# INTERNATIONAL STANDARD

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# Building construction — Sealants for joints — Determination of change in mass and volume

iTeh Construction immobilière Mastics pour joints — Détermination des variations de masse et de volume

## (standards.iteh.ai)

ISO 10563:1991 https://standards.iteh.ai/catalog/standards/sist/bd1c50be-c158-44bb-8713-30dad783a7a6/iso-10563-1991



Reference number ISO 10563:1991(E) ٧.

## 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.

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.

International Standard ISO 10563 was prepared by Technical Committee ISO/TC 59, *Building construction*. (Standards.iten.ai)

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International Organization for Standardization

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# Building construction — Sealants for joints — 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.

## 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.

# 2 Normative reference iTeh STANDAR 52 Parti-adherent substrate, for the preparation of test specimens; e.g. wet paper. The following standard contains provisions which,

through reference in this text, constitute provisions 5.3 Conditioning chamber, capable of being of this International Standard. At the time of publi-10563:166ntrolled at 23 °C  $\pm$  2 °C and (50  $\pm$  5) % relative cation, the edition indicated was valid. All standards dards/humiditybe-c158-44bb-8713-are subject to revision, and parties to agreementsa6/iso-10563-1991

based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 6927:1981, Building construction — Jointing products — Sealants — Vocabulary.

### **3 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. 5.4 Ventilated oven, convection-type, capable of being controlled at 70 °C  $\pm$  2 °C, having an air exchange rate of 30  $\pm$  5 times per hour.

5.5 Regular balance, with an accuracy of 0,01 g.

**5.6 Hydrostatic balance**, with an accuracy of 0,01 g.

**5.7 Test liquid**, at a temperature of 23 °C  $\pm$  2 °C, consisting of water with the addition of up to 0,25 % (*m/m*) of a low-foam surfactant or, in the case of water-sensitive sealants, iso-octane (2,2,4-trimethylpentane) with a boiling point of 99 °C and a density of 0,7 g/ml.

**5.8 Container**, for the immersion of the test specimens in the test liquid.

### 6 Preparation of test specimens

**6.1** Prepare three metal rings for each property to be tested.

6.2 Weigh each metal ring in air using the balance (5.5) (mass  $m_1$ ) and, for the volume test, also in the test liquid (5.7) using the hydrostatic balance (5.6) (mass  $m_2$ ). Set the rings on the anti-adherent substrate (5.2) and fill them with the sealant to be previously conditioned tested. for 16 h at 23 °C  $\pm$  2 °C and (50  $\pm$  5) % relative humidity.

The following precautions shall be taken:

- a) avoid the formation of air bubbles;
- b) press the sealant on the inner surfaces of the metal rings;
- c) trim the sealant surface so that it is flush with the upper rim of the metal rings.

6.3 Remove the test specimens immediately from the anti-adherent substrate and weigh them (see also 6.2) (masses  $m_3$  and  $m_4$ ).

#### **Test procedure** 7

After preparation and weighing, suspend the test specimens and then store them under the following conditions: iTeh STANDARD

- a) 28 days in the conditioning chamber (5.3) dtards.it.h.as the mass, in grams, immediately after 23 °C  $\pm$  2 °C and (50  $\pm$  5) % relative humidity,
- b) 7 days at 70 °C  $\pm$  2 °C in the oven (5.4), and ISO 10563:1991

https://standards.iteh.ai/catalog/standards/sist/m10m2band m54abe-defined in 8.1.

conditioning c) 1 day in the 23 °C  $\pm$  2 °C and (50  $\pm$  5) % relative humidity.

Following storage, weigh the specimens immediately (see also 6.2) (masses  $m_5$  and  $m_6$ ).

#### Calculation and expression of results 8

#### Change in mass 8.1

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

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

where

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

- is the mass, in grams, of the test speci $m_3$ men immediately after preparation. measured in air (see 6.3).
- is the mass, in grams, of the test speci $m_5$ men 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.

### 8.2 Change in volume

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

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

where

- is the mass, in grams, of the metal ring  $m_2$ before filling with the sealant, measured in the test liquid (see 6.2);
- is the mass, in grams, of the test speci $m_{4}$ men, immediately after preparation, Р Rmeasured in the test liquid (see 6.3);

conditioning, measured in the test liquid (see clause 7);

chamber d7ata7a6/iso-10563-1991 The arithmetic mean of the change in volume of the three specimens shall be taken as the test result.

#### **Test report** 9

The test report shall make reference to this International Standard and shall include the following information:

- a) name and type of sealant;
- b) batch of sealant from which the test specimens were produced, if possible;
- c) arithmetic means of the change in mass and/or the change in volume, as a percentage;
- d) any deviations from the specified test conditions.

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