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

**GB/T 47402-2026**

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**Refrigerating systems and heat pumps - Competence of  
personnel**

制冷系统和热泵 人员能力

**(English Translation)**

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## Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is modified to adopt ISO 22712:2023 "Refrigeration systems and heat pumps - personnel competence".

Compared with ISO 22712:2023, this document has undergone the following structural adjustments.

---Appendices C through E correspond to Appendices D through F of ISO 22712:2023, respectively.

The technical differences between this document and ISO 22712:2023, and the reasons therefor, are as follows.

a) ISO 5149-1, ISO 5149-2, ISO 5149-3, and ISO 5149-4 have been replaced by the normatively referenced GB/T 9237.

EN378-1, EN378-2, EN378-3, and EN378-4 (see Chapters 1 and 3) are used to adapt to my country's technical conditions and to increase...

Operability, and maintaining consistency with my country's standards system;

b) The scope of this document has been expanded by adding the inapplicable content from the notes to the main text (see Chapter 1);

c) GB/T 27024 (see 4.2.2) has been added as a normative reference to adapt to my country's technical conditions and improve procedural fairness.

Increase operability.

The following editorial changes have been made to this document.

a) The note regarding the scope of inapplicability has been deleted (see Chapter 1);

b) The parentheses in the definition have been removed, and a note has been added to this content (see 3.4 and 3.10);

c) The note in the definition of "Debug" has been removed (see 3.8);

d) Added "ensuring system integrity and sealing" (see 3.12) and "in cases where system integrity and sealing are not guaranteed" (see the wording in 3.13) is intended to avoid misunderstandings caused by literal translation and to facilitate a clear understanding of the definition's connotation;

e) The review procedure note has been removed (see 4.2.2);

f) The ISO 5149 series and European standards have been replaced by the informatively referenced GB/T 9237 (see B.2.1 and B.2.3.6);

g) ISO/IEC 17024 has been replaced by GB/T 27024 (see B.2.2) which is cited in the informational reference.

h) The description of the assessment skills in Table A.3 in informative Appendix B has been revised (see B.2.3.5);

i) The content regarding US standards in the note has been deleted (see B.2.3.7);

j) The informative Annex C relating to EU regulations (see Annex C of ISO 22712:2023) has been deleted;

k) ISO 817 has been replaced by GB/T 7778 (see note E.1) which is used for informative reference;

l) Footnote a for the "Fluids" cell in the table has been deleted, and European regulations have been replaced with Chinese regulations and ordinances in footnote b (see...).

Tables A.5, C.5, D.5, and E.5)

m) The letters "a" to "u" have been replaced with the numbers "1" to "17" respectively (see Tables A.1 to A.6) for easier reading and use;

n) "BA," "WK," "FO," and "LE" have been replaced with "D," "C," "B," and "A" respectively (see 3.17-3.20 and Tables A.1-A.6), for ease of use.

For reading and use.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Refrigeration and Air Conditioning Equipment (SAC/TC238).

## Introduction

Improper construction, installation, operation, or maintenance of refrigeration systems and heat pumps can threaten human health and safety, as well as property safety and damage the environment.

This will affect the environment and increase energy consumption.

Therefore, it is essential that personnel operating such systems possess the ability to perform one or more of the activities listed in this document. These tasks...

This encompasses the knowledge and skills that personnel operating such systems may need throughout their entire lifecycle, from initial design to final dismantling and disposal.

Areas. Because job descriptions may vary between different countries and companies, this document clarifies specific, actionable guidelines.

Scope of Activities. The job description can clearly list these activities, or select some of them.

This document specifies the work activities related to the refrigeration circuit.

Refrigeration systems and heat pump personnel capabilities

## 1 Scope

This document defines activities related to refrigeration systems and heat pumps (excluding electrical activities) in accordance with GB/T 9237, and specifies the requirements for...

The required skills of the personnel involved in these activities.

This document is not applicable to personnel working on "integrated systems" as defined in GB/T 9237, provided that these products are from the initial stage.

From design to complete manufacturing, the process is controlled, and the review methods used are conducted by those responsible for compliance with health, safety, and environmental (such as energy efficiency) legal requirements.

The organization or individual requested to conduct the inspection.

**Note 1:** Because the refrigeration circuit is considered to exclude electrical and electronic systems, this document does not cover activities related to electrical and electronic systems.

The personnel capabilities of the system should be in accordance with national regulations or applicable international or national standards.

**Note 2:** This document does not constitute a training plan.

## 2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 7778 Refrigerant Numbering Method and Safety Classification (GB/T 7778-2017, ISO 817:2014, MOD) GB/T 9237 Safety and Environmental Requirements for Refrigeration Systems and Heat Pumps (GB/T 9237-2017, ISO 5149-1~5149-4:2014) MOD GB/T 27024-2014 General requirements for bodies certified by conformity assessment personnel (ISO/IEC 17024:2012, IDT) JB/T 7249 Terminology for Refrigeration and Air Conditioning Equipment

## 3 Terms and Definitions

The terms and definitions defined in GB/T 9237 and JB/T 7249, as well as the following terms and definitions, apply to this document.

Review assessment

The process of evaluating whether personnel meet the competency requirements.

[Source. GB/T 27024-2014, 3.8, with modifications] 3.2 competence the ability to use knowledge and skills to achieve the desired results.

[Source. GB/T 27024-2014, 3.6] 3.3 qualification Proof of a certain level of professional competence.

**Note:** See 4.2.