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

GB/T 1771-2007

**Paints and Varnishes -- Determination of resistance to neutral
salt spray (fog)**
(English Translation)

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1 Scope

This standard specifies a method for determining the resistance of coatings to neutral salt spray.

The methods, which are specified in this standard, can be used as a means of testing the quality of paint or coating systems.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 3186-2006 Paints varnishes and raw materials for paints and varnishes -

Sampling (ISO 15528:2000, IDT)

GB/T 6682 Water for laboratory use - Specifications (GB/T 6682-1992, neq ISO 3696:1987)

GB/T 9271 Paints and varnishes - Standard panels for testing (GB/T 9271-1988, eqv ISO 1514:1984)

GB 9278 Temperatures and humidities for conditioning and testing of paint specimens (GB 9278-1988, eqv ISO 3270:1984, Paints and varnishes and their raw materials - Temperatures and humidities for conditioning and testing)

GB/T 13452.2 Paints and varnishes - Determination of film thickness (GB/T 13452.2-1992, eqv ISO 2808:1974)

GB/T 20777-2006 Paints and varnishes - Examination and preparation of samples for testing (ISO 1513:1992, IDT)

ISO 3574:1999 Cold-reduced carbon steel sheet of commercial and drawing qualities

ISO 4628-1:2003 Paints and varnishes - Evaluation of degradation of paint coatings

- Designation of intensity, quantity and size of common types of defect - Part 1: General principles and rating schemes

ISO 4628-2:2003 Paints and varnishes - Evaluation of degradation of coatings -

Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 2: Assessment of degree of blistering

ISO 4628-3:2003 Paints and varnishes - Evaluation of degradation of coatings -

Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 3: Assessment of degree of rusting

ISO 4628-4:2003 Paints and varnishes - Evaluation of degradation of coatings -

Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 4: Assessment of degree of cracking

ISO 4628-5:2003 Paints and varnishes - Evaluation of degradation of coatings -

Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 5: Assessment of degree of flaking

3 Principle

Expose the painted test panels to neutral salt spray. The results of salt spray exposure are assessed, using principles or standards, which are pre-agreed by the parties concerned.

4 Information to be supplemented

For any particular application, the test methods specified in this standard need to be complemented by supplementary information, the items of which are listed in Appendix

A.

5 Test solution

5.1

Preparation of test solution

Dissolve sodium chloride in water, which has a purity of at least grade 3, as specified in GB/T 6682, AND a mass concentration of (50 ± 5) g/L. Sodium chloride shall be white, which has a mass fraction of $\geq 99.5\%$; it is basically free of copper and nickel; the mass fraction of sodium iodide shall be $\leq 0.1\%$.

5.2

The pH of the test solution (5.1) shall be adjusted, so that the pH of the spray solution, which is collected in the test chamber (see Chapter 6), is between 6.5 and 7.2.

When it exceeds the range, it can be adjusted, by adding analytically pure hydrochloric acid or sodium bicarbonate solution.

Note: It shall be noted that the pH value may change, due to the loss of carbon dioxide in the test solution, during spraying. This change can be avoided, by reducing the carbon dioxide content of the solution, for example, by heating the solution to above 35 °C OR using freshly boiled water, before adding the solution to the instrument.

5.3

The test solution shall be filtered, before being injected into the storage tank of the instrument, to prevent solid matter from clogging the nozzle.

6 Instruments and equipment

The equipment is a salt spray test chamber, which shall include the following components.

6.1

The salt spray chamber shall be made of OR lined with materials, which are resistant to corrosion by salt water solutions. It shall be provided with a cover, to prevent condensation from dripping onto the test panel. In order to ensure uniform distribution of spray, the

volume of the chamber shall not be less than 0.4 m³.

The size and shape of the salt spray chamber shall be such, that the volume of solution collected by the spray collector (6.4), is within the limits specified in 10.2.

For the salt spray chamber, which has a volume greater than 2 m³, it shall be carefully considered, in design and construction for ease of operation. Factors, that shall be considered, are listed in Appendix B.

6.2

For the thermostatic control element, the temperature shall be controlled by the thermostatic element in the chamber, so that the components, in the salt spray chamber, are kept within the specified temperature range (see 10.1). The element shall be at least 100 mm from the chamber wall. The thermometer shall be placed in the chamber as a whole; its distance from the four walls, the top of the chamber and the end of the chamber shall be more than 100 mm; meanwhile it shall be able to read from outside the chamber.

6.3

The spraying device shall consist of a compressed air supply, a storage tank for spraying solution, one or more nozzles which are made of materials resistant to corrosion by salt water. The compressed air supplying the spray shall pass through the filter, to remove oil and solid particles. The pressure shall be maintained at (70 ~ 170) kPa. The air shall be humidified, by passing through a saturated column, which is filled with water, before entering the nozzles. The filling water shall be at least grade 3 water, as specified in GB/T 6682; its temperature is several degrees Celsius higher than that of the salt spray chamber. The temperature of the water depends on the air pressure used

AND the type of nozzles used. Adjust the air pressure, to keep the recovery rate in the tank and the concentration of the collected solution, within the specified limits (see 10.2).

Unless otherwise specified or agreed upon, the test sample shall use a substrate, that complies with the provisions of GB/T 9271, AND has a size of about 150 mm x 100 mm x 1 mm.

Note: The size of the test panel can also be 150 mm x 100 mm x (0.8 ~ 1.5) mm or 150 mm x 70 mm x (0.8 ~ 1.5) mm.

8.2 Handling and painting of test panels

Unless otherwise agreed, each test panel shall be treated, in accordance with the provisions of GB/T 9271, then coated with the product or system to be tested, in accordance with the prescribed method.

Unless otherwise specified, the back and edges of the panels are also coated with the