)], *Micrographics — Vocabulary — Part 10: Index*.

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

1) To be published.

## 3 Definitions

For the purposes of this part of ISO 3272, the technical terms relating to micrographics given in ISO 6196 and those relating to density given in ISO 5-1 apply.

## 4 General

A duplicate microform is required to bear in legible form all of the information recorded on the original. To comply with this requirement, the original shall be of appropriate quality, intimate contact shall exist between the original and copy film, and illumination during exposure shall be even.

## 5 Test aperture cards

### 5.1 Uniform illumination test aperture card

#### 5.1.1 Material

The microfilm chip used in a uniform illumination test aperture card shall be monochrome silver-gelatin camera film.

#### 5.1.2 Test target

The test target shall comprise nine patches of material having visual diffuse reflection of 50 % ± 2 %. The patches shall be approximately 200 mm × 200 mm and shall be arranged and numbered in accordance with figure 1.



Dimensions in millimetres

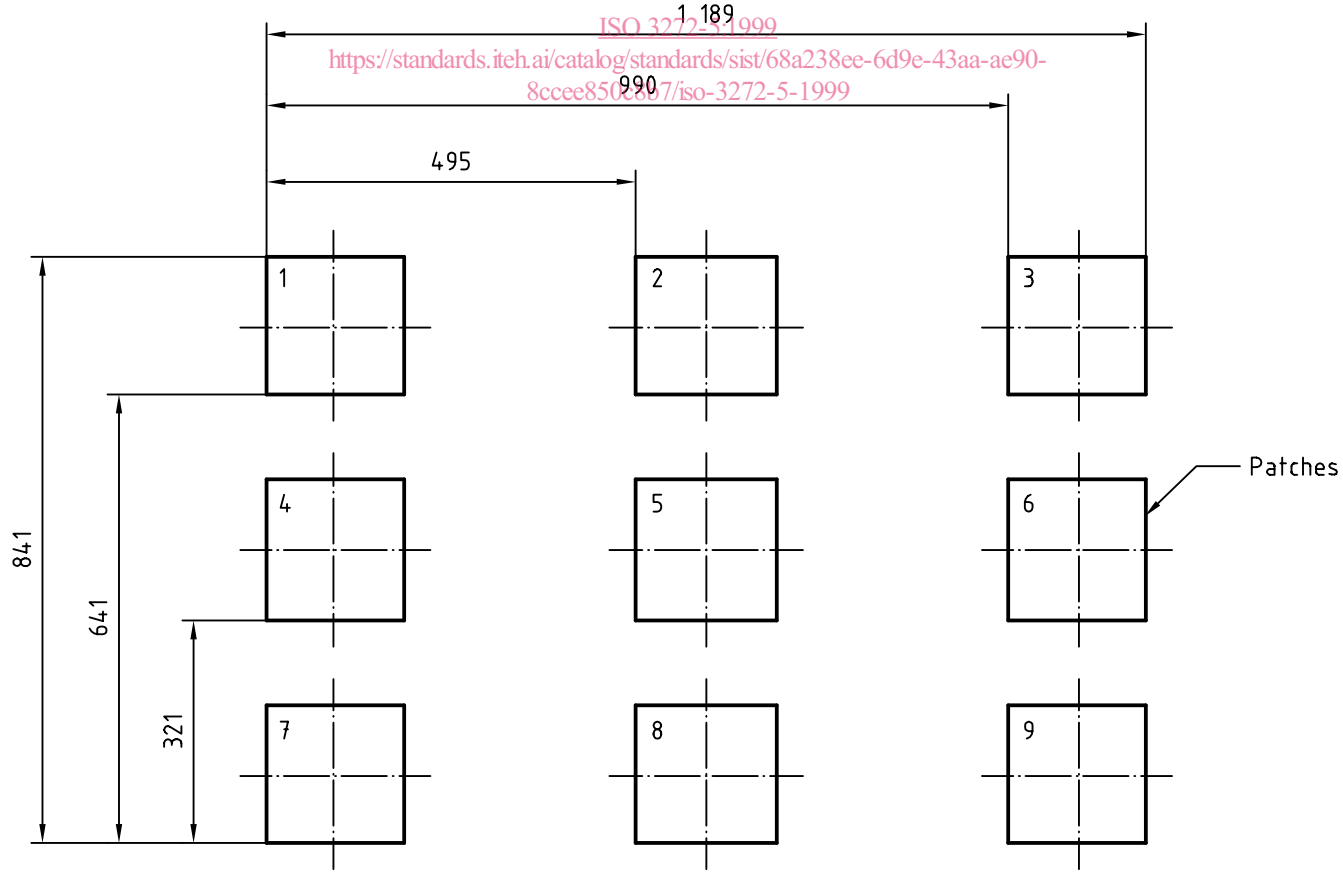




**Figure 1 —Test target for determining illumination uniformity**

#### 5.1.3 Filming of test target

The test target shall be filmed at reduction ratio 1/30 using several steps within a range of light exposures selected to ensure that one microimage having patches with visual diffuse transmission density of 0,35 ± 0,05 is obtained after processing.

#### 5.1.4 Quality

Measure visual diffuse transmission density of all patches in each microimage in accordance with ISO 5. Select a microimage with patches having density of 0,35 ± 0,05 for use in the uniform illumination test aperture card. Record the density of each numbered patch.

### 5.2 Resolution test aperture card

#### 5.2.1 Material

The microfilm chip used in a resolution test aperture card shall be monochrome silver-gelatin camera film.

#### 5.2.2 Test target

The test target shall comprise five ISO No. 1 test charts (see ISO 446) or five ISO No. 2 test charts (see ISO 3334) arranged on a white background and numbered in accordance with figure 2.

#### 5.2.3 Filming of test target

The test target shall be filmed at reduction ratio 1/30 and processed.



#### 5.2.4 Quality

The processed microimage shall have a background visual diffuse transmission density of 1,1 ± 0,1 and resolve at least the ISO No. 1 test character 90 or ISO No. 2, test pattern 4,5 when determined in accordance with ISO 446 or ISO 3334. The minimum ISO No. 1 test character or ISO No. 2 test pattern resolved in the image of each chart shall be recorded.



Dimensions in millimetres

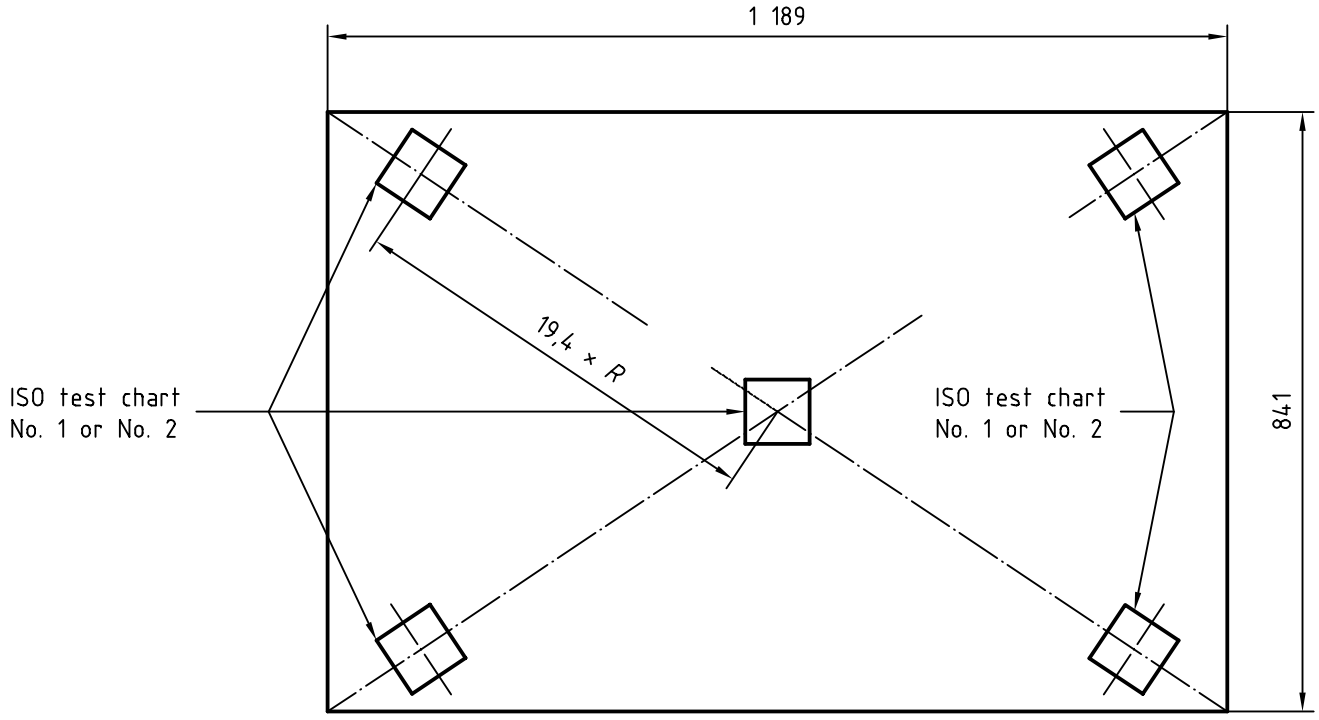


**Figure 2 — Test target for determining resolution**

# 6 Test procedure

## 6.1 Uniform illumination

### 6.1.1 Positioning of test aperture card

Position the uniform illumination test aperture card in the duplicator so that the image-bearing side of the film is in contact with the photosensitive layer of the diazo copy card during exposure.

### 6.1.2 Optimum exposure

Expose a copy card at each exposure setting of the duplicator and process. Measure the visual diffuse transmission density of all of the patches on each of the diazo duplicates in accordance with ISO 8126. The optimum exposure setting is the one that gives a duplicate microimage with patches having density most closely approximating those of the equivalent patches on the test aperture chart.

### 6.1.3 Assessment

At the determined optimum exposure setting, make three more duplicates and measure the density of all patches on each duplicate. If the density of any patch varies by more than ± 0,1 density unit by comparison with that of the corresponding patch on the test aperture card, the need for adjustment or servicing of the duplicator is indicated.

## 6.2 Resolution



### 6.2.1 Positioning of test aperture card

Position the resolution test aperture card in the duplicator so that the image-bearing side of the film is in contact with the photosensitive layer of the diazo copy card during exposure.



### 6.2.2 Exposure

At the determined optimum exposure setting, expose and process three copy cards.

### 6.2.3 Assessment

Determine the smallest ISO No. 1 test character or ISO No. 2 test pattern resolved in accordance with ISO 446 and ISO 3334. Compare the result for each test chart on the duplicate microimage with the value obtained for the corresponding chart of the test aperture card. Duplicates showing loss of resolution in excess of one test character or pattern in any of the test chart images in the duplicates indicate the need for adjustment or servicing of the duplicator.

# Annex A
(informative)

# Bibliography

[1] ISO 8225:1995, *Photography — Ammonia–processed diazo photographic film — Specifications for stability*.