INTERNATIONAL STANDARD

ISO 9727-5

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Cylindrical cork stoppers — Physical tests —

Part 5: Determination of extraction force

Bouchons cylindriques en liège — Essais physiques —

Partie 5: Détermination de la force d'extraction

Reference number
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Foreword

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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 9727-5 was prepared by Technical Committee ISO/TC 87, *Cork*.

This first edition of ISO 9727-5, together with the other parts of ISO 9727:2007, cancels and replaces ISO 9727:1991, which has been technically revised.

ISO 9727 consists of the following parts, under the general title *Cylindrical cork stoppers — Physical tests*:

— *Part 1: Determination of dimensions*

— *Part 2: Determination of mass and apparent density for agglomerated cork stoppers*

— *Part 3: Determination of humidity content*

— *Part 4: Determination of dimensional recovery after compression*

— *Part 5: Determination of extraction force*

— *Part 6: Determination of liquid tightness*

— *Part 7: Determination of dust content*

Cylindrical cork stoppers — Physical tests —

Part 5: Determination of extraction force

1 Scope

This part of ISO 9727 specifies a test method for determining the maximum force necessary to extract a cylindrical cork stopper.

It is applicable to all types of cylindrical cork stoppers ready for use, intended to be completely inserted in the bottle neck (straight cork stoppers).

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 633, *Cork — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 633 and the following apply.

3.1
straight cork stopper
«*ras de bague*»
stopper which is completely introduced in the bottle neck, its superior end reaching the top border of the bottle

4 Materials

4.1 **Acetone**, for cleaning the glass tubes or the necks of the empty bottles.

5 Apparatus

5.1 **Bottling machine with 4 jaws**, with a jaw-compression diameter regulated between 15,5 mm and 16 mm.

5.2 **Glass tubes**, with an internal diameter of 18,5 mm ± 0,2 mm or an internal diameter of (d ± 0,2) mm (where d is the bore diameter of the bottle intended to be used, measured at 3 mm from the top border of the bottle) or empty bottles whose bore characteristics will be specified and referred to in the test report.

5.3 Corkscrew, with a helicoidal stick, having the following characteristics:

— useful length: ⩾ 40 mm, ⩽ 60 mm;

— internal diameter: ⩾ 3 mm, ⩽ 4 mm;

— external diameter: ⩾ 8,5 mm, ⩽ 10 mm;

— wire diameter: ⩾ 2,7 mm, ⩽ 3,2 mm;

— thread: ⩾ 8 mm, ⩽ 11 mm.

5.4 Extraction device, operated by an electric engine, having a compression gauge sensor with a maximum resolution of 10 N, which moves in the parallel direction to the central axis of the stopper at a speed of 300 mm/min.

6 Test conditions

6.1 Environment

The test shall be carried out in an environment with the following characteristics:

— temperature 21 °C ± 4 °C;

— relative humidity of air 60 % ± 20 %.

6.2 Cork stoppers

6.2.1 Temperature

At the beginning of the test, confirm that the stoppers of the test sample are at a temperature of 21 °C ± 4 °C.

6.2.2 Humidity

At the beginning of the test, confirm that the stoppers of the test sample are at a humidity of 6 % ± 2 %.

When the humidity is not between 4 % and 8 %, the result of the humidity obtained shall be referred to in the test report.

7 Sampling

From each lot, take the quantity of stoppers that correspond to the sampling plan previously agreed between the interested parties.

8 Procedure

Clean the glass tubes (5.2) or empty bottles with acetone (4.1) and let them dry.

Put corks on empty bottles or tubes with the bottling machine (5.1).

Carry out measurements one hour after corkage.

Introduce the corkscrew (5.3) into the central point of the cork-stopper end, the corkscrew axis being parallel to the cork-stopper central axis. Fix the tube or the bottle on the extraction device (5.4). Connect the corkscrew to the extraction device.

Pull out the stopper at a speed of 30 cm/min. Read the maximum extraction force on the dial of the measuring unit and register the value obtained, in newtons, rounded off to the nearest 10 N.

9 Results

The final test result is the arithmetic average of the results obtained with each stopper of the test sample, rounded off the nearest unity, and also the standard deviation rounded off to the nearest unity.

10 Test report

The test report shall include the following information:

a) a reference to this part of ISO 9727, referring to the type of support used (glass tube or bottle), as well as its dimensional characteristics;

b) complete identification of the sample, including its type and origin;

c) sampling report;

d) results obtained;

e) any deviation from this part of ISO 9727 that may have affected the results, namely the extraction speed if different from that specified in Clause 8.

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