SLOVENSKI STANDARD
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Informatika in dokumentacija - Trajnost in obstojnost pisanja, tiskanja in razmnoževanje na papir - Zahteve in preskusne metode

Information and documentation -- Permanence and durability of writing, printing and copying on paper -- Requirements and test methods

Information et documentation -- Permanence et durabilité de l'écriture, de l'impression et de la reprographie sur des documents papier -- Prescriptions et méthodes d'essai

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INTERNATIONAL STANDARD

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Information and documentation — Permanence and durability of writing, printing and copying on paper — Requirements and test methods

Information et documentation — Permanence et durabilité de l'écriture, de l'impression et de la reprographie sur papier — Prescriptions et méthodes d'essai

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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 11798 was prepared by Technical Committee ISO/TC 46, *Information and documentation*, Subcommittee SC 10, *Physical keeping of documents.*

Annexes A and B form an integral part of this International Standard. Annex C is for information only.

Introduction

Writing materials and equipment meeting the requirements given in this International Standard can be used in the preparation of paper documents with stable and durable images, i.e. images likely to undergo little or no change in properties that influence legibility and the possibility of copying or converting the paper documents to other data carriers, e.g. microforms.

It is primarily intended for writing, printing, and copying on writing and printing papers and also on photo-copying papers.

This International Standard specifies requirements and testing methods for evaluation of the stability of images. Some properties of an image, e.g. resistance to wear, depend on the combination of the image and the paper. Permanent papers (ISO 9706) and archival papers (ISO 11108), used in the preparation of documents, may differ widely in properties of importance for the quality and permanence of the image. The testing conditions of this International Standard are chosen so that results, representative of the majority of papers on the market to be used for a particular imaging process, shall be obtained.

In this International Standard, the requirements are given in terms of

— image colour strength and appearance;

— lightfastness;

— water resistance;

— transfer of recorded image;

— resistance to wear;

— resistance to heat;

— effect of recording on the mechanical strength of the paper.

More rigorous limiting values and other requirements than those set out in this International Standard may be required when testing material and machinery intended for documents of the highest possible permanence and durability.

Experience has shown that images written with Indian ink as well as printed images using commercial printing inks have a high degree of permanence. There are, however, many documents where acidic inks have affected the paper to such an extent that the paper has corroded, and images produced from dry or liquid toner are also susceptible to ageing problems.

The experience of modern images is limited to a few decades only. Images prepared with modern material and machinery are often completely different from old images with respect to composition and properties. Therefore, conclusions based on studies of old documents in libraries and archives are of limited use when discussing the permanence of modern documents.

Strictly speaking, the only way to test the permanence of the image is to handle the document and to store it under the relevant conditions for long periods of time, perhaps for several hundred years. In practice, one has to rely upon observations made on documents kept for a few years only, and on evaluation of the effect of factors known to influence the permanence and durability of the image.

Information and documentation — Permanence and durability of writing, printing and copying on paper — Requirements and test methods

1 Scope

This International Standard specifies requirements and test methods for evaluation of the permanence and durability of writing, printing and copying on paper stored in libraries, archives and other protected environments for long periods of time.

It is applicable to

— images on paper with the exception of documents within the scope of ISO/TC 42, *Photography*;

— multicoloured images.

The information contents of multicoloured images should be retained but not necessarily the full artistic quality of the coloured image. Documents where the information contents are influenced by small colour changes are not covered by this International Standard.

It does not apply to

— documents stored under harmful conditions, such as high humidity that may promote microbiological attack, excessive heat, radiation (e.g. light), high levels of pollutants, or the influence of water. Since documents may be kept in non-protected environments before being transferred to protected environments, resistance to water and light is, however, of importance;

— legal documentation, e.g. banking documents, where the authenticity is of primary interest.

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 listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

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

ISO 1924-2:1994, *Paper and board — Determination of tensile properties — Part 2: Constant rate of elongation method.*

ISO 2470:—[1)], *Paper, board and pulps — Measurement of diffuse blue reflectance factor (ISO brightness).*

ISO 4892-2:1994, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc sources.*

ISO 5626:1993, *Paper — Determination of folding endurance.*

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[1] To be published. (Revision of ISO 2470:1977)

ISO 7724-1:—[2], *Paints and varnishes — Colorimetry — Part 1: Principles.*

ISO 7724-2:—[3], *Paints and varnishes — Colorimetry — Part 2: Colour measurement.*

ISO 7724-3:—[4], *Paints and varnishes — Colorimetry — Part 3: Calculation of colour differences by CIELAB.*

ISO 9352:1995, *Plastics — Determination of resistance to wear by abrasive wheels.*

ISO 9706:1994, *Information and documentation — Paper for documents — Requirements for permanence*

ISO 12757-1:1998, *Ball point pens and refills — Part 1: General use.*

ISO 12757-2:1998, *Ball point pens and refills — Part 2: Documentary use (DOC).*

ISO 14145-1:1998, *Roller ball pens and refills — Part 1: General use.*

ISO 14145-2:1998, *Roller ball pens and refills — Part 2: Documentary use (DOC).*

BS 3484:1991[5], *Specification for blue-black record inks.*

3 Definitions

For the purposes of this International Standard, the following definitions apply:

3.1
copying
production of an image on paper which is a reproduction of the image of another document carrier, e.g. by a photographic or xerographic process

3.2
document
recorded information which can be treated as a unit in a documentation process [ISO 5127-1:1983[6]]

3.3
durability
the ability to resist the effects of wear and tear in performance situations

3.4
image
pigments distributed on paper as characters or other visually identifiable patterns

3.5
monochromatic image
image with recording in one colour

3.6
multicoloured image
image composed of recording in more than one colour, where the colours constitute part of the information contents

3.7
permanence
the ability to remain chemically and physically stable over long periods of time

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[2] To be published. (Revision of ISO 7724-1:1984)

[3] To be published. (Revision of ISO 7724-2:1984)

[4] To be published. (Revision of ISO 7724-3:1984)

[5] Obtainable from British Standards Institution, 389 Chiswick High Road, GB-London W4 4AL.

[6] ISO 5127-1:1983, *Documentation and information — Vocabulary — Part 1: Basic concepts.*

3.8
permanent image
image which, during long-term storage in libraries, archives and other protected environments will undergo little or no change in properties that affects its use.

NOTE Examples of such properties are the stability of the created image (e.g. legibility and contrast) and the stability of the system of recording on paper.

3.9
printing
production of an image on paper from a printing device, such as a printing press, a thermal printer or a computer printer (e.g. a laser printer or ink jet printer)

3.10
recording
writing, printing and copying

3.11
spot-coloured image
image with different colours in separate parts, so that the colours are not superimposed

3.12
writing
production of an image on paper, one character or stroke at a time

EXAMPLES By hand with a pen or pencil or by means of a typewriter or pen plotter.

4 Required characteristics

Paper documents conforming to this International Standard shall meet the following requirements. Specimens for testing shall be prepared as described in clause 5.

4.1 Optical density

The optical reflection density of monochromatic images, determined as described in 6.1, shall meet the requirements in Table 1. These requirements are applicable also to spot-coloured images. No minimum values are set for multicoloured images.

4.2 Appearance

Each element of the image shall be clearly defined and easily legible when inspected as described in 6.2. The colour strength shall be even. Images prepared by stamp-pad inks shall be legible. No feathering or strike-through is acceptable.

4.3 Lightfastness

After illumination in accordance with 6.3, the optical density of monochromatic images shall meet the requirements of Table 1. These requirements are applicable also to spot-coloured images. The colour tone may change but it shall still be recognizable as being of the same colour as before treatment.

Multicoloured images shall meet the requirements of Table 2. Measurements shall be performed in accordance with ISO 7724.