INTERNATIONAL STANDARD

ISO 12625-11

Second edition
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Tissue paper and tissue products —

Part 11: Determination of wet ball burst strength

Papier tissue et produits tissue —

Partie 11: Détermination de la résistance à l'éclatement à l'état humide, méthode à la balle

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.

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 second edition cancels and replaces the first edition (ISO 12625-11:2012), of which it constitutes a minor revision.

The main changes compared to the previous edition are as follows:

— Clause 12, addition of new "h)" stating "clamping ring diameter (89 mm or 50 mm)".

A list of all parts in the ISO 12625 series can be found on the ISO website.

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.

Introduction

This document is applicable to tissue papers and tissue products. In principle, application to other types of paper is possible, but is not covered by this document.

Tissue paper and tissue products —

Part 11:
Determination of wet ball burst strength

1 Scope

This document specifies a test method for the determination of the resistance to mechanical penetration (ball burst strength procedure) of tissue paper and tissue products after wetting.

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

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

ISO 7500-1, *Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system*

ISO 12625-1, *Tissue paper and tissue products — Part 1: General guidance on terms*

ISO 12625-9, *Tissue paper and tissue products — Part 9: Determination of ball burst strength*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12625-1 and the following apply.

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

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

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

3.1
bursting force
F_D
maximum force, that a test piece of a tissue paper or tissue product can withstand under the test conditions, applied perpendicular to its surface

[SOURCE: ISO 12625-9:2015, 3.2, modified — right angle changed to perpendicular]

Note 1 to entry: The bursting force is expressed in newtons (N).

3.2
wet bursting force
maximum force, that a wetted test piece of a tissue paper or tissue product can withstand under the test conditions, applied perpendicular to its surface

Note 1 to entry: The wet bursting force is expressed in millinewtons (mN).

3.3
wet burst index
wet bursting force of the tissue paper or tissue product divided by the grammage of the conditioned sample determined by the standard method of test

Note 1 to entry: The wet burst index is expressed in millinewton square metres per gram ($mN \cdot m^2/g$).

3.4
wet burst retention
ratio, expressed as a percentage, of the burst strength of the wet tissue paper or wet tissue product to the burst strength of the same tissue paper or tissue product in the dry and conditioned state

Note 1 to entry: This definition is similar to the definition of wet tensile strength retention; see ISO 12625-5:2016, 3.2.

4 Principle

A test piece of tissue paper or tissue product is rigidly clamped at the periphery between two concentric annular rings, then wetted with deionized water and submitted to a perpendicular force until penetration, applied by a ball of a hard, non-deformable, material moving at a constant speed.

5 Reagents

5.1 Deionized water, with a conductivity ≤0,25 mS/m at 25 °C, in accordance with ISO 14487. The water temperature should be maintained during the test at the temperature used for conditioning and testing.

6 Apparatus

6.1 General

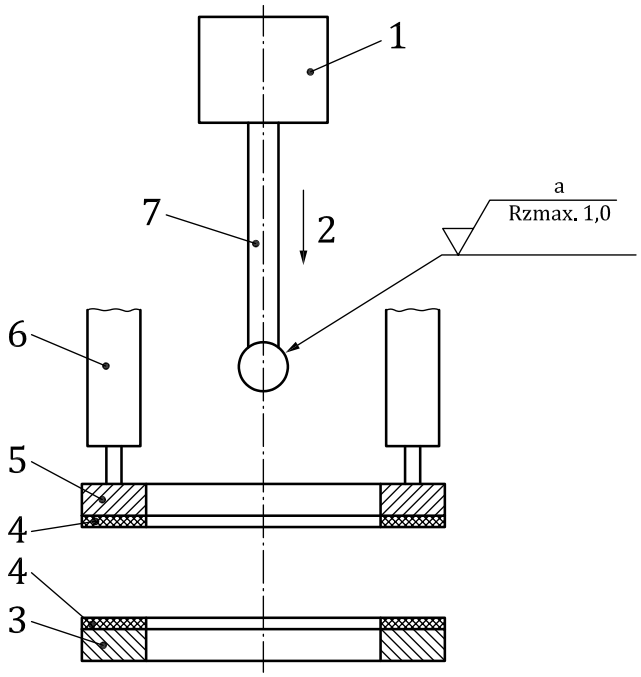
The apparatus shall be placed on a horizontal surface, free from externally induced vibrations.

6.2 Clamping system

The clamping system is designed to clamp the test piece firmly and uniformly between two concentric annular plane, parallel surfaces. The clamping rings can be activated mechanically or pneumatically.

The clamping pressure shall be sufficient to prevent slippage during the test, without damaging the test pieces.

The clamping surfaces of the clamping rings are coated with a commercial grade of a band made of rubber material, typically 1,0 mm to 2,0 mm thick, having an IRHD hardness (International Rubber Hardness Degree) of 70 IRHD to 85 IRHD. The inner edges of the coated band shall be coincident with the inner diameter of the clamping rings and be at least 12,5 mm wide. The internal diameter of the two concentric rings shall be (50,0 ± 0,2) mm. For an example of a pneumatic clamping system, see Figure 1.



Key

1	load cell	5	movable centre-ring
2	travel	6	pneumatic cylinder
3	stationary ring	7	probe
4	suitable band made of rubber (e. g. chloroprene rubber)		
a	Polished ball.		

Figure 1 — Principle of the clamping system, pneumatic fixture

6.3 Penetration system

The penetration (burst) system shall consist of a spherical ball attached to a rod designed to transmit the force applied to the ball. The penetration ball shall be made of highly polished stainless steel and shall have the following dimensions:

— diameter: (16 ± 0,2 mm);

— sphericity: better than 1 µm.

The penetration ball shall be centred with the annular clamps. It is permanently attached to the end of a solid hard rod designed to transmit the force applied to the ball.

6.4 Force measuring system

The force measuring system shall measure the loads with a class of machine range of 1 or better and shall be calibrated and verified in accordance with the requirements of ISO 7500-1.

The load cell system shall have a measuring range of 0,1 N to 15 N.

The readout system shall have a display that shows the maximum force at burst.