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Paper — Determination of folding endurance

Papier — Détermination de la résistance au pliage



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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 5626 was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*, Sub-Committee SC 2, *Test methods and quality specifications for paper and board*.

This second edition cancels and replaces the first edition (ISO 5626:1978), of which it constitutes a technical revision (see introduction).

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

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Introduction

A number of instruments for determining the folding endurance of paper are in existence, the most commonly used being the Köhler Molin, Lhomargy, the MIT and the Schopper instruments. This International Standard is therefore based upon these four types of instrument. It should be noted, however, that the instruments do not give identical results.

The first edition of this International Standard (ISO 5626:1978) specified that the result be reported as the logarithm (to the base 10) of the number of double folds before fracture. The reason for this was the widely held opinion that the relative folding endurances of different papers are best indicated when the test values are expressed logarithmically. This procedure is still valid. However, experience during the life of the 1978 edition has shown that the interpretation of logarithmic results has caused confusion and consequently results are frequently quoted as the number of double folds. In view of this, this International Standard allows the results to be reported as either folding endurance [the logarithm (to the base 10) of the number of double folds] or the fold number (the antilogarithm of the folding endurance).

It should be noted that the fold number as defined in this International Standard is not the mean of the observed number of double folds and is therefore different to the understanding of fold number which existed prior to 1978 and which still persists in some countries.

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Paper — Determination of folding endurance

1 Scope

This International Standard specifies the methods for the determination of folding endurance of paper using Köhler Molin, Lhomargy, MIT and Schopper testers. It sets out the conditions to be observed when using these instruments, and gives the precautions to be taken in using each instrument.

Interpretation of the results is complicated by the fact that the different types of instrument included in this International Standard will give different numerical results for the same test material and they can produce dissimilar rankings for different test materials.

Annexes A, B and C give information on the instruments and their maintenance and calibration.

NOTE 1 The results obtained with the instruments described are very sensitive to atmospheric conditions under which the test is carried out, particularly humidity.

When operated with the standard loads, the Köhler-Molin, Lhomargy and Schopper methods are applicable to paper up to 0,25 mm thick and having a tensile strength greater than 1,33 kN/m.

The MIT tester has interchangeable folding heads allowing a range of thicknesses up to 1,25 mm to be accommodated.

This International Standard does not state any preferences for any particular method.

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 186:1985, *Paper and board — Sampling to determine average quality*.

ISO 187:1990, *Paper, board and pulps — Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples*.

3 Definitions

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

3.1 double fold: One complete oscillation of the test piece, during which it is folded first backwards and then forwards about the same line.

3.2 folding endurance: Logarithm (to the base 10) of the number of double folds required to cause rupture of the test piece when tested under applied standard stress conditions.

3.3 fold number: Antilogarithm of the mean folding endurance.

4 Principle of the methods

Folding backwards and forwards in a standardized manner of a narrow strip of paper subjected to a longitudinal stress, until it breaks.

5 Apparatus

5.1 Fold tester (see annex A).

Details for maintenance and calibration of instruments are given in annex B.

5.2 Means of measuring the temperature in the vicinity of the folding head.

NOTE 2 Heating of the paper in the test area, which results either from the work done on the paper or from heat transferred from the instrument motor via the jaws, can lead to local embrittlement of the paper test strip and thus to low