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

GB/T 21551.6-2024

Replacing GB/T 21551.6-2010

**Antibacterial, antimicrobial and purification functions of
household and similar electrical appliances - Part 6: Particular
requirements for air conditioners**

家用和类似用途电器的抗菌、除菌、净化功能 第6部分：空调器的特殊要求

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Table of Contents

1 Scope
2 Normative References
3 Terms and Definitions
4 Technical Requirements
4.1 Hygiene and Safety Requirements
5 Test Methods...
5.2 Hygiene and Safety Test
5.2.2 Hygiene and safety test of the whole machine
5.3 Tests of the Antimicrobial, Microbial Reduction and Cleaning Functions
5.3.3 Function of indoor air cleaning
Appendix A

1 Scope

GB/T 21551.6-2024 sets the particular requirements for air conditioners in the Chinese appliance hygiene series. An air conditioner is a humid, dark box with a large surface area and continuous airflow, which makes it an excellent place for mould and bacteria to grow and the reason that self-cleaning and antibacterial functions have become a main selling point in the Chinese market. The standard covers the antibacterial and mould-proof performance of the components in the air path, the antimicrobial and purification performance of any active device fitted, and the purification of particulate matter and of odour, with the test method for each: the test organisms and the inoculation, the operation of the whole unit in a test chamber under stated conditions rather than testing a component alone, the sampling and the calculation of the reduction rate, the durability of the effect, and the safety requirements including ozone release. The 2024 edition replaces GB/T 21551.6-2010. For an air conditioner maker selling into China, this is the text a hygiene claim is verified against.

This document specifies the hygiene and safety, and functional requirements for household and similar air conditioners with the antimicrobial, microbial reduction and cleaning functions, as well as the marking requirements, and describes the corresponding test methods. This document applies to the production, inspection and sales of household and similar air conditioners (hereinafter referred to as "air conditioners") with one or multiple functions of antimicrobia, preventing mildew, microbial reduction, indoor air cleaning and self-cleaning, etc.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB 4789.2 National Food Safety Standard - Microbiological Examination of Food. Aerobic Plate Count

GB/T 7725 Room Air Conditioner

GB/T 18204.2 Examination Methods for Public Places - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 21551.1 and GB/T 7725, and the following are applicable to this document.

3.1 self-cleaning The process of using physical or chemical methods, such as. ultraviolet lamp and negative ions to remove or reduce the microorganisms inside the indoor unit of the air conditioner (filter screen, evaporator, fan, air guide blades, etc.).

3.2 self-cleaning rate In the self-cleaning test, the value of the reduction in the number of microorganisms expressed as a percentage.

3.3 indoor air cleaning The process of adopting certain technologies or methods to significantly reduce the concentration of particulate matters or gaseous pollutants (formaldehyde, benzene and TVOC, etc.) in the air through self-circulation of indoor air.

3.4 clean air delivery rate; CADR The parameter of the cleaning capacity of an air conditioner with the indoor air cleaning function for target pollutants (particulate matters or gaseous pollutants) under specified conditions. It indicates the rate at which, the air conditioner provides clean air. [Source: GB/T 18801-2022, 3.8, modified]

3.5 cumulate clean mass; CCM The parameter of the cumulate cleaning capacity of an air conditioner with the indoor air cleaning function for target pollutants (particulate matters or gaseous pollutants) under specified conditions. It indicates the total mass of target pollutants treated by cumulate cleaning when the clean air delivery rate of the air conditioner decays to 50% of the initial value. [Source: GB/T 18801-2022, 3.9, modified]

4.1 Hygiene and Safety Requirements

4.1.1 Air conditioners with the antimicrobial, microbial reduction and cleaning functions shall comply with the hygiene and safety requirements in GB/T 21551.1.

g) TVOC concentration test equipment shall satisfy the requirements of GB/T 18883. Online instant-reading gaseous pollutant mass concentration tester may also be used. its resolution shall not be lower than

0.01 mg/m³, and the test instrument needs to be regularly calibrated in accordance with its measurement range;

h) The PM₁₀ concentration test equipment may use a particulate matter mass concentration tester. the resolution is not lower than

0.001 mg/m³, and the maximum allowable error is 10%.

5.1.3 Prototype settings When the air conditioner is tested for harmful substances, microbial reduction and cleaning, it shall be operated under the normal working conditions (the mode with the optimal cleaning effect) explicitly stated by the manufacturer. If the manufacturer does not specify, the air conditioner shall be operated at the maximum wind speed gear. When conducting microbial reduction and cleaning tests on split-type air conditioners, only the indoor unit shall be operated and there is no need to start the outdoor unit. When conducting microbial reduction and cleaning tests on integral air conditioners, only the air supply function shall be operated, and there is no need to start the cooling or heating function. When the air conditioner is undergoing a self-cleaning test, it shall be operated in accordance with the working mode explicitly stated by the manufacturer.

5.2 Hygiene and Safety Test

5.2.1 Hygiene and safety test of components and parts The antimicrobial or preventing mildew materials or components and parts used for air conditioners shall be tested in accordance with the method described in GB/T 21551.1.

5.2.2 Hygiene and safety test of the whole machine

5.2.2.1 Requirements for sampling points The harmful substance release test of air conditioners shall use the test value minus the laboratory environment background concentration value as the test result. The laboratory background environment shall comply with the requirements of GB/T 18883. The appliance shall be stably operated for at least 30 minutes before starting the test. "5 cm or 20 cm from the air outlet" means that the vertical distance between the sampling point and the center of the plane where the air outlet is located is 5 cm or 20 cm. The TVOC sampling time should be 45 minutes; the sampling frequency for ozone leakage and PM₁₀ concentration is 1 time/min, and the test time shall not be lower than 20 minutes. If there are multiple points, take the maximum value of all points as the final result. "5 cm around the appliance" means that the vertical distance between the sampling point and the center of each plane of the prototype to be tested is 5 cm, and there are up, down, front, back, left and right, a total of six points, and the maximum value is taken as the final result. NOTE. the sampling points comply with the

actual installation conditions. If it is an integral or split floor-standing air conditioner, no sampling is required at the "bottom"; if it is a split wall-mounted air conditioner, no sampling is required at the "back". For other situations, refer to this for implementation.

5.2.2.2 Ozone leakage The ozone leakage test adopts the ultraviolet photometry method specified in GB/T 18883.

5.2.2.3 UV leakage When testing the UV leakage, the air conditioner needs to be placed in a dark room (with the walls painted black). After the prototype is turned on and runs for 5 minutes, directly use a ultraviolet radiation meter to test the UV intensity at 5 cm around the air conditioner. Measure the ultraviolet light at a main wavelength of 253.7 nm and take the maximum value as the test value. If the manufacturer explicitly states that the main wavelength of ultraviolet light is another value, then, additional tests shall be carried out for that wavelength.

5.2.2.4 TVOC concentration The TVOC concentration at the air outlet of the air conditioner shall be tested in accordance with the solid adsorption-thermal desorption-gas chromatography-mass spectrometry method specified in GB/T 18883 and may also be tested using an online gaseous pollutant concentration tester.

5.2.2.5 PM10 concentration The PM10 concentration at the air outlet of the air conditioner shall be tested in accordance with the light scattering method specified in GB/T 18204.2.

5.3 Tests of the Antimicrobial, Microbial Reduction and Cleaning Functions

5.3.1 Antimicrobial and preventing mildew functions The antimicrobial and preventing mildew materials and components and parts used for air conditioners shall be tested in accordance with the method described in GB/T 21551.2.

5.3.2 Function of microbial reduction The microbial reduction function of the air conditioners shall be tested in accordance with the method described in GB/T 21551.3.

Appendix A

(normative) Test Method for Self-cleaning Performance A.1 Test Microorganisms *Staphylococcus albus* CGMCC 1.3374. Other bacterial species or strains may also be selected as test bacteria, but all bacterial species or strains used for testing shall be provided by corresponding national bacterial species preservation and management institutions, and the test bacterial species and classification codes shall be indicated in the report. Laboratories shall use test microorganisms in accordance with relevant national safety regulations. If other test pathogens are selected, the laboratories shall have a biosafety protection level that is compatible with the hazards and shall not involve the first and second categories of pathogenic microorganisms in the Catalogue of Pathogenic Microorganisms Transmissible to Humans. The various culture medium components used to culture bacterial species shall comply with the requirements of the bacterial species