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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 13477.11-2017

**Test method for building sealants -- Part 11: Determination of
tensile properties at maintained extension after immersion in
water**

(English Translation)

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1 Scope

This part of GB/T 13477 specifies the method for determining the tensile properties at maintained extension of building sealing materials after immersion in water.

This part is suitable for determining the effect of water immersion on the tensile properties of building sealing materials at maintained extension.

2 Normative references

The following documents are essential to the application of this document. For the dated referenced documents, only the versions with the indicated dates are applicable to this document; for the undated referenced documents, only the latest version (including all the amendments) is applicable to this document.

GB/T 13477.1 Test method for building sealants - Part 1: Specifications for test substrates (GB/T 13477.1-2002, ISO 13640:1999, MOD)

GB/T 14682 Building sealing material vocabulary (GB/T 14682-2006, ISO 6927:1981, NEQ)

3 Terms and definitions

The terms and definitions defined in GB/T 14682 apply to this document.

4 Principle

The sealing material sample is bonded between the surfaces of two parallel substrates to prepare a specimen. After the specimen is immersed in water under specified conditions, the specimen is stretched to the specified width, and after maintaining the stretched state for the specified time, the adhesion/cohesion failure mode of the specimen is measured and recorded.

5 Standard test conditions

The standard test conditions of the laboratory are as follows: a temperature of $(23\pm 2)^\circ\text{C}$, and the relative humidity of $(50\pm 5)\%$.

6.1 Adhesive substrate: Cement mortar boards, glass plates, or aluminum plates that

meet the requirements of GB/T 13477.1 and are used to prepare test specimens. The shape and sizes of the substrate are shown in Figures 1 and 2. For each specimen, two substrates of the same material shall be used. Substrates of other materials and sizes can also be selected as agreed upon by all parties, but the bonding size and area of the embedded sealing material sample shall be the same as shown in Figures 1 and 2.

6.2 Spacer block: The surface shall be anti-adhesive and used to prepare a sealing material specimen with a cross-section of 12 mmx12 mm (as shown in Figures 1 and 2).

6.3 Bond breaker: Anti-adhesive film or anti-adhesive paper, such as polyethylene (PE)

film, should be selected according to the recommendations of the sealing material manufacturer. It is used to prepare specimens.

6.4 Positioning block: It is used to control the width of the stretched specimen, allowing the specimen to maintain an elongation rate of 60%, 100% of the initial width, or the width agreed upon by all parties.

6.5 Tensile testing machine: It is capable of stretching the specimen at a speed of (5.5 ± 0.7) mm/min.

6.6 Blast drying oven: The temperature can be adjusted to $(70\pm 2)^\circ\text{C}$; it is used to process the specimen according to method B (see 8.3).

6.7 Container A: It is used to hold distilled water and soak the specimen according to method B (see 8.3).

6.8 Container B: It is used to hold water at (23 ± 2) °C and soak the specimen.

6.9 Measuring tool: The graduation value is 0.5 mm.

7 Specimen preparation

Use degreasing gauze to remove floating dust from the surface of the cement mortar board.
Use acetone and other solvents to clean the aluminum plate and glass plate; and

Method A (see 8.2) or method B (see 8.3) can be used to process the specimens as agreed upon by all parties.

8.2 Method A

The prepared specimens are stored under standard test conditions for 28 days.

8.3 Method B

First process the specimen according to method A, and then process the specimen according to the following procedure for 3 cycles:

- a) Store in a drying oven at (70 ± 2) °C for 3 days;
- b) Store in distilled water at (23 ± 2) °C for 1 day;
- c) Store in a drying oven at (70 ± 2) °C for 2 days;
- d) Store in distilled water at (23 ± 2) °C for 1 day.

The above procedure can also be changed to c)-d)-a)-b).

The specimens processed by Method B shall be stored under standard test conditions for at least 24 hours before testing.

NOTE: Method B is a conventional treatment procedure that uses heat and water to affect the curing speed of the specimen, and is not suitable for giving durability information of sealing materials.

9 Test steps

After treatment by method A or B, remove the spacer block. Soak the specimen in water (6.8) with a temperature of (23 ± 2) °C for 4 days, and then let the specimen stand under standard test conditions for 24 hours. Place the specimen into the clamp of the tensile machine and stretch the specimen at a speed of (5.5 ± 0.7) mm/min. The tensile elongation rate is 60% or 100% of the initial width (stretched to 19.2 mm or 24 mm respectively), or the width agreed upon by all parties; then, use the positioning block of corresponding sizes to insert into the specimen that has been stretched to the specified width and keep it for 24 h.

Remove the positioning block, check the adhesion/cohesion failure of the specimen, and

use a measuring tool with a graduation value of 0.5 mm to measure the depth (mm) and area of the adhesion/cohesive failure.

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