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

GB/T 13477.15-2017

**Test method for building sealants -- Part 15: Determination of
adhesion/cohesion properties after exposure to heat and
artificial light through glass and to water
(English Translation)**

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Foreword

GB/T 13477 Test method for building sealants is divided into 20 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.

This part is Part 15 of GB/T 13477.

Test method for building sealants - Part 15: Determination of adhesion/cohesion properties after exposure to heat and artificial light through glass and to water

1 Scope

This part of GB/T 13477 specifies the method for determining the adhesion properties of sealing materials after cyclic exposure to heat, water, and artificial light through glass.

This part is applicable to the determination of changes in the adhesion properties of sealing materials after cyclic exposure to heat, artificial light, and water.

NOTE: The cyclic exposure test of the specimen to heat, light source and water is similar to the natural

aging conditions of sealing materials in actual use. Compared with the actual use conditions, the

acceleration factors are unknown and cannot be used to evaluate the durability of sealing materials.

However, a minimum performance guarantee for glazing can be obtained.

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

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

GB/T 16422.2-2014 Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc sources (ISO 4892-2:2006, IDT)

3 Terms and definitions

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

4 Principles

The sealing material sample is bonded between the surfaces of two parallel glass plates to make a specimen. After the specimen is cyclically exposed to artificial light and water at the specified temperature, the specimen is stretched to the specified width. After the tensile state is maintained for the specified time, the adhesion/cohesive failure mode of the specimen is checked.

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 Glass substrate: A glass plate that complies with the provisions of 4.2 in GB/T

13477.1-2002, with a thickness of 6 mm, and is used to prepare specimens. Each specimen consists of two glass plates, and the cross-sectional dimensions are shown in Figure 1. Test substrates of other sizes can also be used, but the bonding area of the sealing material shall be the same as shown in Figure 1.

6.2 Spacer block: The surface shall be anti-adhesive and used to prepare a sealing

material specimen with a cross-section size of 12 mmx12 mm (see Figure 1).

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

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

6.4 Blast drying oven: The temperature can be adjusted to (70 ± 2) °C, used for processing specimens according to method B (see 8.3).

6.5 Container: It is filled with deionized water or distilled water, and used for soaking

the specimen during processing according to method B (see 8.3).

6.6 Test chamber with artificial light source: It can expose the specimen to a light source

under dry conditions at the specified temperature (that is, the temperature measured by the black standard thermometer). The test chamber shall be fully ventilated, and the light can be directly irradiated on one surface of the glass substrate. (see Figure 1).

If fully automated equipment is used, the water exposure test can be carried out in the same test chamber. It can be either immersed in water or sprayed, but deionized water shall be used. For cyclic exposure test equipment with a spray system, see GB/T 16422.2-2014.

nm~400 nm, the average irradiance on the surface of the specimen is (60 ± 2) W/m²; or when the wavelength is 340 nm, the irradiance is 0.51 W/(m² · nm).

6.8 Black standard thermometer: It shall comply with the provisions of 4.4 in GB/T

16422.2-2014. Black panel thermometers may also be used, which under given operating conditions will indicate a lower temperature than a black standard thermometer. The temperature difference between the two measurements may be as much as 10 °C.

Readings can only be taken after sufficient time has elapsed for the temperature to become more stable. Temperature can also be controlled, for example by adjusting the