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## Composition cork — Expansion joint fillers — Test methods

*Aggloméré composé de liège — Matériau pour le remplissage de joints de dilatation — Méthodes d'essai*

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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](http://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](http://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 on 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 the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html). (standards.iteh.ai)

This document was prepared by Technical Committee ISO/TC 87, *Cork*.

This third edition cancels and replaces the second edition (ISO 3867:2001) of which [Clauses 4](#) and [6](#) have been technically revised.

## Introduction

Some test methods specified in this document (e.g. compression resistance perpendicular to the faces, extrusion during compression and ability to recover after release of the load) are indicative of the ability of a joint filler to continuously fill a concrete expansion joint and thereby to prevent damage that might otherwise occur during thermal expansion. The resistance to water absorption is a relative measure of durability and life expectancy.

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# Composition cork — Expansion joint fillers — Test methods

## 1 Scope

This document specifies test methods to determine the following characteristics of the composition cork intended to be used as a joint filler of expansion joints of concrete or other construction materials:

- apparent density;
- expansion in water;
- compression;
- recovery;
- extrusion;
- water absorption.

These test methods apply to agglomerated cork joint filler with a nominal thickness ranging from 6,3 mm to 25 mm.

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## 2 Normative references

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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 633, *Cork — Vocabulary*

ISO 3869:2017, *Agglomerated cork — Expansion joint fillers — Specifications, packaging and marking*

ISO 7322:2014, *Composition cork — Test methods*

## 3 Terms and definitions

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

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

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

## 4 Apparatus

**4.1 Balance**, with resolution of 0,01 g.

**4.2 Vernier gauge**, with resolution of 0,1 mm.

**4.3 Compression testing machine**, with one fixed jaw and one mobile jaw which shall move unloaded at a speed of 1,3 mm/min, and having enough capacity to reduce the test specimen to 50 % of its initial thickness.

**4.4 Load recorder**, to indicate the load with a readability of 1 %.

**4.5 Three-sided extrusion mould**, to confine the lateral movement of test specimens under compression to one side only. The mould shall have internal dimensions equal to  $(100 \pm 0,5)$  mm  $\times$   $(100 \pm 0,5)$  mm and sides of such height as to extend at least 13 mm above the test specimens.

**4.6 Steel template**, measuring 100 mm  $\times$  100 mm, so that it fits the extrusion mould to within 0,13 mm in length and width, equipped with a dial comparator.

**4.7 Dial gauge**, with a resolution of 0,02 mm.

**4.8 Metal plate**, measuring  $(100 \pm 2,5)$  mm  $\times$   $(100 \pm 2,5)$  mm  $\times$  6 mm, with rectified parallel faces.

**4.9 Cutting system**.

**4.10 Climatic chamber**.

## 5 Sampling and preparation of test specimens

### 5.1 Sampling

**5.1.1** The sample taken shall be approximately 0,2 m<sup>2</sup> from each lot of 100 m<sup>2</sup> and shall consist of sufficient material to provide at least five test specimens measuring 100 mm  $\times$  100 mm. Each test specimen shall be squarely cut using the cutting system (4.9).

**5.1.2** The test specimens from self-expanding agglomerated cork (joint filler) shall be properly banded and wrapped in plastic at the factory immediately after cutting.

Samples shall be packaged for safe transportation to the testing laboratory so that there is no distortion or fissure of the material.

### 5.2 Preparation of test specimens

**5.2.1** If necessary, squarely cut the test specimens immediately before testing so that the test specimens measure 100 mm  $\times$  100 mm. Each test specimen shall be cut using a metal plate (4.8) as cutting system.

**5.2.2** The test specimens of self-expanding agglomerated cork shall be dried for 24 h at ambient air after boiling the test specimens (see 6.2.1). Then cut the samples to the dimensions indicated in 5.1.1.

## 6 Tests

### 6.1 Determination of dimensions

#### 6.1.1 Determination of thickness

Determine the thickness in accordance with ISO 7322:2014, 6.1.

#### 6.1.2 Determination of length and width

Determine the length and width in accordance with ISO 7322:2014, 6.2.1.



## 6.2 Expansion in water

### 6.2.1 Procedure

For self-expanding agglomerated cork, use the five test specimens delivered by the manufacturer, as described in [5.1.2](#).

Determine the thickness ( $d_1$ ) of one test specimen, as described in [6.1](#). Immerse the test specimen in boiling water for 1 h. Remove the test specimen and allow to cool at room temperature for 15 min. Measure the final thickness to the nearest 0,1 mm.

### 6.2.2 Calculation and expression of results

Calculate the expansion,  $E$ , of composition cork using [Formula \(1\)](#):

$$E = \frac{d_2}{d_1} \times 100 \% \quad (1)$$

where

$d_1$  is the thickness of each test specimen before immersion, expressed in millimetres, rounded to the nearest 0,1 mm;

$d_2$  is the thickness of each test specimen after immersion, expressed in millimetres, rounded to the nearest 0,1 mm.

The test result is the average value of individual results expressed as a percentage rounded to the nearest integer.

## 6.3 Recovery

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### 6.3.1 Procedure

Place on the testing machine one test specimen prepared, as described in [5.2](#). Give the test specimen a single application of a load sufficient to reduce its thickness to 50 % of its initial thickness. Apply the load without shock and at such a rate that the test specimen is compressed approximately at 1,3 mm/min. Record this applied load ( $F$ ).

Immediately release the load and allow the test specimen to recover for 10 min. Measure the new thickness ( $d_2$ ), rounded to the nearest 0,1 mm.

### 6.3.2 Calculation and expression of results

Calculate the recovery,  $R$ , using [Formula \(2\)](#):

$$R = \frac{d_1}{d_2} \times 100 \% \quad (2)$$

where

$d_1$  is the thickness of the test specimen before compression, expressed in millimetres, rounded to the nearest 0,1 mm;

$d_2$  is the thickness of the test specimen after compression, expressed in millimetres, rounded to the nearest 0,1 mm.

The test result is the average value of the individual results, expressed as a percentage rounded to the nearest integer.