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

GB/T 20154-2024

Low temperature freezer

低温保存箱

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. This document replaces GB/T 20154-2014 "Low Temperature Storage Boxes". Compared with GB/T 20154-2014, except for structural adjustments and editorial In addition to the modifications, the main technical changes are as follows:

--- Changed the definitions of the terms "volume", "load limit", "power consumption" and "ambient temperature" (see 3.1.4, 3.1.6,

3.2.1 and 3.2.6, 3.3.4, 3.3.6,

3.4.4 of the.2014 edition);

--- Added the terms "rated characteristic point temperature", "measured characteristic point temperature", "holding time", "temperature fluctuation" and "temperature uniformity" and definitions (see 3.2.4, 3.2.5, 3.2.11,

3.2.12 and 3.2.13);

--- Added -164°C temperature series in product classification (see 4.1.2);

--- Changed the ambient humidity of the operating environment (see 5.1, 5.1 of the.2014 edition);

--- Increased dimensional requirements (see 5.4);

--- Changed the set temperature of -86°C product in temperature uniformity (see 5.6.2, 5.3.2 of the 2014 edition);

--- Added technical requirements and test methods for temperature fluctuation, door opening recovery time and insulation time (see 5.6.3, 5.6.5, 5.6.7, 6.6.3,

1 Scope

GB/T 20154-2024 is the Chinese standard for low temperature preservation cabinets, the minus forty and minus eighty degree freezers used to store biological samples, vaccines, reagents and clinical material. What distinguishes them from ordinary refrigeration is that the contents are irreplaceable: a warm excursion of a few hours destroys a sample collection that took years to assemble, so the standard is as much about the behaviour on failure and on door opening as about steady-state performance. It sets the classification and basic parameters, then the requirements: the temperature range and its uniformity and stability throughout the working volume, the pull-down and recovery times, the temperature rise on power failure, the alarm functions and their independence, the energy consumption, the noise, the condensation and frosting behaviour, the electrical safety and the environmental adaptability, together with the door and lid, the insulation and the refrigerant. It then gives the test methods for each requirement, the inspection rules and the marking, packaging, transport and storage. It takes effect on 1 May 2025.

This document specifies the appearance, volume, structure and material properties, refrigeration performance, thermal insulation performance and anti-condensation, noise, safety of low temperature storage box. and electromagnetic compatibility, as well as inspection rules, marking, packaging, transportation and storage, provide a classification for technical regulations and describe the relevant Appropriate test method. This document applies to low-temperature storage boxes that use closed motors to drive compression refrigeration (hereinafter referred to as "low-temperature boxes"). The low temperature box with cold mode shall be implemented in accordance with the above.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 191 Pictorial symbols for packaging, storage and transportation

GB/T 18268.1 Electromagnetic compatibility requirements for electrical equipment for measurement, control, and laboratory use Part

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 General Definitions

3.1.1 An insulated box with one or more compartments and related devices, in which the temperature of characteristic points in the box is controlled within a certain temperature range, using power consumption Means to refrigeration. Note

1.Currently, the characteristic temperature range of low-temperature storage boxes is generally -25°C and below. Note

2.Under the specified conditions, when the temperature inside the box reaches the set temperature, put in an appropriate amount of items, these items will reach the specified temperature after a period of time, and Reliable storage within temperature fluctuation range. Note

3.For low-temperature boxes with two or more compartments, the characteristic point temperature and other performance of each compartment are the same.

3.1.2 A low-temperature box where items are placed and taken in through a door or lid on the top.

3.1.3 A low-temperature box where items are loaded and unloaded through the front door.