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

GB/T 1741-2020

Replacing GB/T 1741-2007

**Test method for determining the resistance of paints film to
mold**

漆膜耐霉菌性测定法

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1 Scope

GB/T 1741-2020 is the Chinese national standard on test method for determining the resistance of paints film to mold, 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 test principle, equipment and materials, culture medium and reagents, test procedures and test report which are involved in the test of the resistance of paints film to mold. This Standard applies to the determination of the resistance of paints film of architectural coating to mold. For the determination of the resistance of other types of paints film to mold, this Standard can be referred to.

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 6682-2008, Water for analytical laboratory use - Specification and test methods
- GB/T 9271-2008, Paints and varnishes standard panels for testing
- GB/T 9278, Temperatures and humidities for conditioning and testing of paint specimens
- GB/T 23987-2009, Paints and varnishes - Exposure of coatings to artificial weathering - Exposure to fluorescent UV lamps and water
- YY 0569-2011, Class II biological safety cabinets
- 5.6 pH meter: The division value is 0.01.
- 5.7 Centrifuge: The speed is 500 r/min ~ 5 000 r/min.
- 5.8 Biological safety cabinet: in accordance with the requirements of class II biological safety cabinet that is specified by YY 0569-2011.
- 5.9 Microscope: ordinary optical microscope.
- 5.10 Refrigerator: The temperature control range is 4 °C ~ 10 °C; the temperature uniformity does not exceed ± 2 °C; the temperature fluctuation does not exceed ± 2 °C.
- 5.11 Nebulizer: The capacity is 30 mL.
- 5.12 Graduated cylinder: The capacities are 10 mL, 50 mL, 100 mL, 500 mL and 1 000 mL.

6 Medium and reagents

6.1 General requirements Unless otherwise specified, all tests use chemically pure or reagents above chemically pure and distilled water or deionized water that meets the requirements of Grade-3 water in GB/T 6682-2008.

6.2 Sterile water Accurately weigh

0.005 g of dispersant (such as Tween 80) and add it to 100 mL of water; stir evenly; divide it into colorless glass test tubes (5.21) at a cultivate at 28 °C ~ 30 °C for 7 d ~ 14 d; when the surface of the medium is covered with mold spores, add 10 mL of sterile water (6.2); in the biological safety cabinet (5.8), use a sterile inoculation loop (5.16) to gently scrape mold spores on the surface of the mold culture, under aseptic operating conditions, to make into a mold spore suspension. Pour the mold spore suspension into a 125 mL sterile triangular flask (5.15) with a stopper, which has been pre-filled with 45 mL of sterile water (6.2) and 10 ~ 15 sterile glass beads (5.17); vigorously shake the sterile triangle flask (5.15) to break up the spore clusters and release mold spores from the fruit body. Place a sterile glass funnel (5.18) with sterile fiber filter paper (5.19) on a sterile triangular flask (5.15); pour the shaken mold spore suspension into a sterile glass funnel (5.18) to filter and remove mycelium and medium fragments. Centrifuge the filtered mold spore suspension at a speed

of 4 000 r/min under aseptic conditions; remove the supernatant; add 10 mL ~ 50 mL of sterile water (6.2) to the spore precipitate; mix well; then, centrifuge to get the mold spore precipitate; re-add sterile water to mix; centrifuge again to obtain mold spore precipitate. Use the nutrient solution (6.3) to dilute the mold spore precipitate; use a blood counting chamber (5.14) or other methods to determine the concentration of mold spores; dilute so that the concentration of mold spores in the suspension is $0.8 \times 10^6/\text{mL} \sim 1.2 \times 10^6/\text{mL}$. Each kind of prepared mold spore suspension can be stored in a refrigerator (5.10) at $4\text{ }^{\circ}\text{C} \sim 10\text{ }^{\circ}\text{C}$ for no more than 4 days. Before the test, mix each prepared mold spore suspension in equal volume to obtain a mixed mold spore solution.

7.2 Sample Take samples of the product according to GB/T 3186; the sampling amount shall be determined according to the inspection requirements.

7.3 Preparation of samples

7.3.1 Test sample Unless otherwise specified, use aluminum plates, glass plates and other substrates that are not easy to rust and absorb moisture; the size is 50 mm x 50 mm; the thickness is at least 1 mm. Unless otherwise specified, process each test plate according to the provisions of GB/T 9271-2008; aluminum plate and other metal substrates can be polished with suitable sandpaper. Then, apply and maintain 3 test plates as test samples according to the product regulations. The paints film of the outdoor product test sample is subjected to an aging test according to the provisions of

8.2.1 in GB/T 23987-2009 before the resistance test to mold; the irradiance is

$0.83\text{ W}\cdot\text{m}^{-2}\cdot\text{nm}^{-1}$; the test time is 100 h. Unless otherwise agreed, the test sample shall be adjusted for at least 4 h under the conditions that are specified in GB/T 9278 before the test.

7.3.2 Control sample 3 sheets of sterile fiber filter paper (5.19) whose size is (50x50) mm.

7.4 Inoculated culture

7.4.1 Petri dish method Pour about 20 mL of nutrient agar medium (6.4) into a sterile petri dish (5.13). When the medium is solidified, under aseptic conditions, place 3 test samples and 3 control samples respectively in the center of the surface of the petri dish that contains the culture medium. Use a sterile sprayer (5.11) to evenly spray

0.4 mL ~

0.6 mL of mixed mold spore solution (7.1.3) on the surface of each test sample and control sample and the surface of the culture medium, so that the entire test sample and the surface of the control sample and the surface of the culture medium are wet. Place the inoculated test sample and control sample in a constant temperature and humidity incubator (5.1); incubate for 7 days at a temperature of $25\text{ }^{\circ}\text{C} \sim 30\text{ }^{\circ}\text{C}$ and a relative

humidity of not less than 85%; then, visually inspect the growth of mold on the control sample; the three control samples shall have mold growth; otherwise, the test is invalid and the test shall be repeated. If mold growth can be seen on each control sample, continue to incubate the test sample and the control sample for 28 days and evaluate the result according to 7.5. The cultivation time can be extended to 56 days upon agreement by the relevant parties.

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