# International Standard 8507

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# Agglomerated cork discs — Methods of test

*Disques en agglomeré composé de liège — Méthodes d'essai*

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## Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

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Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.





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# Agglomerated cork discs — Methods of test

## 1 Scope and field of application

This International Standard specifies methods of test applicable to agglomerated cork discs for crown caps or screw caps intended to provide impermeable closure.

## 2 References

ISO 2859, *Sampling procedures and tables for inspection by attributes.*

ISO 3951, *Sampling procedures and charts for inspection by variables for per cent defective.*

ISO 4711, *Agglomerated cork discs — Specifications.* 1)

## 3 Apparatus

**3.1 Oven with thermostat and air circulation,** capable of being maintained at 103 ± 2 °C.

**3.2 Balance,** of capacity 160 g, accurate to 1 mg.

**3.3 Tin sheet,** of diameter about 125 mm and thickness 0,5 mm.

**3.4 Desiccator.**

**3.5 Magnifying glass** or **binocular,** with X 30 magnification.

**3.6 Set of gauges,** of stainless steel, in increasing increments of 0,1 mm, on either side of the nominal diameters of the discs and machined to 0,01 mm.

**3.7 Mechanical comparator,** graduated in millimetres, accurate to ± 0,01 mm and capable of applying a load of 0,65 N (see figures 1 and 2).

**3.8 Set of templates,** circular, corresponding to the nominal thicknesses of the discs.

**3.9 Set of templates,** corresponding to the nominal thicknesses of the discs and machined to 0,01 mm.

**3.10 Perfectly polished cylindrical rods,** of diameter 5 and 10 mm.

**3.11 Glass beaker,** tall form, of capacity 250 ml.

**3.12 Watch glass** and **lead weight,** to keep the discs immersed in the water in the beaker (3.11).

**3.13 Petri dishes,** of diameter 90 mm.

**3.14 Bacteriological oven,** ventilated if possible, capable of being maintained at 30 ± 1 °C and 98 ± 2 % relative humidity.

**3.15 Crown caps.**

**3.16 Aluminium bottles,** with stainless steel necks of the same type as the mouth to be stoppered and capable of being adapted to the compressed gas generating apparatus (3.18).

**3.17 Capping machine,** adapted to the type of ring on the test bottles (3.16) and to the crown caps (3.15).

**3.18 Air compressor** or **air or compressed gas supply** (carbon dioxide) **pipe,** allowing the test pressure to be raised in increments of 0,1 MPa up to 1 MPa.

**3.19 Water container,** of sufficient capacity to contain all the test bottles (3.16) simultaneously, or **container for hydropneumatic tests.**

1) At present at the stage of draft.

## 4 Standard test conditions

Unless otherwise specified, tests shall be carried out on discs after conditioning for 72 h at a temperature of 20 ± 2 °C and relative humidity of 65 ± 5 %.

## 5 Tests

### 5.1 Number of determinations

Carry out each test on the number of discs specified in clause 4, performing each determination on the number of units or groups specified in 5.2 to 5.8.

### 5.2 Determination of moisture content

#### 5.2.1 Procedure

Place at least 50 discs in their as-received condition on the tin sheet (3.3) and weigh to the nearest 1 mg on the balance (3.2). Then place the discs and sheet in the oven (3.1), maintained at 103 ± 2 °C, and leave for 24 h. Remove them from the oven, place them in the desiccator (3.4), allow to cool for 30 min and weigh again to the nearest 1 mg.

#### 5.2.2 Expression of resultats

The moisture content, expressed as a percentage by mass, is given by the formula

$$\frac{m_0 - m_1}{m_0} \times 100$$

where

$m_0$ is the initial mass of the discs, in milligrams and rounded off to the nearest integer;

$m_1$ is the final mass of the discs after 24 h drying, in milligrams and rounded off to the nearest integer.

Express the results as a percentage and round them off to the nearest integer.

### 5.3 Finishing

Check the surface of 10 discs using the magnifying glass or the binocular (3.5).

### 5.4 Determination of dimensions

#### 5.4.1 Diameter of discs for crown caps

##### 5.4.1.1 Procedure

Take at least 50 discs from the sample.

Try the discs, in succession, in the gauges (3.6) in descending order of diameter. The diameter of the disc shall be that of the last well-fitting gauge which allows an easy release.

##### 5.4.1.2 Expression of results

The diameter of the discs, in millimetres, is the average of the results obtained in the determinations.

Express the results in millimetres and round them off to the nearest tenth.

#### 5.4.2 Diameter of discs for screw caps

##### 5.4.2.1 Procedure

Take at least 50 discs from the sample.

Place the comparator (3.7), fitted with a V-wedge at 120° (see figure 1), horizontally on a table.

Place the template (3.8) having the diameter of the disc to be tested over the V-wedge and zero the comparator.

Remove the template, place a disc over the V-wedge and place the foot of the comparator so that it just touches the disc at any point. Check the constancy of the diameter by rolling the disc over the V-wedge.

Record the maximum and minimum readings of the diameter on the dial of the comparator.

##### 5.4.2.2 Expression of results

The diameter of the discs, in millimetres, is the average of the results obtained in the determinations.

Express the results in millimetres and round them off to the nearest tenth.

#### 5.4.3 Thickness

##### 5.4.3.1 Procedure

Take at least 50 discs from the sample.

Place the comparator (3.7) vertically on the table.

Place the flat wedge, with its upper surface horizontal, on the bed-plate of the comparator.

Place a template (3.9) having the nominal thickness of the disc to be tested on the wedge and bring the flat movable foot of diameter 10 mm into contact with the bed-plate under a load of about 0,65 N.

Set the dial of the comparator to zero.

Remove the template, place a disc on the wedge and adjust the foot so that it just touches the disc exactly at the centre.

Record the thickness registered on the dial.

##### 5.4.3.2 Expression of results

The thickness of the discs, in millimetres, is the average of the results obtained in the determinations.

Express the results in millimetres and round them off to the nearest tenth.

## 5.5 Flexibility

### 5.5.1 Procedure

Take at least 10 discs from the sample.

Roll a disc progressively and slowly around a mandrel (3.10) of diameter

— 5 mm if the thickness of the disc is less than or equal to 1,5 mm;

— 10 mm if the thickness of the disc is greater than 1,5 mm.

### 5.5.2 Expression of results

Express the results as a statement of the absence or presence of fissures or splits in the granules.

## 5.6 Behaviour in boiling water

### 5.6.1 Procedure

Pour 150 ml of distilled water into a 250 ml beaker (3.11) and heat to boiling. Immerse at least 15 discs in the boiling water for 15 min. Remove the discs, allow to drain and dry, then examine them.

### 5.6.2 Expression of results

Express the result of the test by indicating the presence or absence of disintegration[1] in the agglomerated cork and classifying the discs as resistant or not resistant to boiling water.

## 5.7 Absence of mildew

### 5.7.1 Procedure

Take at least 9 discs from the sample.

Place each disc in an open sterile Petri dish and place the dishes in the oven (3.14), exempt from mildew spores and maintained at 30 °C and 98 % of relative humidity.

Unless otherwise agreed, observe the development every 24 h up to 7 days.

### 5.7.2 Expression of results

Express the result by indicating the presence or absence of live mildew colonies on the discs.

## 5.8 Behaviour under pressure[2]

### 5.8.1 Procedure

Take at least 50 discs from the sample and place one in each cap (3.15).

Apply to each set, using the capping machine (3.17), a vertical load of about 700 N; the load shall be applied on the centre of each cap which is applied on the mouth of the bottles (3.16) which will be tested simultaneously (5 or 6 bottles).

Connect each bottle to the air or gas pipes and immerse them vertically with the caps at least 2 cm below the surface of the water.

Progressively increase the internal pressure of test in increments of 0,1 MPa, each maintained for 1 min, up to 1 MPa, and maintain at this value for 5 min.

NOTE — The type of gas used should be selected in accordance with the intended use and should be indicated in the test report.

### 5.8.2 Expression of results

After checking the impermeability, express the result as the absence of bubbles or note the pressure when a flow of bubbles appears.

# 6 Test report

The test report shall include the following information :

a) all details required for complete identification of the sample;

b) the test methods used and the results obtained;

c) all details of procedure not specified in this International Standard or optional;

d) any occurrences that may have affected the results.



1) A disc is said to disintegrate if it splits open and/or if it shows a substantial loss of particles during the test.

2) For discs for crown caps only.