ICS 87.040
CCS G51

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 30981.1-2025

Replacing GB 18582-2020

Limit of harmful substances of coatings - Part 1: Architectural coatings

涂料中有害物质限量 第1部分：建筑涂料

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1 Scope

GB 30981.1-2025 is the Chinese national standard on limit of harmful substances of coatings - part 1: architectural coatings, in the field of paint and colour industries. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 30 May 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 June 2026. Classification: ICS 87.040, CCS G51. 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 document specifies the product classification, requirements, inspection rules, marking and implementation of the document related to the permissible limits of substances harmful to the human body and the environment in architectural coatings and accessory materials, and describes the corresponding test methods. This document applies to all kinds of wall coatings that are directly applied on site for decoration, protection and other special functions (such as mildew prevention, algae prevention, thermal insulation, etc.) on the interior and exterior surfaces of buildings based on cement and other non-metallic materials, and accessory materials used in conjunction; it also applies to all kinds of floor coatings that are directly applied on site for decoration, protection and other special functions (such as antistatic, corrosion resistance, anti-slip, etc.) on the floor base surfaces such as cement mortar, concrete, stone, plastic or steel, and accessory materials used in conjunction. This document does not apply to architectural waterproof coatings and

coatings for sports fields with synthetic surface layers.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 1725 Paints, varnishes and plastics - Determination of non-volatile-matter content

GB/T 1727 General methods for preparation of coating films

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

GB/T 5206 Paints and varnishes - Terms and definitions

GB/T 6750 Paints and varnishes - Determination of density - Pyknometer method

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

GB/T 9754 Paints and varnishes - Determination of gloss value at 20°, 60°and 85° volatile organic compounds content VOC content Under specified conditions, mass of volatile organic compounds (3.10) measured in the coating. [Source:

GB/T 23986.2-2023, 3.4, modified]

3.12 semi-volatile organic compound; SVOC At normal temperature and pressure in the environment, organic liquids and/or solids that can evaporate naturally, but the evaporation rate is slower than that of VOC. [Source:

GB/T 23986.2-2023, 3.2, modified]

3.13 semi-volatile organic compounds content SVOC content Under specified conditions, mass of semi-volatile organic compounds (3.12) measured in the coating. [Source:

GB/T 23986.2-2023, 3.5, modified]

3.14 biocide A type of additive added to the coating to prevent organisms from eroding the substrate, coating or its coating film through microbial degradation. Example. In-can preservatives such as formaldehyde, methylisothiazolinone, chloromethylisothiazolinone, benzisothiazolinone, di(3-aminopropyl)dodecylamine; dry film mildew inhibitors such as octylisothiazolinone, dichlorooctylisothiazolinone, carbendazim, thiophanate-methyl, iodopropynyl carbamate; algaecides such as diuron, terbutryl, zinc pyrithione. Some biocides have multiple functions. [Source:

4 Product classification

Architectural coatings are divided into water-borne wall coatings, floor coatings, and

accessory materials according to product categories. Water-borne wall coatings are divided into the following categories according to the application occasions. - interior wall coatings; interior wall coatings are divided into primers, intermediate coatings, topcoats and varnishes according to the coating structure. Primers are further divided into paints and varnishes according to the appearance of the coating film; intermediate coatings are further divided into flat coatings and textured coatings according to the coating effect; topcoats are further divided into flat coatings, textured coatings and effect pigment coatings according to the coating effect; flat coatings are further divided into gloss (60°) <= 10 GU and gloss (60°) > 10 GU according to the coating gloss. - exterior wall coatings; exterior wall coatings are divided into primers, intermediate coatings, topcoats and varnishes according to the coating structure; primers are further divided into paints and varnishes according to the appearance of the coating film; intermediate coatings are further divided into flat coatings and textured coatings according to the coating effect; topcoats are further divided into flat coatings, textured coatings and effect pigment coatings according to the coating effect. Floor coatings are divided into water-borne, solvent-borne and solvent-free according to the dispersion medium. Accessory materials are divided into water-borne and solvent-borne according to the dispersion medium.

5 Requirements

5.1 The limit values of harmful substances in water-borne wall coatings shall comply with the requirements of Table

1.When a coating product is clearly indicated to be suitable for multiple uses, it shall comply with the most stringent limit value requirement among all requirements. Carry out in accordance with the provisions of GB/T 23986.2-2023.The chromatographic column uses a medium polarity chromatographic column (6 % cyanopropylphenyl/94 % methyl polysiloxane capillary column), the chromatographic injection port temperature is 260 °C and the marker is diethyl adipate. Weigh about 1 g of the sample; the calibrant is limited to benzene, toluene, ethylbenzene, o-xylene, m- xylene, p-xylene, ethylene glycol methyl ether, ethylene glycol methyl ether acetate, ethylene glycol ethyl ether, ethylene glycol ethyl ether acetate, ethylene glycol dimethyl ether, ethylene glycol diethyl ether, diethylene glycol dimethyl ether, triethylene glycol dimethyl ether, methanol, ethanol, n-propanol, isopropanol, n-butanol, isobutanol, benzyl alcohol, isooctyl alcohol, ethylene glycol, 1,2-propylene glycol, diethylene glycol, triethylamine, dimethylethanolamine, 2-amino-2-methyl-1-propanol, ethylene glycol n-butyl ether, ethylene glycol phenyl ether, diethylene glycol n-butyl ether, ethylene glycol butyl ether acetate, diethylene glycol ethyl ether acetate, diethylene glycol butyl ether acetate, propylene glycol monomethyl ether, propylene glycol n-butyl ether, propylene glycol phenyl ether, dipropylene glycol monomethyl ether, dipropylene glycol n-butyl ether, acetone, methyl isoamyl ketone, N-methylpyrrolidone, 2,2,4-trimethyl-1,3-pentanediol, diethyl adipate; if other chromatographic peaks appear in the chromatogram, the relative correction factor relative

to the alternative calibrant (diethyl adipate) shall be assumed to be

1.0 for calculation. The determination of moisture content is carried out in accordance with the provisions of GB/T 41953.The absolute difference between the two results of parallel determination is less than 1.0 %; if the moisture content in N,N-dimethylformamide (DMF) after molecular sieve drying is less than 0.02 %, the moisture content of DMF is set to zero. The moisture content of water-borne putties is not measured. The calculation of VOC content in coatings is carried out in accordance with

11.4 of GB/T 23986.2-2023, with a detection limit of 2 g/L. The calculation of VOC content in water-borne putties is carried out in accordance with

11.2 of GB/T 23986.2-2023 and converted into grams per kilogram (g/kg), with a detection limit of 1 g/kg.

6.2.1.4 VOC content in solvent-borne floor coatings (including putties) For solvent-borne floor coatings (including putties) without active diluents, it is carried out in accordance with the provisions of GB/T 23985-2009.The non-volatile content is carried out according to the provisions of GB/T 1725; weigh about 1 g of the sample, and the baking condition is (105 ± 2) °C/1 h. The moisture content is not measured, and the moisture content is set to zero. The calculation of VOC content in solvent-borne floor coatings without active diluents is carried out in accordance with

8.3 of GB/T 23985-2009.The calculation of VOC content in solvent-borne putties without active diluents is carried out in accordance with

8.2 of GB/T 23985-2009 and converted into grams per kilogram (g/kg). For solvent-borne coatings (including putties) containing active diluents, it is carried out in accordance with the provisions of GB/T 34682-2017, the moisture content is not measured, and the moisture content is set to zero. The placement time for the determination of non-volatile content is 24 h under the standard test environment [temperature (23 ± 2) °C, relative humidity (50 ± 5) %]. The calculation of VOC content in solvent-borne coatings containing active diluents is carried out in accordance with

8.3 of GB/T 34682-2017.The calculation of VOC content in solvent-borne putties containing active diluent is carried out in accordance with

8.2 of GB/T 34682-2017 and converted into grams per kilogram (g/kg).

6.2.1.5 VOC content in solvent-free floor coatings Carry out in accordance with the provisions of GB/T 34682-2017.The placement time for the determination of non-volatile content is 24 h under the standard test environment [temperature (23 ± 2) °C, relative humidity (50 ± 5) %], or placed for the time required by the product instruction manual, but the placement time is not more than 7 d. The moisture content is not measured, and the moisture content is set to zero. The calculation of VOC content in coatings is carried out according to