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NATIONAL STANDARD OF THE

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Determination of drying time of coating and putty films

漆膜、腻子膜干燥时间测定法

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Table of Contents

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Determination of drying time of coating and putty films

1 Scope

This Standard specifies the determination of drying time of coating and putty films under specified drying conditions.

This Standard applies to the determination of the surface-drying time and through-drying time 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 1914, Chemical analytical filter paper

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

YY 0174, Scalpel blade

3 Terms and definitions

The following terms and definitions are applicable to this document.

3.1 Surface-drying time

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Figure 1 -- Dimensions of the contact surface of the drying time tester

5 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.

6 Test panel

6.1 Substrate

Unless otherwise specified, select substrates according to the provisions of GB/T 9271. The substrate shall be flat and not deformed.

6.2 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 supporting system according to the specified method.

6.3 Thickness of coating and putty films

The thickness of coating and putty films shall be specified or agreed; the dry film thickness of coating and putty films shall be measured according to one of the methods that are specified in GB/T 13452.2, in micrometers (μm); the wet film thickness of putty films can be controlled by a model frame of known thickness, in micrometers (μm) or millimeters (mm).

7 Operation steps

7.1 General

Unless otherwise agreed, the state conditioning of the test panel and the temperature and relative humidity of the test shall meet the requirements of GB/T 9278.

Under the specified conditions, dry or bake the test panels and place them for a specified time. If applicable, each test panel should be placed horizontally in a ventilated position; interference from external airflow and direct sunlight shall be avoided. Every certain time or at the time that is specified in the product standard, within the range of not less than 1 cm from the edge of the coating film or putty film, test whether the coating film is surface-dry or through-dry. If there are no special instructions, when the product requires baking, take the

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film, the coating film is considered to be through-dry, while it shall be indicated "sticky" in the test report.

7.3.2 Method B (pressing cotton ball method)

This method applies to determination of through-drying time of coating films.

Put an absorbent cotton ball (4.1) on the surface of the coating film; then, gently place the drying time tester (4.9) on the absorbent cotton ball. At the same time, start the stopwatch (4.5); after 30 s, remove the drying time tester and the absorbent cotton ball; leave it for 5 minutes. If there are no traces of the cotton ball and loss of gloss on the surface of the coating film; if there are 1 ~ 2 cotton thread(s) on the coating film, which can be gently wiped off with a cotton ball, it is considered that the coating film is through-dry.

7.3.3 Method C (blade method)

This method applies to the determination of through-drying time of thick coating and putty films.

Use a medical scalpel blade (4.4) to cut through the coating film or putty film on the test panel; observe whether there is adhesion to the bottom layer and the film. For putty films, the surface also needs to be polished with an applicable waterproof abrasive paper (4.8). If there is no adhesion to the bottom layer and the film of the coating and putty films, and the putty film can form a uniform and smooth surface and does not stick to the sandpaper, it is considered that the coating film or putty film is through-dry.

Under normal circumstances, for water-based products, it is recommended to use No. 120 or No. 180 waterproof abrasive paper to smooth the surface of the putty film to smooth and to remove floating dust; for solvent-based products, it is recommended to use No. 320, No. 400 or No. 500 waterproof abrasive paper to lightly polish the surface of the putty film to smooth.

7.3.4 Method D (thick layer drying method)

This method applies to the determination of through-drying time of insulating varnish.

Use absolute ethanol to wipe and dry the aluminum sheet box (4.2). According to the non-volatile matter content of the sample, weigh an appropriate amount of sample; ensure that the mass of the dried sample is about 10 g. If the non-volatile matter content of the sample is 50%, the sampling amount is about 20 g. Let the aluminum sheet box stand until there are no bubbles in the sample. If the bubbles do not disappear, use a needle to pick out the bubbles; place it horizontally into a forced convection oven (4.7) that is heated to a specified temperature. Dry according to the specified heating rate and baking time of the

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