HG

CHEMICAL INDUSTRY INDUSTRY STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 87.040

G 51

Filing No.: 37870-2013

HG/T 3655-2012

Replacing HG/T 3655-1999

Ultraviolet curing coatings for woodenware

紫外光（UV）固化木器涂料

Issued on: November 07, 2012 **Implemented on: March 01, 2013**

Issued by: Ministry of Industry and Information Technology of PRC

Table of Contents

Ultraviolet curing coatings for woodenware

1 Scope

This standard specifies the classification, requirements, test methods, inspection rules and marking, packaging, storage of ultraviolet (UV) curing coatings for woodenware.

This standard applies to ultraviolet curing coatings for woodenware, which is composed of reactive oligomers, reactive diluents, photo-initiators, other components. The product is suitable for decoration and protection of indoor wooden floors, furniture and other woodware.

This standard does not apply to water-based ultraviolet curing coatings for woodenware.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB/T 1728-1979 Methods of test for drying time of coatings of paints and putties

GB/T 1766 Paints and varnishes - Rating schemes of degradation of coats

GB/T 1768-2006 Method of test for abrasion resistance of paint films

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

GB/T 4893.1-2005 Furniture - Assessment of surface resistance to cold liquids

GB/T 4893.3-2005 Furniture - Assessment of surface resistance to dry heat

GB/T 6682 Water for analytical laboratory use - Specification and test methods

GB/T 6739-2006 Paints and varnishes - Determination of film hardness by pencil test

GB/T 6753.1-2007 Paints varnishes and printing inks - Determination of fineness of grind

GB/T 8170 Rules of rounding off for numerical values & expression and judgement of limiting values

5 Test methods

5.1 Sampling

The product is sampled, according to the provisions of GB/T 3186, OR it can be sampled according to the agreed method. The sampling amount is determined, according to the inspection needs.

5.2 Test environment

The state adjustment of the test panel and the temperature and humidity of the test shall comply with the provisions of GB/T 9278.

5.3 Preparation of test template

5.3.1 Substrate and substrate treatment

Use glass plates for curing performance, gloss, pencil hardness; use aluminum plates or glass plates for wear resistance item; use white exterior porcelain tiles for yellowing resistance item; use light-colored veneer plywood for other items (in compliance with the technical requirements in GB/T 15104-2006). The requirements and treatment of glass plates and aluminum plates shall meet the requirements of GB/T 9271. The requirements of white exterior porcelain tiles shall meet the requirements of 6.1 in GB/T 23983-2009. The light-colored veneer plywood shall be placed for over 7 d, under the conditions of 5.2, before use.

Note: Light-colored veneer plywood can use light-colored varieties, such as unstreamed beech, white maple, white oak; the plywood shall be guaranteed not to deform during the test.

5.3.2 Requirements for plate making

Generally, a wire rod coater is used for plate coating. After agreement, it can also be coated, by shower coating, roller coating, spray coating, brush coating, etc. The wire rod, which has a specification of 40, is used for single coating; the wire rod, which has a specification of 20, is used for the composite coating. Please refer to Table 2 for the plate making requirements of each item. The conditions of UV curing shall be indicated

Open the container. Use a spatula or stirring rod to mix. It allows sedimentation at the bottom of the container. If it is easy to mix evenly after stirring, it is rated as "even without lumps after stirring".

Note: For multi-component coatings, the main agent and curing agent shall be inspected separately.

5.4.3 Fineness

Carry out according to the provisions of GB/T 6753.1-2007.

Note: For multi-component coatings, the main agent and curing agent shall be inspected separately.

5.4.4 Storage stability

Put about 0.5 L of the sample into a well-sealed iron can, which has about 10% space left in the can. Put it in a constant temperature drying box at (50 ± 2) °C, after sealing. Take it out after 7 days. Place it at (23 ± 2) °C for 3 hours. Check the "state in the container", according to 5.4.2. If there is no significant difference between the test results after storage and before storage, it is rated as "no abnormality".

Note: For multi-component coatings, the main agent and curing agent shall be inspected separately.

5.4.5 Curing properties

It can be measured, by a single UV lamp or a UV curing device in the production line. The measurement unit of curing performance is mJ/cm^2 (tested by a UV energy meter).

The determination of curing property is carried out, in accordance with the provisions of Method A of actual dry of GB/T 1728-1979. Under the curing conditions agreed by both parties, if the paint film can be dried, it will be judged as "pass".

5.4.6 Appearance of coating film

Visually observe the template, under scattered sunlight. If the coating film is uniform, AND there is no coating film damages such as sagging, blooming, pinholes, cracking, peeling, it is rated as "normal".

5.4.7 Grindability

Use 400# water sandpaper to carry out 10 dry grindings (one reciprocating counts as one grinding). If the painting film is easy to be ground into smooth surface, it is rated as "easy grinding".

5.4.8 Gloss (60°)

It is carried out, according to the provisions of GB/T 9754-2007.

5.4.9 Abrasion resistance

It is carried out, according to the provisions of GB/T 1768-2006. The model of grinding wheel used is CS-10.

Note: Other rubber grinding wheels, which have comparable abrasive action to CS-10, can also be used.

5.4.10 Pencil hardness

It is carried out, according to the provisions of GB/T 6739-2006. The pencil is a Chinese brand 101 drawing pencil.

5.4.11 Cross-cut test

It is carried out, according to the provisions of GB/T 9286-1998. The grid spacing is 2 mm.

5.4.12 Dry heat resistance

It is carried out, according to the provisions of GB/T 4893.3-2005. The test temperature is (90 ± 2) °C. The test time is 15 min.

5.4.13 Water resistance

It is carried out, according to the provisions of GB/T 4893.1-2005. The test solution is distilled water. The middle part of each plate is taken as the test area. Respectively place five layers of filter paper, on each test area. The filter paper shall be kept moist, during the test. If necessary, apply Vaseline to the contact portion between the glass cover and the test panel, to seal it. After 24 hours, remove the filter paper. Absorb it dry. Let it stand for 2 h. Visually observe it under scattered sunlight. If 2 of the 3 test panels do not have any film damage, such as blistering, cracking, peeling, etc., but slight discoloration and slight gloss change are allowed, it is rated as "no abnormality". If the above film damage occurs, it shall be described according to GB/T 1766.

5.4.14 Alkali resistance

The test and result evaluation method is the same as that of water resistance. The test solution is 50 g/L Na_2CO_3 solution; the test duration is 2 h; it is observed, after being placed for 1 h after test.

5.4.15 Alcohol resistance

The test and result evaluation method is the same as that of water resistance. The test solution is 70% (volume fraction) ethanol aqueous solution; the test time is 8 h. It is observed, after being placed for 1 h after test.

This is an excerpt of the PDF (Some pages are marked off intentionally)

------ The End ------