



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

GB/T 13477.13-2019

**Test Method for Building Sealants -- Part 13: Determination of
Adhesion/cohesion Properties at Variable Temperatures**

Issued on: June 4, 2019

Implemented on: May 1, 2020

Issued by: SAMR; SAC

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Foreword

GB/T 13477 Test Method for Building Sealants is divided into the following parts:

- Part 1: Specifications for Test Substrates;
- Part 2: Determination of Density;
- Part 3: Determination of Extrudability of Sealants Using Standardized Apparatus;
- Part 4: Determination of Extrudability of One-component Sealants;
- Part 5: Determination for Tack-free Time;
- Part 6: Determination of Flow;
- Part 7: Determination of Low-temperature Flexibility;
- Part 8: Determination of Tensile Properties;
- Part 9: Determination of Adhesion/cohesion Properties after Immersion in Water;
- Part 10: Determination of Tensile Properties at Maintained Extension;
- Part 11: Determination of Tensile Properties at Maintained Extension after Immersion in Water;
- Part 12: Determination of Adhesion/cohesion Properties at Constant Temperature;

---Part 13: Determination of Adhesion/cohesion Properties at Variable Temperatures;

---Part 14: Determination of Resistance to Prolonged Exposure to Water;

---Part 15: Determination of Adhesion/cohesion Properties after Exposure to Heat and Artificial Light through Glass and to Water;

---Part 16: Determination of Resistance to Compression;

---Part 17: Determination of Elastic Recovery;

---Part 18: Determination of Adhesion-in-peel;

---Part 19: Determination of Change in Mass and Volume;

---Part 20: Determination of Staining.

Test Method for Building Sealants - Part 13:

Determination of Adhesion/cohesion Properties at Variable Temperatures

1 Scope

This Part of GB/T 13477 stipulates the terms and definitions, principle, standard test conditions, test apparatuses and materials, specimen preparation, specimen processing, test procedures and test report of the determination of adhesion/cohesion properties of sealants for the purposes of architecture and civil engineering after stretch-compression cycle at variable temperatures.

This Part is applicable to the determination of adhesion/cohesion properties of elastic sealants for the purposes of architecture and civil engineering after repeated cooling stretch - heating compression.

2 Normative References

The following documents are indispensable to the application of this document. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) 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

Terms and definitions that are defined in GB/T 14682 are applicable to this document.

4 Principle

Bond sealant sample between the surface of two parallel substrates to make the test specimen. After the test specimen goes through cooling stretch - heating compression cycle under the stipulated conditions, examine the damage of the adhesion or cohesion of the test specimen.

5 Standard Test Conditions

Standard test conditions are: temperature (23 $\pm$ 2) °C; relative humidity (50 $\pm$ 5) %.

6.1.2 Low-temperature test chamber: temperature can be adjusted to (-20 $\pm$ 2) °C; be

capable of containing test specimen under stretched state.

6.1.3 Container: used to hold distilled water; soak and process test specimen in accordance with Method B (please refer to 8.2).

6.1.4 Testing machine: be capable of stretching and compressing test specimen at the

speed of (5.5 $\pm$ 0.7) mm/min.

6.2.1 Adhesion/cohesion substrate: cement mortar board, aluminum plate or glass

plate, which is used to prepare test specimen, shall comply with the stipulations in GB/T 13477.1. The shape and dimensions of substrate are shown in Figure 1 and Figure 2. Or, substrates of other textures and dimensions may also be selected in accordance with the negotiation among various parties. However, the adhesion/cohesion dimension and area of embedded sealant sample shall be identical

to what is shown in Figure 1 and Figure 2. In terms of each test specimen, two substrates which are made of the same materials shall be adopted.

6.2.2 Isolation pad: the surface shall be anti-sticking; it shall be used to prepare test

specimen with the sealant cross-section of 12 mm x 12 mm (as it is shown in Figure 1 and Figure 2).

6.2.3 Anti-stick material: anti-stick thin film or anti-stick paper, for example, polyethylene (PE) thin film. Anti-stick material should be selected in accordance with sealant manufacturer's suggestions. Anti-stick material shall be used to prepare test specimen.

6.2.4 Stretch positioning block: be capable of maintaining the stretched state at 12.5%,

20% or 25% elongation of test specimen (the width of positioning block is shown in Table 1). Or, other elongations negotiated by various parties may also be selected.

6.2.5 Compression positioning block: be capable of maintaining the compressed state

at 12.5%, 20% or 25% compression ratio of test specimen (the width of positioning block is shown in Table 1). Or, other compression ratios negotiated by various parties may also be selected.

7 Preparation of Test Specimen

Before the test, sealant sample and substrate to be tested shall be placed under the standard test conditions for at least 24 h.

Use absorbent gauze to eliminate floating ash on the surface of the cement mortar board. Use solvents, for example, acetone, to rinse the aluminum plate and the glass plate, then, dry them.

In accordance with sealant manufacturer's instructions (for example: whether primer has been used; the mixing program of multi-component sealant), prepare the test