



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

GB 18581-2020

Limit of Harmful Substances of Woodenware Coatings

Issued on: March 4, 2020

Implemented on: December 1, 2020

Issued by: SAMR; SAC

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1 Scope

This Standard specifies the product classification, requirements, test methods, inspection rules, packaging marks and implementation of the standards involved in the allowable limits of substances harmful to humans and the environment in woodenware coatings.

This Standard is applicable to all types of woodenware coatings for on-site and factory coatings such as filler, primer and topcoat except for special functional coatings such as Lacquer, bridging paint, wood stain, open effect paint, etc.

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) are applicable to this document.

GB/T 1725-2007 Paints Varnishes and Plastics - Determination of Non-Volatile-Matter Content

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 6750-2007 Paints and Varnishes - Determination of Density - Pycnometer Method

GB/T 8170-2008 Rules of Rounding off for Numerical Values & Expression and Judgement of Limiting Values

GB/T 9750 Marks for Package of Coating Product

GB/T 9754-2007 Paints and Varnishes - Determination of Specular Gloss of Non-Metallic Paint Films at 20°, 60° and 85°

GB/T 18446-2009 Binders for Paints and Varnishes - Determination of Monomeric Diisocyanate in Isocyanate Resins

GB/T 23985-2009 Paints and Varnishes - Determination of Volatile Organic Compound (VOC) Content - Difference Method

GB/T 23986-2009 Paints and Varnishes - Determination of Volatile Organic Compound (VOC) Content - Gas-Chromatographic Method

GB/T 23990-2009 Determination of the Contents of Benzene, Toluene, Ethylbenzene, and Xylene in Coatings by Gas Chromatography

GB/T 23991-2009 Determination of Soluble Harmful Elements Content of Coatings

3 Terms and Definitions

For the purpose of this document, the following terms and definitions apply.

3.1 Polyurethane coatings

A type of coating that uses polyurethane resin formed by the reaction of polyisocyanate and active hydrogen-containing compound as the main film-forming material.

3.2 Nitrocellulose coatings

A type of coating that uses nitrocellulose prepared by the esterification reaction of a mixture of nitric acid and sulfuric acid with cellulose as the main film-forming material.

3.3 Alkyd coatings

A type of coating that uses alkyd resin prepared by polyacid, fatty acid (or vegetable oil) and polyhydric alcohol as the main film-forming material.

3.4 Unsaturated polyester coatings

A type of coating that uses unsaturated polyester resins with carbon-carbon double bonds on the polymer chain that are easily crosslinked with reactive diluents as the main film-forming materials.

3.5 Volatile organic compound; VOC

Organic compounds that participate in atmospheric photochemical reactions, or organic compounds determined in accordance with relevant provisions.

3.6 Volatile organic compound content; VOC content

The mass of the volatile organic compounds in the coating that is measured under the specified conditions.

4 Product Classification

This Standard classifies woodenware coatings into solvent-based coatings (including filler), water-based coatings (including filler), radiation curing coatings (including filler), and powder coatings. Thereof, solvent-based coatings (including filler) are divided into polyurethane, nitrocellulose (only for factory coating use),

5 requirements

The limit value of the limit of harmful substances in woodenware coatings shall meet the requirements of Table 1.

6.1 Sampling

Sampling according to the provisions of GB/T 3186, or according to the agreed method.

The sampling amount is determined according to the inspection requirements.

6.2.1.1 Density

Perform according to the provisions of GB/T 6750-2007; the test temperature is $(23 \pm 0.5)^\circ\text{C}$.

6.2.1.2 Luster

Perform according to the provisions of GB/T 9754-2007. Use a wet film preparation device with a groove depth of $(100 \pm 2) \mu\text{m}$ to prepare a sample plate on a flat glass plate. The varnish shall use black glass or flat glass with a matte black paint on the back as the substrate. After drying the sample plate for 48h at a temperature of $(23 \pm 2)^\circ\text{C}$ and a relative humidity of $(50 \pm 5)\%$, test it with a 60° specular gloss meter.

6.2.1.3 Moisture content

Perform according to the provisions of Appendix A.

Perform according to the provisions of GB/T 34682-2017. The moisture shall not be

measured, the moisture content is set to zero.

6.2.1.7 VOC content in radiation curable coatings (including filler)

Perform according to the provisions of GB/T 34675-2017. Filler samples are not tested for moisture content (moisture content is set to zero) and density.

6.2.2 Formaldehyde content

Perform according to the provisions of GB/T 23993-2009.

6.2.3 Total lead (Pb) content

Perform according to the provisions of GB/T 30647-2014.

6.2.4 Soluble heavy metal content

Perform according to the provisions of GB/T 23991-2009.

6.2.5 Total sum content of glycol ether and ether ester

Perform according to the provisions of GB/T 23986-2009. The calculation of the content of glycol ether and ether ester is carried out according to 10.2 in GB/T 23986-2009; and converted into milligrams per kilogram (mg/kg).

6.2.6 Benzene content, total sum content of toluene and xylene (including

ethylbenzene)

6.2.10 Methanol content

Perform according to the provisions of GB/T 23986-2009. The calculation of methanol content is carried out according to 10.2 of GB/T 23986-2009.

7.1.1 Under normal production conditions, the type inspection shall be carried out at

least once a year. The type inspection items include all the requirements listed in this Standard.

7.1.2 The type inspection shall be carried out at any time in one of the following situations.

7.2.1 The judgment of the test result shall be carried out according to the rounding-off