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Paper and board — Testing of cores —

Part 3:

Determination of moisture content using the
oven drying method

Papier et carton — Essais des mandrins —

Partie 3: Détermination de la teneur en eau par séchage à l'étuve



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Foreword

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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 11093-3 was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*, Subcommittee SC 3, *Dimensions and grammage of paper, board and pulp products*.

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: Dimensional measurements*
- *Part 5: Determination of characteristics of concentric rotation*
- *Part 8: Machine test for dynamic cleavage*
- *Part 9: Determination of flat crush resistance*

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Paper and board — Testing of cores —

Part 3:

Determination of moisture content using the oven drying method

1 Scope

This part of ISO 11093 specifies an oven method for determining the moisture content of wound paper and board cores at the time the sample is taken.

This method can be taken for all types of core from which water is the main volatile component to escape at the specified drying temperature.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 11093. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 11093 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 11093-1:1994, *Paper and board — Testing of cores — Part 1: Sampling*.

3 Definitions

For the purposes of this part of ISO 11093, the following definitions apply.

3.1 moisture content, u : Quantity indicating the amount of water contained in a core.

The moisture content, u , expressed as a percentage by mass, is related to the moist weight m_u and is the ratio multiplied by 100 of the difference (moist weight m_u — dry weight m_o) to the moist weight m_u .

3.2 dry weight, m_o : Mass of the test piece after drying to constant mass.

3.3 constant mass: Constant mass is deemed to have been reached when two successive weighings show a difference of no more than 0,1 % of the specimen mass m_u .

The time between successive weighings shall be at least 7 hours for each 4 mm of wall thickness.

4 Principle

Weighing of the test piece at the time of sampling, and again after drying to constant mass.

5 Apparatus

5.1 Balance, having an accuracy of 0,05 % of the mass to be weighed, or better.

5.2 Test piece containers, for the transport and weighing of test pieces, which shall be water-vapour proof and made in a light-weight construction from a material not subject to change under the conditions of test.

5.3 Oven, capable of being maintained at 105 °C $\pm$ 2 °C.

6 Sampling

Sampling shall be performed in accordance with ISO 11093-1.

Care shall be taken that the test pieces are not contaminated during the sampling process and that their moisture content is not altered.

If the atmosphere at the place of sampling is warm and damp, precautions shall be taken in handling the sample to avoid contamination and any gain or loss of moisture. In particular, it is recommended that rubber gloves be worn. To avoid moisture changes due to atmospheric exposure, it is important also to enclose all test pieces in their containers immediately after taking them.

7 Procedure

Determine the moist weight, m_u , of the test piece as sampled. The test piece should have a minimum weight of 50 g.

Place the test piece in the oven (5.3) for the appropriate time (3.3) at a temperature of $105\text{ °C} \pm 2\text{ °C}$ in such a manner that the conditioning air has free access to all surfaces. Weigh the dried test piece not later than 30 s after removal from the oven.

Repeat the drying and weighing procedure until constant mass is obtained (see 3.2 and 3.3).

8 Expression of results

The moisture content u , expressed as a percentage by mass, is given by the equation:

$$u = \frac{m_u - m_o}{m_u} \times 100$$

where

m_u is the moist weight, in grams;

m_o is the dry weight, in grams.

9 Test report

The test report shall include the following particulars:

- reference to this part of ISO 11093;
- type and designation of the cores tested;
- place and date of sampling;
- place and date of testing;
- number of test pieces;
- test result u , expressed as a percentage by mass, rounded to 0,1 %;
- deviation, if any, from the method specified;
- certification date and signature.

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