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

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Valves for cryogenic vessels

低温容器用阀门

(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 21011:2008 "Valve for cryogenic vessels in cryogenic conditions".

Compared with ISO 21011:2008, this document has undergone many structural adjustments. A comparison table of the structural numbering changes between the two documents is provided.

See Appendix A.

The technical differences between this document and ISO 21011:2008, and the reasons therefor, are as follows.

---The dimensions within the range have been changed, expanding from DN150 to DN200 (see Chapter 1) to meet the needs of practical applications in my country;

---Added normative references to GB/T 21465 and GB/T 17213.1 (see Chapter 3), and revised relevant terms and definitions.

Regulation;

---Change the term "rated pressure" to "maximum permissible working pressure" (see 3.1), and replace "rated pressure" with "maximum" in the text.

Allowing for work pressure to meet the needs of practical applications in my country;

---The terms "nominal size," "flow coefficient," and "valve cover" have been removed. These three terms are general valve terms and do not need to be listed separately.

---The reference standards for material selection and the requirements for using foreign material grades in the general requirements for materials have been revised (see 4.1.1) to adapt to...

Improve my country's technological capabilities and operational feasibility;

---The conditions for exempting metallic castings from low-temperature impact testing have been modified (see 4.1.2) to adapt to my country's technical conditions and improve operability.

Actual nature;

---ASME B16.34 (see 4.1.2, 4.2.1) has been replaced with the normatively referenced GB/T 12224, and its technical conditions are consistent with ASME Consistent with B16.34, to adapt to my country's technical conditions and improve operability;

---ISO 21010 has been replaced with the normatively referenced GB/T 31481 (see 4.1.5.1) to adapt to my country's technical conditions and improve reliability.

Operability;

---The requirements for liquefied natural gas compatibility have been increased (see 4.1.5.4) to meet the needs of practical applications in my country;

---ISO 15761 (see 4.2) has been replaced with the normatively referenced GB/T 28776 to adapt to my country's technical conditions and improve operability.

Actual nature;

---The applicable media for the valves have been expanded (see 4.2.1) to accommodate the media application range of cryogenic vessels;

---The standard for wall thickness design has been revised (see 4.2.1) to adapt to my country's technical requirements and improve operability;

---The normative references ISO 10434 and ISO 17292 in the minimum wall thickness design standard have been removed, as they are not applicable to Chinese technical standards.

This item is not widely used (see 4.2.1);

---The torque of the bolts in the valve cover has been increased (see 4.2.5) to meet the

needs of practical applications in my country;

---The technical requirements for anti-static performance have been changed from "maximum not exceeding 1000ohm at 28V" to "between ports, not exceeding..." Under a DC voltage of 12V, the maximum resistance should not exceed 10ohm (see 4.3.4) to meet the needs of practical applications in my country;

---Fire resistance requirements have been added, and the normative reference GB/T 26479 (see 4.3.5) has been added, specifying the performance requirements for fire resistance testing.

To supplement and improve the operability, we need to meet the needs of practical applications in my country.

---The applicable conditions for type testing have been changed (see 5.1.1.1) to comply with the relevant safety technical specifications of my country;

---The sampling specifications for products requiring type testing have been changed (see 5.1.1.2) to comply with relevant Chinese safety technical specifications.

Regulation;

---The "General Requirements" for type test methods have been added (see 5.1.3.1) to meet my country's general requirements for valve pressure testing.

Require;

---ISO 5208 (see 5.1.3.1, 5.3) has been replaced with the normatively referenced GB/T 13927 to adapt to my country's technical conditions and improve [the quality of the standard].

Operability;

---In the "Static Pressure Strength Test," the test pressure for valves whose pressure-bearing components are non-cast and whose maximum permissible working pressure is greater than 10 MPa is specified.

The minimum requirement of "not less than 40 MPa" has been added; the static pressure strength test pressure requirement has also been added when the valve body is a casting.

(See 5.1.3.2) to adapt to my country's technological conditions and improve operability;

---Requirements for ambient temperature and humidity have been added (see 5.1.3.3.1) to improve the accuracy and consistency of the tests;

---The description that does not meet sealing performance requirements (see 5.1.3.3.2) has been removed to adapt to my country's technical conditions and improve operability;

---Added fire resistance testing methods (see 5.2) to meet the testing needs of the newly added fire resistance performance requirements;

---General requirements for valve marking have been added (see 7.1) to adapt to my country's technical conditions and improve operability;

---The normative reference GB/T 12220 (see 7.1) has been added, providing general provisions for valve marking to adapt to my country's technical requirements.

Improve operability;

---The requirement for marking the leakage rate on the nameplate (see 7.3) has been removed because the relevant requirement for non-conforming sealing performance has already been removed in 5.1.3.3.2.

Require.

The following editorial changes have been made to this document.

---To align with existing standards, the standard name has been changed to "Valves for Cryogenic Vessels";

---Added warning messages;

---Appendix A (Informative) "Structure Number Comparison Table" has been added;

---Appendix B (Informative) "Thermal Shock Testing for LNG Valves" has been added;

---Appendix C (Informative) "Non-toxic Refrigerant Liquefaction Gases" has been added;

---Appendix D (Informative) adds an alternative test method for assessing the external sealing performance of valves using pressure difference;

---References have been removed.

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 and is under the jurisdiction of the National Technical Committee on Standardization of Boilers and Pressure Vessels (SAC/TC262).

1 Scope

This document specifies the technical requirements, testing, cleaning, and marking of valves for cryogenic containers (hereinafter referred to as "valves").

This document applies to valves with a rated minimum temperature not exceeding -40°C, including vacuum-jacketed cryogenic valves with a nominal size not exceeding DN200.

Valve design, manufacture, and inspection. Other valves should refer to this guide.