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

GB/T 21551.4-2024

Replacing GB/T 21551.4-2010

**Antibacterial, antimicrobial and purification functions of
household and similar electrical appliances - Part 4: Particular
requirements for refrigerators**

家用和类似用途电器的抗菌、除菌、净化功能 第4部分：电冰箱的特殊要求

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Foreword

This document was drafted in accordance with the rules provided in GB/T 1.1-2020
Directives for Standardization - Part

1.Rules for the Structure and Drafting of Standardizing Documents. This is Part 4 of GB/T 21551 Antimicrobial and Cleaning Function of Household and Similar Electrical Appliances. GB/T 21551 has issued the following parts.

- 1.General requirement;
- 2.Particular requirements for material;
- 3.Particular requirements for air cleaner;
- 4.Particular requirements for refrigerator;
- 5.Particular requirements for electric washing machine;
- 6.Particular requirements for air conditioner. This document serves as a replacement for GB 21551.4-2010 Antibacterial and Cleaning Function for Household and Similar Electrical Appliances - Particular Requirements of Refrigerator. In comparison with GB 21551.4-2010, apart from structural adjustments and editorial modifications, the main technical changes are as follows:

- The scope of application is modified (see Chapter 1; Chapter 1 of Version 2010);
- The terms and definitions of "cleaning", "cleaning rate" and "deodorization rate" are added, and the terms and definitions of "antibacterial", "deodorization" and "antibacterial materials" are deleted (see Chapter 3; Chapter 3 of Version 2010);
- The clause division of hazardous substance leakage in the "hygiene and safety requirements" is modified (see 4.1.1; 4.4 of Version 2010);
- The "requirements for inhibition ring" and "requirements for microbial reduction" are added (see 4.1.2 and 4.2.3);

1 Scope

GB/T 21551.4-2024 sets the particular requirements for refrigerators in the Chinese appliance hygiene series. Antibacterial and deodorising claims are on almost every refrigerator sold in China, and this is the document that decides whether such a claim can be made and how it is proved. It covers the antibacterial function of the surfaces and components inside the cabinet, the antimicrobial function of any active device fitted, whether ultraviolet, photocatalytic, ionising or ozone-generating, and the purification function against odour and against ethylene, with for each the test method: the test organisms and the inoculation, the placement inside a real cabinet at its normal operating temperature, which is the part that makes a refrigerator different from a laboratory dish, the contact and sampling times, the controls and the calculation of the reduction rate, together with the durability of the effect and the safety requirements including any ozone released. The 2024 edition replaces GB/T 21551.4-2010.

This document specifies the hygiene and safety, and functional requirements for refrigerators, refrigerator-freezers and freezers for household and similar purposes 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 refrigerators, refrigerator-freezers and freezers (hereinafter referred to as "refrigerators") for household and similar purposes that have one or more functions of antimicrobia, preventing mildew, microbial reduction, cleaning / deodorization, 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 8059 Household and Similar Refrigerating Appliances

GB/T 18883 Standards for Indoor Air Quality

GB 19489 Laboratories - General Requirements for Biosafety

GB/T 21551.1 Antimicrobial and Cleaning Function of Household and Similar Electrical Appliances - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 21551.1 and GB/T 8059, and the following are applicable to this document.

3.1 cleaning The process of reducing or removing the metabolites of microorganisms, such as. bacteria and fungi, or volatile chemical gases (ethylene and TVOC, etc.) generated by stored objects inside the refrigerator.

3.2 cleaning rate The reduction in chemical gas concentration in the cleaning (3.1) test expressed as a percentage.

3.3 deodorization rate In the deodorization test, the reduction in the concentration of chemical gases that cause olfactory discomfort expressed as a percentage.

4.1 Hygiene and Safety Requirements

4.1.1 Hygiene and safety of the whole machine When the refrigerator door is opened, the ultraviolet, ozone and other generation devices shall stop working; if they cannot stop working, there shall be a description to remind that the use of this product will generate ultraviolet or ozone.

4.1.2 Inhibition ring The inhibition ring shall meet the requirements of GB/T 21551.1.

4.1.3 Hygiene toxicology For refrigerators with materials that are explicitly stated to have the antimicrobial function or components and parts containing antimicrobial materials, the toxicology shall comply with the requirements of GB/T 21551.1.

4.2 Requirements for Antimicrobia, Microbial Reduction and Cleaning

4.2.1 Antimicrobia The antimicrobial rate of refrigerator materials or components and parts that are explicitly stated to have the antimicrobial function shall comply with the requirements of GB/T 21551.2.

4.2.2 Preventing mildew For refrigerator materials or components parts that are explicitly stated to have the preventing mildew function, the preventing mildew level shall comply with the requirements of GB/T 21551.2.

4.2.3 Microbial reduction For refrigerators that are explicitly stated to have the microbial reduction function, the microbial reduction state shall not be lower than 90.0%.

4.2.4 Cleaning / deodorization For refrigerators that are explicitly stated to have the cleaning / deodorization function, the cleaning rate / deodorization rate shall not be lower than 90.0%.

5.1 Test Conditions

5.1.2 Measurement instruments The general measurement instruments for the test shall satisfy the following requirements.

5.2.1 Hygiene and safety test of the whole machine

5.2.2 Inhibition ring In accordance with the method described in GB/T 21551.1, carry out the test.

5.2.3 Hygiene toxicology In accordance with the method described in GB/T 21551.1, carry out the test.

5.3 Tests of Antimicrobia, Microbial Reduction and Cleaning

5.3.1 Antimicrobia The antimicrobial rate is tested in accordance with the method described in GB/T 21551.2.

5.3.2 Preventing mildew The preventing mildew level is tested in accordance with the method described in GB/T 21551.2.

5.3.3 Microbial reduction In accordance with the method described in Appendix A, carry out the test.

5.3.4 Cleaning / deodorization In accordance with the method described in Appendix B, carry out the test.

6 Marking and Instructions for Use

6.1 The marking of refrigerator products that are explicitly stated to have the antimicrobial, preventing mildew, microbial reduction, cleaning / deodorization functions shall comply with the requirements of GB/T 21551.1.

6.2 Refrigerator products that are explicitly stated to have the antimicrobial, preventing mildew, microbial reduction, cleaning / deodorization functions shall indicate in the product instructions that the products have the functions and indicators specified in this document,