INTERNATIONAL STANDARD

ISO 11093-5

Second edition
2009-09-01

Paper and board — Testing of cores —

Part 5: Determination of characteristics of concentric rotation

Papier et carton — Essais des mandrins —

Partie 5: Détermination des caractéristiques de rotation

Reference number
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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 11093-5 was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*.

This second edition cancels and replaces the first edition (ISO 11093-5:1994), which has been technically revised. The main change in this edition is the addition of subclause 6.4.2 “Precision of the measurement system”.

ISO 11093 consists of the following parts, under the general title *Paper and board — Testing of cores*:

— *Part 1: Sampling*

— *Part 2: Conditioning of test samples*

— *Part 3: Determination of moisture content using the oven-drying method*

— *Part 4: Measurement of dimensions*

— *Part 5: Determination of characteristics of concentric rotation*

— *Part 6: Determination of bending strength by the three-point method*

— *Part 7: Determination of flexural modulus by the three-point method*

— *Part 8: Determination of natural frequency and flexural modulus by experimental modal analysis*

— *Part 9: Determination of flat crush resistance*

Paper and board — Testing of cores —

Part 5:
Determination of characteristics of concentric rotation

1 Scope

This part of ISO 11093 specifies a method for determining the characteristics of concentric rotation of cylindrical board cores which meet the following criteria:

— minimum wall thickness: 5 mm;

— minimum external diameter: 60 mm;

— maximum sample length: 3 200 mm.

2 Normative references

The following referenced documents are indispensable for the application 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 11093-1, *Paper and board — Testing of cores — Part 1: Sampling*

ISO 11093-2, *Paper and board — Testing of cores — Part 2: Conditioning of test samples*

3 Principles

3.1 Determination of roundness deviation (f_R) by three-point measurement

Measurement between three points in a plane perpendicular to the core axis where two points are fixed in predetermined positions and the third moves in the direction of the measurement.

3.2 Determination of the straightness deviation (f_S) by five-point measurement

Measurement between five points in planes perpendicular to the core axis where four measuring points are fixed in pairs in predetermined positions in two planes perpendicular to the core axis and the fifth in a central plane perpendicular to the core axis moves in the direction of the measurement.

4 Apparatus

The apparatus, shown in Figure 1, consists of two supports (2), a rack (1) and two measuring heads (4 and 5). Each support consists of two free rotating support rollers mounted side by side (3) where the distance between the two can be adjusted. The diameter of each roller shall be (85 ± 1) mm and the width shall be (19 ± 1) mm. For example, a 6209 roller bearing can be used.