



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

GB/T 4732.6-2024

Pressure vessels design by analysis - Part 6: Fabrication

压力容器分析设计 第6部分：制造

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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 is Part 6 of GB/T 4732 "Analysis and Design of Pressure Vessels". GB/T 4732 has been published in the following parts.

1. General requirements;

3. Formula method;

4. Stress classification method;

5. Elastic-plastic analysis methods;

6. Manufacturing, inspection and acceptance. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is proposed and coordinated by the National Technical Committee for Standardization of Boilers and Pressure Vessels (SAC/TC262). This document was drafted by: Hefei General Machinery Research Institute Co., Ltd., China National Machinery Industry Corporation, China Special Equipment Testing

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GB/T 4732 "Analysis and Design of Pressure Vessels" provides the requirements for the construction of pressure vessels according to the analysis and design method. GB/T 150 is based on The rule design concept puts forward the requirements for the construction of pressure vessels. Pressure vessel design and manufacturing units can choose two construction methods according to the specific design conditions. One of the standards implements the construction of pressure vessels. GB/T 4732 consists of 6 parts.

1.General requirements. The purpose is to provide general requirements for pressure vessels built according to analysis and design, including relevant management requirements. Requirements, common terms and definitions, and basic requirements shared by other parts of GB/T 4732.

2.Materials. The purpose is to give the relevant requirements and material properties of steel materials in pressure vessels built according to analysis and design. Energy data, etc.

3.Formula method. The purpose is to give typical pressure components and structural design requirements of pressure vessels built according to analytical design. The thickness calculation formulas for commonly used container parts designed by the formula method are specifically given. GB/T 4732.3 can be used as The design basis of GB/T 4732.4 and GB/T 4732.5 can also be simplified and completed according to GB/T 4732.3. Analysis design.

4.Stress classification method. The purpose is to give the stress classification method used in pressure vessels built according to analysis and design. Design related regulations.

5.Elastic-plastic analysis method. The purpose is to give the elastic-plastic analysis method used in pressure vessels built according to analytical design. Relevant provisions for design in accordance with the law.

6.Manufacturing, inspection and acceptance. The purpose is to give the structural types of pressure vessels built according to analysis and design. Manufacturing, inspection and acceptance requirements for devices. GB/T 4732 includes the pressure vessel construction process based on the analysis and design method (i.e. materials, design, manufacturing, inspection, testing and verification). GB/T 4732 does not need to and cannot cover all the technical requirements and special prohibition regulations that need to be followed in the collection work. Therefore, under the premise of meeting the basic safety requirements

stipulated in the safety technical specifications, there is no restriction on There is no special mention of technical content in GB/T 4732. GB/T 4732 cannot be used as a technical manual for the construction of specific pressure vessels, nor can it be used as a technical manual for the construction of specific pressure vessels. Alternative training, engineering experience and engineering evaluation. An engineering evaluation is a review of a specific Technical evaluation of products. Engineering evaluation needs to comply with the relevant technical requirements of GB/T 4732. GB/T 4732 does not restrict the use of other advanced technical methods in actual engineering construction, but engineering and technical personnel use advanced technical methods. Reliable judgment is needed when applying the law to ensure that it meets the requirements of GB/T 4732. GB/T 4732 neither requires nor restricts designers to use computer programs to analyze and design pressure vessels, but the use of computers is When analyzing and designing the program, in addition to meeting the requirements of GB/T 4732, it is also necessary to confirm.

1 Scope

GB/T 4732.6-2024 is the fabrication part of the Chinese design-by-analysis pressure vessel series, and it exists because a vessel designed to the tighter margins that analysis permits has to be built to correspondingly tighter workmanship. It specifies the requirements for the fabrication, inspection and testing and acceptance of steel pressure vessels designed by analysis: the general requirements, the material re-inspection, cutting and mark transplantation, the cold and hot forming and assembly, the welding, the heat treatment, the test pieces and specimens, the non-destructive testing, the pressure test and leakage test, the hot gas cycle test, and the requirements placed on the pressure vessel factory itself. Its coverage of construction types is wide: single-layer welded vessels including tubular cylindrical shells, forged-welded vessels, shrink-fit vessels and multilayer wrapped vessels, together with clad plate vessels on non-alloy, low-alloy or high-alloy steel substrate with nickel and nickel alloy cladding, lined vessels and vessels with a surfacing layer. For a fabricator or an inspection body working on high-duty Chinese pressure vessels, this is the acceptance text.

This document specifies the requirements for the manufacture, inspection and acceptance of steel pressure vessels using analytical design. This document is applicable to steel pressure vessels and composite plate pressure vessels and lined pressure vessels using nickel and nickel alloys as cladding, lining or cladding layer. Manufacture, inspection and acceptance of non-alloy steel, low alloy steel or high alloy steel base layers in pressure vessels and pressure vessels with cladding layers. The pressure vessels to which this document applies are single-layer welded (including pipe-type cylinder) pressure vessels, forged welded pressure vessels, and sleeve pressure vessels. Pressure vessels, multi-layer wrapped (including multi-layer cylinder segment wrapped, multi-layer overall wrapped) pressure vessels and steel strip wound pressure vessels.

2 Normative references

The contents of the following documents constitute 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 150.1 Pressure vessels Part

3 Formula method

GB/T 6396 Test methods for mechanical and process properties of composite steel plates

GB/T 8923.1 Surface preparation of steel before coating - Visual assessment of surface cleanliness - Part

1.Uncoated steel Rust level and treatment level of steel surface after surface and complete removal of existing coatings

GB/T 12337 Steel spherical storage tanks

GB/T 16749 Pressure vessel corrugated expansion joints

GB/T 21433 Test for intergranular corrosion susceptibility of stainless steel pressure vessels

4 Manufacturing, inspection and acceptance GB/T 151 Heat Exchanger

GB/T 196 Basic dimensions of common threads

GB/T 197 Common thread tolerances

GB/T 228.1 Tensile test of metallic materials Part