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Paper — Requirements for stability for general graphic applications

Papier — Exigences pour évaluer la stabilité pour les applications graphiques générales

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*, Subcommittee SC 2, *Test methods and quality specifications for paper and board*.

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Introduction

This document is intended for papers used for general graphic applications. Paper meeting the requirements of this document will not undergo any significant loss of mechanical properties under normal use and storage conditions. Typical applications include paper products, such as copy paper, brochures, maps and books, which can tolerate some changes in optical properties over time, the magnitude of which may vary with the type of paper and papermaking conditions. Such changes, if any, will not affect the legibility or reproducibility of the information.

This document effectively responds to market needs and environmental requirements. In recent years, there have been an increased trend and interest worldwide in the use of bleached chemithermomechanical pulp (BCTMP), alkaline peroxide mechanical pulp (APMP) and secondary fibre pulp for general applications, such as copy paper, brochures, maps and books which are not intended for permanent storage. Thus, this document will open up opportunities for high-yield pulp producers and paper manufacturers to develop and market a wide range of products containing mechanical fibre, as well as most types of recycled fibre. In particular, coated and uncoated printing and writing papers containing high-yield pulps, such as BCTMP or most types of recycled fibre, can be classified as stable paper, as long as they meet the specifications described in this document. This document will also be of benefit to paper customers and consumers as it provides them with options depending on their end-use applications.

The benefits of using mechanical fibre and/or most types of recycled fibre in paper products may range from improvement in some paper attributes, such as opacity, and lower production costs, to higher sustainability and a greatly reduced environmental footprint. In particular, the amount of virgin fibre, energy consumption, use of water resources, levels of greenhouse gas and other emissions, and solid discharge are significantly lower with the utilization of high-yield pulp and/or most types of recycled pulp in paper production.

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Paper — Requirements for stability for general graphic applications

1 Scope

This document specifies the requirements for the stability of paper for general graphic applications. It is applicable to all types of uncoated, coated and filled papers.

NOTE For information on International Standards on paper permanence (see ISO 9706), archival paper permanence and durability (see ISO 11108) and on paper stability for general graphic applications (see ISO 20494), refer to Annex C.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 186, *Paper and board — Sampling to determine average quality*

ISO 187, *Paper, board and pulps — Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples*

ISO 536, *Paper and board — Determination of grammage*

ISO 1974, *Paper — Determination of tearing resistance — Elmendorf method*

ISO 5630-3, *Paper and board — Accelerated ageing — Part 3: Moist heat treatment at 80 degrees C and 65 % relative humidity*

ISO 6588-1, *Paper, board and pulps — Determination of pH of aqueous extracts — Part 1: Cold extraction*

ISO 10716, *Paper and board — Determination of alkali reserve*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
paper stability
ability of paper to retain its intended functionality for *general graphic applications* (3.2), under normal use and storage conditions

Note 1 to entry: Stability for the purpose of this document differs from permanence which is required for paper used for documents to be stored over long periods of time, as in libraries, archives and other protected environments (see ISO 9706).

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3.2
general graphic applications
printing and writing on graphic paper for all applications not intended for permanent storage

Note 1 to entry: Typical products used for general graphic applications include newspapers, magazines, catalogues, books, office printouts and copies.

3.3
alkali reserve
compound (such as calcium carbonate) that neutralizes acid that might be generated as a result of natural ageing or from atmospheric pollutants

Note 1 to entry: Determined as specified in ISO 10716.

4 Principle

In this document, the requirements for the stability of paper for general graphic applications are given in terms of

— minimum tearing resistance prior to accelerated ageing,

— retention of tearing resistance after accelerated ageing,

— minimum content of a substance (such as calcium carbonate) that neutralizes acid action, measured by the alkali reserve test, and

— maximum and minimum pH values of a cold water extract of the paper.

5 Sampling

Always handle the paper sample with clean cotton gloves.

If the average quality of a lot is to be determined, sampling shall be carried out in accordance with ISO 186. Where possible, test specimens shall not include areas containing watermarks, creases or visible damage. If another type of sample is to be tested, make sure that the specimens taken are representative of the sample received. Select sufficient sheets of adequate size for performing the tests required in this document.

6 Requirements for paper stability

6.1 Tearing resistance

6.1.1 Conditioning

The sheets shall be conditioned at 23 °C and 50 % relative humidity in accordance with ISO 187 prior to testing.

6.1.2 Tear testing

The tear test shall be performed as described in ISO 1974, and the grammage shall be determined according to ISO 536.

For papers of grammage 70 g/m^2 or higher, the tearing resistance in any direction (machine and cross), before ageing, shall be at least 350 mN. For papers of grammage below 70 g/m^2, the tearing resistance, before ageing, expressed in millinewtons, shall be at least r as calculated from Formula (1):

$$r = 6g - 70 \quad (1)$$

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