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Paper, board and corrugated fibreboard — Description and calibration of fixed platen compression-testing equipment

Papier, carton et carton ondule — Description et étalonnage du materiel pour essai de compression à plateau fixe

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Foreword

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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 of 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 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*.

This third edition cancels and replaces the second edition (ISO 13820:2014), which has been technically revised:

The main changes are as follows:

— the title of this document has been changed;

— “fixed platen” has been added to the scope;

— former 4,2, 5.2 and Annex A have been removed;

— Clause 6 has been restructured with additional sub-clauses added for clarity;

— the bibliography has been updated.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

This document describes the fixed-platen compression tester used for carrying out compression tests on paper, board, and corrugated fibreboard. This equipment develops compressive forces at a constant rate of strain. This is the primary equipment used in modern test labs, preferred because of its reliability, its ability to test over the range of test levels likely to be found, and because the characteristics of existing instruments have been well defined and universally accepted.

Another instrument, known as the beam-deflection compression tester, develops compressive forces between one platen driven at constant speed and another platen resting on a deformable beam. With this type neither rate of stress nor rate of strain is constant. The two instrument types produce different results[1][2][3][7]. The extent of the difference depends on the test being conducted and on the characteristics, particularly the elastic characteristics, of the material being tested. The beam-deflection tester has been inadequately defined in past International Standards for compression tests; among existing instruments there have been different loading rates, different beam stiffnesses, and therefore different rates of strain. It is no longer described in this document.

The testing equipment referred to in this document is used for tests described in ISO 3035[1], ISO 3037[2], ISO 7263[3], ISO 12192[4], ISO 13821[5], and ISO 16945[6], among others.

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Paper, board and corrugated fibreboard — Description and calibration of fixed platen compression-testing equipment

1 Scope

This document specifies the essential characteristics and the principles of calibration of fixed platen compression testing equipment used in the testing of paper, board, and corrugated fibreboard.

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

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

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

4 Principle

The characteristics and calibration of the compression testing machine are described.

5 Apparatus

5.1 Fixed-platen compression testing machine, operating on the constant rate of deformation (strain) principle and incorporating the following features.

5.2 An upper and a lower platen, each large enough to completely accommodate the test piece and sufficiently rigid to resist significant deformation by the compressive forces.

The platens shall be mounted so as to have not more than 0,05 mm relative movement in the horizontal plane and their surfaces shall be parallel to each other, within 0,05 mm per 100 mm of platen surface. The surface of the platens shall be flat to the extent that the lowest and highest points are within 0,05 mm of the average surface.

Some tests require the surface finish of the platen to be such as to prevent slippage of the test piece during the test. Emery cloth, grade 00 or its equivalent (type 240 in Europe, crocus cloth in Canada), secured to the surface of the platens with contact adhesive or with low-compressibility double-sided pressure-sensitive tape (see last paragraph in this subclause), or matte finish of the platen surfaces, or any equivalent means, can be used to achieve this, provided the requirements for parallelism are met.

The emery cloth shall be replaced as soon as any damage is observed. A knife or other sharp instrument shall not be used to remove the emery cloth or other material adhering to the platens.

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