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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 12002-2026

Replacing GB 12002-1989

Sealing strips for plastic doors and windows

塑料门窗用密封条

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. This document replaces GB/T 12002-1989 "Sealing Strips for Plastic Doors and Windows". Compared with GB/T 12002-1989, the main differences are structural adjustments and... Aside from editorial changes, the main technical changes are as follows:

---Added terms and definitions for free height, minimum height, compressive force, and springback rate (see Chapter 3);

---The classification and naming have been changed (see Chapter 4, Chapter 3 of the 1989 edition);

---The requirements for Shore hardness and hardness variation have been changed (see 5.3,

4.2 of the 1989 edition);

---The tensile property requirements have been changed (see 5.3,

4.2 of the 1989 edition);

---Requirements have been added for compression force, rebound recovery rate, oxygen

index, vertical combustion performance, and smoke density rating (SDR) (see 5.3);

---The requirements for hot air aging performance have been changed (see 5.3,

4.2 of the 1989 edition);

---The test method for ozone aging resistance has been changed (see 6.12,

5.4.9 of the 1989 edition);

---A test method for compressive force has been added (see 6.13);

4.1 Classification

4.1.1 Classification by Use Sealing strips are classified into two categories according to their uses, as shown in Table 1.

4.1.2 Classification by Material Sealing strips are classified into three categories according to their materials, as shown in Table 2.

4.1.3 Classification by Application Scope Sealing strips are classified into two categories according to their application scope, as shown in Table 3.

4.1.4 Classification by shape Glass assembly sealing strips are classified into three categories according to their shape, and frame-sash interlocking sealing strips are classified into two categories according to their shape, as shown in Table 4.

4.1.5 Classification according to flame retardant properties Sealing strips are classified into two categories according to their flame retardant properties, as shown in Table 5.

4.2 Naming The name consists of the document number, purpose, material, application scope, flame retardant properties, and nominal hardness.

5 Requirements

5.1 Appearance The sealing strip should be smooth, straight, and free from twisting or deformation. The surface should be free from cracks, bubbles, obvious impurities, and other defects, and the color should be uniform.

5.2 Tolerances for the cross-sectional dimensions of the sealing strip The dimensional tolerances of the sealing strip cross-section shall be in accordance with Table 6, wherein the assembly dimensions shall be in accordance with grade E1 and the non-assembly dimensions shall be in accordance with grade E2.

5.3 Technical Requirements The physical and mechanical properties of the sealing strips should meet the requirements of Table 7; for Type F sealing strips, they should also meet the requirements of Table

8.The compression force requirement shall be negotiated between the supplier and the

buyer. The classification shall be determined according to Table 9; the rebound recovery rate (CR) shall meet the requirements of Table 10.

6 Test Methods

6.1 Rounding of Test Results The test results should be rounded according to the rounding comparison method of GB/T 8170.

6.2 Sample Preparation The test specimen should be cut from the sealing strip according to the relevant standard test method. If the specimen cannot be prepared from the sealing strip, then the same type of sealant used for testing should be applied. Standard test pieces made from the same batch of materials as the seal, either by extrusion or molding. When providing sealing strip products or samples, the following information should be provided. cross-sectional shape, dimensions, nominal hardness, design working range, and pressure-bearing working surface of the strip. Drawings or documents, etc.

6.3 Conditioning and Test Environment Unless otherwise specified, conditioning shall be carried out in accordance with GB/T 2918, at a temperature of 23°C±2°C and a relative humidity of (50±10)%. Under these conditions, adjust for at least 24 hours. The samples used for oxygen index determination were conditioned for 24 hours at a temperature of 23°C±2°C and a relative humidity of (50±5)%. If the mass change of the sample is no more than 0.1%, the test can be carried out; otherwise, it should be adjusted for at least 88 hours. The specimens used for vertical combustion performance testing were conditioned under the following conditions. temperature 23°C±2°C, relative humidity (50±10)%, and time. 48h. The samples used for smoke density (SDR) determination were conditioned under the following conditions. temperature 23°C±2°C, relative humidity (50±10)%, and time. 40h. Unless otherwise specified, the test environment is a temperature of 23°C±2°C and a relative humidity of (50±10)%.

6.4 Appearance Visually inspect the product's appearance quality under natural light or an equivalent artificial light source.

6.5 Dimensional Tolerances Take a 2mm-3mm thick cross-sectional sample of the product and use a non-contact measuring instrument with the corresponding graduation value, such as one that can magnify 5x or 10x. The test is performed using a projector or scanner.

6.6 Shore Hardness

6.6.1 Shore Hardness (A) at 23°C Perform the test according to GB/T 2411, take the reading in 15 seconds, and calculate the deviation from the nominal value.

6.6.2 Hardness Change Place the sample in a constant temperature test chamber at the test temperature specified in Table 7, with a temperature deviation of ±2°C. Remove the sample after 2 hours ±

0.25 hours and test it within 10 seconds. The hardness was determined according to the method specified in GB/T 2411, and the hardness difference of each temperature range was calculated according to Table 7.

6.7 Tensile properties Tensile strength and elongation at break were tested according to GB/T 1040.2, using type 5A specimens and a tensile speed of 500mm/min ± 50mm/min.

6.8 Hot air aging performance

6.8.1 Change rate of tensile properties and change in hardness Hot air aging was performed according to GB/T 7141, with a test temperature of 100°C±2°C, for modified polyvinyl chloride and thermoplastic elastomers. The testing time for solid materials is 72h ± 0.5h, and the testing time for rubber materials is 168h ± 1h. Samples are prepared and tested according to the requirements for hardness and tensile properties. The test was conducted, and the change in hardness was calculated, as well as the change rate of tensile fracture strength and the change rate of tensile fracture elongation were calculated according to formula (1).

6.8.2 Weight loss upon heating Five samples of 5g ± 0.5g each were taken, conditioned according to section 6.3, and weighed to an accuracy of 0.0001g. The samples were then placed in a container at 100°C. The rubber products were dried in an electric heating drying oven and the time was recorded. The test time was 168h ± 1h for rubber products and 168h ± 1h for modified polyvinyl chloride and thermoplastic elastomer products. The time between heating and cooling is 72 h ±

0.5 h. The sample is then placed in a desiccator and cooled to the ambient temperature. The mass of the heated sample is weighed to an accuracy of 0.0001 g. Formula (2) is used to calculate the weight loss rate mr during heating.

6.9 Heating shrinkage rate Three 110mm long samples were cut and conditioned according to 6.3. Draw two marks 100 mm apart on each sample and measure their initial distance l0, accurate to

0.1 mm; place the sample on a bed of... Place the talc powder in a tray and put it in an electric heating drying oven at 70°C±2°C for 24 hours. Remove the tray containing the sample from the electric heating drying oven and cool it for 2 hours under the test environment. Measure the distance l1 between each sample mark, accurate to

0.1 mm.

6.10 Compression Permanent Deformation The procedure shall be carried out in accordance with GB/T 7759.1, using type A specimens (diameter

0.5 mm, height

0.5 mm). 0.5mm), modified polyvinyl chloride and thermoplastic elastomers are tested at 70°C±2°C, and rubber is tested at 100°C±2°C. Time 22 0.5 0 h, sample compression