
INTERNATIONAL STANDARD



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Paper and board — Determination of stiffness — Static bending method

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (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 set up 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 2493 was drawn up by Technical Committee ISO/TC 6, *Paper, board and pulps*, and circulated to the Member Bodies in September 1971.

It has been approved by the Member Bodies of the following countries :

Australia	India	South Africa, Rep. of
Austria	Iran	Spain
Belgium	Israel	Sweden
Bulgaria	Italy	Switzerland
Czechoslovakia	New Zealand	Thailand
Egypte, Arab Rep. of	Norway	Turkey
Finland	Poland	United Kingdom
France	Portugal	U.S.A.
Hungary	Romania	

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Germany
Netherlands

Paper and board — Determination of stiffness — Static bending method

0 INTRODUCTION

There are a number of different methods of measuring stiffness of paper and board using static bending. Of these, the most widely used one is that described in this International Standard, although some other methods may be equally satisfactory. The publication of this International Standard does not preclude the publication of other recommended methods of measuring stiffness based either on static bending or on alternative principles.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a static bending method for determining the stiffness of paper and board.

This International Standard applies to the measurement of the stiffness of paper and board, most commonly within the range 20 to 10 000 mN (corresponding to a range of grammage of approximately 150 to 1 500 g/m²) but, on some instruments, down to about 2 mN (approximately 60 g/m² grammage). The method may also be applied to some stiffer materials.

The method does not apply to corrugated boards but may be applied to the components of such boards.

2 REFERENCES

ISO/R 186, *Method of sampling paper and board for testing*.

ISO/R 187, *Method for the conditioning of paper and board test samples*.

3 DEFINITIONS

For the purpose of this International Standard the following definitions apply :

3.1 stiffness : The degree of resistance offered by paper or board when it is bent under the conditions specified in this International Standard. This is measured as the bending force.

NOTE — Certain instruments give readings in terms of bending moment (see section 11).

3.2 bending force : The force in newtons necessary to deflect a rectangular test piece, clamped at one end, through a bending angle of 15° when the force is applied near to the free end of the test piece, normal to the plane which includes the near edge of the test piece clamp and the point or line of application of the force.

3.3 bending length : The constant radial distance between the clamp and the position on the test piece at which the force is applied.

3.4 bending angle : The angle between the initial plane of the test piece and the plane passing through the line of clamping and the line of application of force at the end of the test.

3.5 free length : The initial length of the test piece that projects from the clamps.

4 PRINCIPLE

Measurement of the force required to bend a test piece clamped at one end through a given angle; the force is applied at a constant distance from the line of clamping.

5 APPARATUS

Any system may be used that is capable of acting on the test piece to measure the bending force as defined in 3.2 to a degree of precision in accordance with the specification for instrument accuracy.

The clamp should grip the test piece across its full width and along its length for a distance of not less than 12,7 mm when test pieces are inserted. The test piece should not be restrained at the free end except by the friction imposed by the surface of the free end of the test piece on the indicating or recording mechanism.

The nominal bending length is 50 mm. This bending length allows the use of several types of instrument that have been found satisfactory¹⁾. For the most accurate work, however, the results shall be corrected for differences in the nominal bending length (see sections 6 and 11).

1) These include the Taber stiffness tester, the Kenley stiffness tester and the Lorentzen and Wettres stiffness tester No. 188.