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

GB/T 1731-2020

Replacing GB/T 1731-1993

Determination of flexibility of coating and putty films

漆膜、腻子膜柔韧性测定法

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1 Scope

GB/T 1731-2020 is the Chinese national standard on determination of flexibility of coating and putty films, in the field of paint and colour industries. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 19 November 2020 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 October 2021. Classification: ICS 87.040, CCS G50. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This Standard specifies the determination of flexibility of coating and putty films by a flexibility tester. Use the smallest spindle diameter that does not cause damage to the coating and putty films to represent the flexibility of the coating and putty films. This Standard applies to the determination of flexibility of coating and putty films.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated version applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 3186, Paints, varnishes and raw materials for paints and varnishes - Sampling

GB/T 9271, Paints and varnishes standard panels for testing

GB/T 9278, Temperatures and humidities for conditioning and testing of paint specimens

GB/T 13452.2, Paints and varnishes - Determination of film thickness

GB/T 20777, Paints and varnishes - Examination and preparation of samples for testing

GB/T 37356, Paints and varnishes - Lighting and procedure for visual assessments of coatings

3 Terms and definitions

The following terms and definitions are applicable to this document.

3.1 Flexibility The ability of the coating film or putty film to deform along with its substrate without damage. According to the provisions of GB/T 20777, inspect and prepare test samples.

4.3 Test panel

4.3.1 Substrate Unless otherwise specified, the substrate shall be tinplate. The tinplate shall meet the technical requirements of GB/T 9271; the dimensions are 120 mm x 25 mm x (

0.20 mm ~

0.30 mm).

4.3.2 Substrate processing and test panel coating Unless otherwise specified, process each piece of substrate according to GB/T 9271; then, apply coating of the test product or system according to the specified method.

4.3.3 Drying and conditioning Each coated test panel shall be dried (or baked) and maintained under the specified conditions for the specified time. Test panels that are not maintained under the conditions that are specified in GB/T 9278, such as drying, shall be conditioned for at least 16 h under the conditions that are specified in GB/T 9278 before the test.

4.3.4 Thickness of coating films The thickness of the coating films shall be specified or agreed. The determination of the thickness of coating films shall be performed according to one of the methods to determine the thickness of dry films that are specified in GB/T 13452.2, in micrometers (μm) or millimeters (mm).

4.4 Test procedure

4.4.1 Number of tests Perform three tests on the same spindle.

4.4.2 Test environment Unless otherwise agreed, the test shall be performed under the environment that is specified in GB/T 9278.

4.4.3 Test Place the coating films of the test panel upwards; use both hands to press the

test panel on the spindle of the specified diameter of the flexibility tester of coating films (4.1.1); use two thumbs to bend the test panel around the spindle at a steady speed within 2 s ~ 3 s. After bending the test panel, the two thumbs 3 -- Spindle 1; 4 -- Spindle 2. Figure 3 -- Schematic diagram of the flexibility tester of putty films

5.1.2 Magnifier 4x magnifier.

5.1.3 Waterproof abrasive paper Suitable waterproof abrasive paper, such as No. 120, No. 180, No. 320, No. 400, No. 500 waterproof abrasive paper.

5.2 Sample According to the provisions of GB/T 3186, take representative samples of the tested product (or each product in the multi-coating system). According to the provisions of GB/T 20777, inspect and prepare test samples.

5.3 Test panel

5.3.1 Substrate Unless otherwise specified, the substrate shall be tinplate. The tinplate shall meet the technical requirements of GB/T 9271; the dimensions are 155 mm x 70 mm x (0.20 mm ~ 0.30 mm).

5.3.2 Substrate processing and test panel coating Unless otherwise specified, process each piece of substrate according to GB/T 9271; then, apply coating of the test product or system according to the specified method.

5.3.3 Drying and conditioning Each coated test panel shall be dried (or baked) and maintained under the specified conditions for the specified time. Test panels that are not maintained under the conditions that are specified in GB/T 9278, such as drying, shall be conditioned for at least 16 h under the conditions that are specified in GB/T 9278 before the test.