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**CHEMICAL INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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Cathodic electrodeposition coatings

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(English Translation)

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Foreword

The Appendix A and Appendix B of this Standard are normative.

1 Scope

This Standard specifies the classification requirements, test methods, inspection rules, marking, package and storage, etc. of the cathodic electrodeposition coatings.

This Standard is applicable to the cathodic electrodeposition coatings with epoxy resin as the main film former.

2 Normative References

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) 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 1250 Rules for Expression and Judgement of Limiting Values

GB/T 1724 Methods of Test for Fineness of Grind of Paints

GB/T 1731-1993 Determination of Flexibility of Films

GB/T 1732-1993 Determination of Impact Resistance of Film

GB/T 1740 Determination of Resistance to Heat and Humidity of Paint Films

GB/T 1766 Paints and Varnishes - Rating Schemes of Degradation of Coats

GB/T 1771 Paints and Varnishes - Determination of Resistance to Neutral Salt Spray (GB/T 1771-1991, eqv ISO 7253:1984)

GB/T 6751 Paints and Varnishes - Determination of Volatile and Non-Volatile Matter (GB/T 6751-1986, eqv ISO 1515:1973)

GB/T 9271 Paints and Varnishes - Standard Panels for Testing (GB/T 9271-1988, eqv ISO 1514:1984)

GB/T 9274-1988 Paints and Varnishes - Determination of Resistance to Liquids (eqv ISO 2812:1974)

GB 9278 Temperature and Humidity for Conditioning and Testing of Paint Specimens (GB 9278-1988, eqv ISO 3270:1984, Paints and Varnishes and Their Raw Materials - Temperature and humidity for Conditioning and Testing)

GB/T 9286-1998 Paints and Varnishes - Cross Cut Test for Films (eqv ISO 2409:1992)

GB/T 9750 Marks for Package of Coating Products

GB/T 9753 Paints and Varnishes - Cupping Test (GB/T 9753-1988, eqv ISO 1520:1973)

GB/T 13452.1-1992 Paints and Varnishes - Determination of Total Lead - Flame Atomic Absorption Spectrometric Method (eqv ISO 6503:1984)

GB/T 13491 General Rule for Packing of Coatings

GB 17930 Unleaded Petrol (Gasoline) for Motor Vehicles

HG/T 3792-2005 Crosslinking Fluorocarbon Resin Coatings

ISO 15184:1998 Paints and Varnishes - Determination of Film Hardness by Pencil Test

ISO 15528:2000 Paints, Varnishes and Raw Materials for Paints and Varnishes - Sampling

ISO 15580:2000 Paints, Varnishes and Binders - Determination of MEQ Value of Water-Based Coating Materials and Binders

ASTM D1654-2005 Standard Test Method for Evaluation of Painted and Coated Specimens Subjected to Corrosive Environments

3 Product Classification

The cathodic electrodeposition coatings can be divided into 4 classes according to the main application areas in this Standard. Class-A is the cathodic electrodeposition coatings for

commercial vehicles (buses, trucks); Class-B is the cathodic electrodeposition coatings for passenger cars (small cars with less than 9 seats);

Class-C is cathodic electrodeposition coatings for automotive parts; Class-D is cathodic electrodeposition coatings for motorcycle, household appliances hardware and light industrial products, etc. The cathodic electrodeposition coatings for agricultural vehicles, construction machinery and the like vehicles can refer to Class- A. requirements.

5.2 Test environment

The test board conditioning and test temperature shall conform to the provisions of GB 9278.

5.3.1 Substrate and substrate treatment

The items of flexibility and impact resistance use tin plate; the remaining items use steel plate. The tin plate and steel plate shall conform to the provisions of GB/T 9271; substrate treatment. use 200# water sandpaper to dip into water and polish the tin plate, so that to remove the tin layer; the steel plate used for throwing power, breakdown voltage, coulomb efficiency, salt spray resistance, cycle corrosion alternating test must be phosphating; the phosphating solution and other pre-treatment reagents shall be agreed by both parties; cupping item shall not be phosphating; the steel plate used for the remaining items without special provisions shall not be phosphating; use 200# water sandpaper to dip into water to polish, and remove the oxide layer. After the tin plate is polished or steel plate is phosphate, it shall be electroplated as soon as possible, so that prevent the template rusted or phosphating film damaged.

NOTE: the substrate material and treatment mode can be agreed. The arbitration test phosphating plate is recommended to adopt BONDER plate (cold-rolled steel plate) with brand of RB0 26S/NL60/0 or the standard phosphating plate agreed by both parties (during the test, it shall be noted that generally the standard phosphating plate has positive side and negative side).

5.3.2 Specimen preparation

Prepare as per the product provisions; prepare the plate after curing.

5.3.3.1 Equipment and material requirements

- a) DC power supply. 0V~350V, the voltage ripple rate is less than 5%; the current reading can be displayed.
- b) Stainless steel plate. long strip shape, the area of each block (single-side) shall be 1/5~1/3 of the coated template; the stainless-steel plate with brand of 316 is recommended to be used.
- c) Electrophoresis groove. volume is about 10L, material is plastic.

d) Adjustable speed electric mixer. mixing head is made of stainless steel or glass.

5.4.1.2 Fineness

It shall be performed as per the provisions of GB/T 1724. The double-component paint only checks the color paste; while if the single-component paint is too viscous and difficult to test, then diluent can be added according to the product provisions to adjust.

5.4.1.3 Storage stability

Place about 1L of sample (the double-component paint shall check each component) into the appropriate plastic or glass container; 10% space shall be left in the container; after sealing, place it into $(50\pm 2)^{\circ}\text{C}$ constant temperature drying oven; take it out after 10d, place for 3h at $(23\pm 2)^{\circ}\text{C}$; check the "state in the container" according to the method in 5.4.1.1, if stirring, it can be mixed evenly; prepare the plate as per 5.3; check the coating film appearance (5.4.3.1); if the appearance is normal, then it is considered "no abnormality".

5.4.1.4 Solid content

It shall be performed as per GB/T 6751. The emulsion and color paste of double-component paint shall be tested respectively.

5.4.2.1 pH value

The accuracy of pH meter to determine the pH value shall be at least ± 0.01 . The total amount of test solution is 100mL; adjust the temperature into the range of $(25\pm 1)^{\circ}\text{C}$, then test as per the instrument requirement. Repeat for twice, take the average value.

The difference between the parallel determinations shall be no greater than 0.3; otherwise repeat the determination.

5.4.2.2 Conductivity

The accuracy of conductivity meter to determine the conductivity shall be at least $\pm 1\%$.

The total amount of test solution is 100mL; adjust the temperature into the range of $(25\pm 1)^{\circ}\text{C}$, then test as per the instrument requirement. Repeat for twice, take the average value. The difference between each measurement value and the average value shall be no greater than 3%; otherwise repeat the determination.

5.4.2.3 Solid content

It shall be performed as per the provisions of GB/T 6751.