

SLOVENSKI STANDARD
SIST EN ISO 6428:2002

01-februar-2002

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Technical drawings - Requirements for microcopying (ISO 6428:1982)

Technische Zeichnungen - Anforderungen für die Mikroverfilmung (ISO 6428:1982)

Dessins techniques - Conditions requises pour la micrographie (ISO 6428:1982)

iteh STANDARD PREVIEW
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Ta slovenski standard je istoveten z: EN ISO 6428:1999

SIST EN ISO 6428:2002

<https://standards.iteh.ai/catalog/standards/sist/12d8979c-ee1f-46f0-8bf8-7fd410a58eac/sist-en-iso-6428-2002>

ICS:

01.100.01	V^ @ ã } [Áã ã b Á ã] z } [Technical drawings in general
37.080	Uporabniške rešitve za predstavitev dokumentov	Document imaging applications

SIST EN ISO 6428:2002

en

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 6428

July 1999

ICS 01.100.10; 37.080

English version

Technical drawings - Requirements for microcopying (ISO
6428:1982)

Dessins techniques - Conditions requises pour la
micrographie (ISO 6428:1982)

Technische Zeichnungen - Anforderungen für die
Mikroverfilmung (ISO 6428:1982)

This European Standard was approved by CEN on 4 June 1999.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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EN ISO 6428:1999

Foreword

The text of the International Standard from Technical Committee ISO/TC 10 "Technical drawings, product definition and related documentation" of the International Organization for Standardization (ISO) has been taken over as an European Standard by CEN/CS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2000, and conflicting national standards shall be withdrawn at the latest by January 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 6428:1982 has been approved by CEN as a European Standard without any modification.

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NOTE: Normative references to International Standards are listed in annex ZA (normative).

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Annexe ZA (normative)**Références normatives aux publications internationales avec leurs publications européennes correspondantes**

Cette norme européenne comporte par référence datée ou non datée des dispositions d'autres publications. Ces références normatives sont citées aux endroits appropriés dans le texte et les publications sont énumérées ci-après. Pour les références datées les amendements ou révisions ultérieurs de l'une quelconque de ces publications ne s'appliquent à cette norme européenne que s'ils y ont été incorporés par amendement ou révision. Pour les références non datées, la dernière édition de la publication à laquelle il est fait référence s'applique.

<u>Publication</u>	<u>Année</u>	<u>Titre</u>	<u>EN</u>	<u>Année</u>
ISO 5457	1999	Documentation technique de produits - Formats et présentation des éléments graphiques des feuilles de dessin	EN ISO 5457	1999

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International Standard



6428

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Technical drawings — Requirements for microcopying

Dessins techniques — Conditions requises pour la micrographie

First edition — 1982-12-15

SIST EN ISO 6428:2002

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SIST EN ISO 6428:2002

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UDC 744.4/.5 : 778.14

Ref. No. ISO 6428-1982 (E)

Descriptors : technical drawings, reproduction (copying), technical documents, micrographics, generalities.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6428 was developed by Technical Committee ISO/TC 10, *Technical drawings*, and was circulated to the member bodies in February 1981.

It has been approved by the member bodies of the following countries :

Austria
Belgium
Canada
China
Czechoslovakia
Denmark
Egypt, Arab Rep. of
Finland

Hungary
India
Italy
Japan
Korea, Rep. of
Netherlands
New Zealand
Norway

Poland
Romania
South Africa, Rep. of
Spain
Sweden
United Kingdom
USSR

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Australia
France
Switzerland
USA

Technical drawings — Requirements for microcopying

0 Introduction

Microcopying procedures allow the information contained in original technical drawings and other drawing office documents to be reduced to smaller sizes, thus facilitating transport, handling and storage.

However, it should be noted that the possibility of obtaining serviceable enlargements from a microform depends above all on the good quality of the microform (see ISO 3272/2) and this condition can be realized only if the original document is prepared in accordance with appropriate rules.

Usually, the original is a drawing or associated document prepared manually, by a typewriter or other means (plotter). It may also be a combination of these methods.

The draughtsman already has at his disposal several International Standards (such as ISO 128, ISO 3098, ISO 5457) containing general rules of execution which allow the establishment of documents for good reproduction. Nevertheless, for microcopying, these rules should be expanded.

The purpose of this International Standard is to compile in one document the rules to be observed when executing original documents allowing for the establishment of microforms yielding legible enlargement copies.

Due to the fact that the instructions of this International Standard are more extensive than those for other methods of reproduction, it follows that documents complying with the requirements for microcopying can also be reproduced without difficulty by any other reprographic system.

1 Scope and field of application

This International Standard specifies the requirements to be observed when executing original technical drawings and other drawing office documents which are to be microcopied. These requirements will provide for high quality microforms with which legible enlargement copies can be made.

However, the application of these rules is also very beneficial for other methods of reproduction and it is therefore recommended that all drawing office documents be executed in accordance with this International Standard, thereby being available for microcopying at a future date.

2 References

ISO 128, *Technical drawings — General principles of presentation*.

ISO 3098/1, *Technical drawings — Lettering — Part 1 : Currently used characters*.

ISO 3272, *Microfilming of technical drawings and other drawing office documents —*

*Part 1 : Operating procedures.*¹⁾

Part 2 : Quality criteria and control.

Part 3 : Unitized 35 mm microfilm carriers.

ISO 5457, *Technical drawings — Sizes and layout of drawing sheets*.

3 Requirements of execution

3.1 Drawing sheets

3.1.1 Blanks or pre-printed sheets for drawings or other documents may be transparent, translucent or opaque, but shall preferably be matt on the face used for drafting and/or lettering. Their quality shall be chosen in view of obtaining the best possible contrast between background and lines (see 3.2.1).

NOTE — Due to its good qualities relating to dimensional stability, durability, erasability and draftability, polyester drafting film (minimum thickness 76 µm) is superior to paper.

3.1.2 The sizes to be used shall comply with those specified in ISO 5457.

3.1.3 If adhesive overlays are to be used on the original document, consideration shall be given to the effects of dust accumulation and ageing as these defects may be reflected in the microcopying process.

3.1.4 Edge binding is not recommended, unless unshrinkable adhesive tape is used.

¹⁾ At present at the stage of draft.

ISO 6428-1982 (E)

3.2 Density, thickness and spacing of lines

3.2.1 All lines used on the original document for executing representations, symbols, lettering, etc. including those added in any revision, shall have a matt finish and consistent density.

It is recommended that lines have a minimum contrast value of 0,7 relative to the sheet background¹⁾.

NOTES

1 It is recommended that equipment and materials be selected to comply with these requirements and that as an aid the draughtsman be provided with a transparent reference chart of neutral grey tones.

2 The best quality of reproduction will be obtained by executing original drawings with drawing ink on polyester film. Drawing with polymer pencil on film may also provide a good quality of reproduction.

3.2.2 Thicknesses of line are specified in ISO 128 and ISO 3098/1.

In order to allow for microforms originating from size A0 or A1 documents to be enlarged for reproduction to a size smaller than that of the original document, it is recommended to use for any A0 and A1 size document a minimum thickness of line of 0,35 mm.

3.2.3 The space between parallel lines shall be not less than twice the thickness of the heaviest of these lines, with a minimum value of 0,7 mm.

3.3 Areas

Blacking of large areas shall be avoided. If needed, they shall be hatched or dotted.

Thin sections (such as for structural profiles or thin objects) may be blackened, provided their largest width, as depicted on the original representation, is not more than 3 mm. In all cases, the spaces around such sections shall be not less than 0,7 mm.

3.4 Markings

All markings figuring on the drawing shall comply with the specifications of ISO 5457.

In particular, it is required that a metric reference graduation be added to allow for determining the scale of the enlarged reproduction.

3.5 Lettering

3.5.1 All lettering used on original documents shall comply with the specifications of ISO 3098/1.

3.5.2 The choice of the height of lettering should take into account the possibility that the subsequent enlargement of a microform may be established at one or two sizes smaller than the size of the original document.

Therefore, it is recommended that dependent on the original size the minimum heights of lettering as shown in the following table, be observed.

Dimensions in millimetres

Minimum heights of lettering					
Lettering ISO 3098/1	Size		Size		
	A0	A1	A2	A3	A4
A ($h = 14 d$)	5	5	3,5	3,5	3,5
B ($h = 10 d$)	3,5	3,5	2,5	2,5	2,5

h = height of capital letters and numerals

d = thickness of line

3.5.3 The distances between characters and spacing lines (such as in lists and tables) or reference lines shall be not less than 2 mm.

3.5.4 When mechanical means for lettering are used (such as typewriters, plotters, etc.), the density shall, as much as possible, be the same as that of the other lines on the document. Moreover, it is recommended that the type of lettering and its dimensions be similar to those of ISO 3098/1.

Clarity of character image can be achieved by using only capital letters and using one-time printing ribbons.

NOTE — Typing on polyester material requires a special total transfer ribbon which has low reflection and a high density.

3.6 Pencil drawings

Pencil drawings are not desirable for microcopying but if, nevertheless, it is necessary to use this method, the following precautions shall be taken.

3.6.1 Pencil drawings shall be made with instruments and materials which provide adequate contrast (see 3.2.1).

3.6.2 The pencil leads selected shall produce matt finish and even density lines. In this respect, polymer type pencil leads are superior to graphite.

3.6.3 Drawing boards shall be provided with a hard and flat underlay to reduce imprint due to pencil pressure.

3.6.4 Pencil drawings shall be handled as little as possible. Smudging may be prevented by a non-toxic fixative but this may also create problems of erasure.

3.6.5 The simultaneous use of ink and pencil on the same drawing is not recommended.

1) Contrast is the difference between the optical density of a line and that of the sheet.

Optical density is the logarithm to base 10 of the reciprocal of the factor of light transmission.