INTERNATIONAL STANDARD

ISO 10563

Second edition
2005-07-01

Building construction — Sealants — Determination of change in mass and volume

Construction immobilière — Mastics — Détermination des variations de masse et de volume

Reference number
ISO 10563:2005(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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 10563 was prepared by Technical Committee ISO/TC 59, *Building construction*, Subcommittee SC 8, *Jointing products*.

This second edition cancels and replaces the first edition (ISO 10563:1991), Clauses 5 and 6 of which have been technically revised.

Building construction — Sealants — Determination of change in mass and volume

1 Scope

This International Standard specifies a method for the determination of the change of mass and the change of volume of sealants used in joints in building construction. This International Standard is not suitable for self-levelling sealants.

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 6927, *Building construction — Jointing products — Sealants — Vocabulary*

3 Terms and definitions

For the purposes of this International Standard, the definitions given in ISO 6927 apply.

4 Principle

Test specimens consisting of metal rings filled with the sealant to be tested are submitted to room temperature and to elevated temperature. The differences between the masses and/or the volumes of the test specimens measured before and after exposure to the temperatures are recorded.

5 Apparatus and materials

5.1 Rings of non-corrosive metal, having the following approximate dimensions: outer diameter, 34 mm; inner diameter, 30 mm; height, 10 mm. A hook or loop is fixed to each ring to suspend it from a string for the weighing procedure.

5.2 Anti-adherent substrate, for the preparation of test specimens.

EXAMPLE Wet paper.

5.3 Conditioning chamber, capable of being controlled at (23 ± 2) °C and (50 ± 5) % relative humidity.

5.4 Ventilated oven, capable of being controlled at (70 ± 2) °C.

5.5 Balance, with an accuracy of 0,01 g, capable of being used to weigh the test specimens in air and immersed in water.

5.6 Test liquid, at a temperature of (23 ± 2) °C, consisting of water with the addition of up to 0,25 % (by mass) of a low-foam surfactant. In the case of water-sensitive sealants, laboratory grade 2,2,4-trimethylpentane (iso-octane) shall be used.

5.7 Container, for the immersion of the test specimens in the test liquid.

6 Preparation of test specimens

6.1 The sealant and the metal rings shall be brought to (23 ± 2) °C. Three test specimens shall be prepared for each property to be tested.

6.2 Each metal ring shall be weighed in air (mass m_1) using the balance (5.5), and, for the volume test, also in the test liquid (5.6) (mass m_2).

6.3 The rings shall be set on the anti-adherent substrate (5.2) and filled with the sealant to be tested using the following procedure.

a) The formation of air bubbles shall be avoided.

b) The sealant shall be pressed on the inner surfaces of the metal rings.

c) The sealant surface shall be trimmed so that it is flush with the upper rim of the metal rings.

d) The test specimens shall be removed immediately from the anti-adherent substrate such that the reverse side of the sealant is flush.

e) The filled rings (see also 6.2) shall be weighed immediately in air (mass m_3) and for the volume change also in the test liquid (mass m_4). For water-borne sealants, these measurements shall be carried out after 60 min and shall be completed within 30 s.

7 Test procedure

After preparation and weighing, the test specimens shall be suspended vertically and then stored under the following conditions, in the sequence given:

a) 28 days in the conditioning chamber (5.3) at (23 ± 2) °C and (50 ± 5) % relative humidity;

b) 7 days at (70 ± 2) °C in the oven (5.4);

c) 1 day in the conditioning chamber (5.3) at (23 ± 2) °C and (50 ± 5) % relative humidity.

Following storage, the test specimens shall be weighed immediately in air (mass m_5) and, for the volume change, also in the test liquid (mass m_6).

8 Calculation and expression of results

8.1 Change in mass

For each test specimen, the change in mass, Δm, expressed as a percentage, shall be calculated using the following equation:

$$\Delta m = \frac{m_5 - m_3}{m_3 - m_1} \times 100 \qquad (1)$$

where

m_1 is the mass, expressed in grams, of the metal ring before filling with the sealant, measured in air (see 6.2);

m_3 is the mass, expressed in grams, of the test specimen immediately after preparation, measured in air (see 6.3);

m_5 is the mass, expressed in grams, of the test specimen immediately after conditioning, measured in air (see Clause 7).

The arithmetic mean of the change in mass of the three specimens shall be taken as the test result, rounded to the nearest 0,1 %.

8.2 Change in volume

For each test specimen, the change in volume, ΔV, expressed as a percentage, shall be calculated using the following equation:

$$\Delta V = \frac{(m_5 - m_6) - (m_3 - m_4)}{(m_3 - m_4) - (m_1 - m_2)} \times 100 \qquad (2)$$

where

m_2 is the mass, expressed in grams, of the metal ring before filling with the sealant, measured in the test liquid (see 6.2);

m_4 is the mass, expressed in grams, of the test specimen immediately after preparation, measured in the test liquid (see 6.3);

m_6 is the mass, expressed in grams, immediately after conditioning, measured in the test liquid (see Clause 7);

m_1, m_3, m_5 are defined in 8.1.

The arithmetic mean of the change in volume of the three specimens shall be taken as the test result, rounded to the nearest 0,1 %.

9 Test report

The test report shall include the following information:

a) test laboratory's name and date of test;

b) reference to this International Standard;

c) name, type (chemical family) and colour of sealant;

d) batch of sealant from which the test specimens were produced;

e) individual values of the change in mass and volume for each test specimen and the arithmetic means of the change in mass and/or the change in volume, as a percentage;

f) any deviations from the specified test conditions.

ICS 91.100.50
Price based on 3 pages