NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 33145-2023

Large capacity seamless steel gas cylinders

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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 document serves as a replacement GB/T 33145-2016 Large Capacity Seamless Steel Gas

Cylinders. In comparison with GB/T 33145-2016, apart from structural adjustments and editorial modifications, the main technical changes are as follows.

a) The upper limit of the nominal operating pressure in the Scope of this document is modified from 30 MPa into 35 MPa. "Steel cylinders with a nominal capacity greater than 3,000 L, and less than or equal to 4,200 L may take the relevant stipulations of this document as a reference" is added to the Scope of this document (see Chapter 1; Chapter 1 of Version 2016);

b) The upper limit of the nominal diameter of steel cylinders is modified (see Table 1; Table 1 of Version 2016);

c) The nominal bursting pressure of the bursting disc of the safety relief device is

adjusted to 1.5 times the nominal operating pressure p of gas cylinders (see 5.2.5.2;

5.2.5.2 of Version 2016).

This document was drafted with reference to ISO 11120.2015 Gas cylinders - Refillable seamless steel tubes of water capacity between 150 L and 3,000 L - Design, construction and testing. The degree of consistency with ISO 11120.2015 is non-equivalent.

Please be noted that certain content of this document may involve patents. The institution issuing this document does not undertake the responsibility of identifying these patents.

This document was proposed by and shall be under the jurisdiction of National Technical Committee 31 on Gas Cylinders of Standardization Administration of China (SAC/TC 31).

The drafting organizations of this document. Shijiazhuang Enric Gas Equipment Co., Ltd.; China Special Equipment Inspection & Research Institute; Xinxing Energy Equipment Co., Ltd.; Beijing Tianhai Industry Co., Ltd.; Zhejiang REIN Gas Equipment Co., Ltd.; Zhejiang Jindun Pressure Vessel Co., Ltd.

1 Scope

This document specifies the type and parameters, technical requirements, test methods, inspection rules, marking, coating, packaging, transportation and storage of large capacity seamless steel gas cylinders (hereinafter referred to as the "gas cylinders").

This document is applicable to mobile gas cylinders that can be refilled with compressed gas or liquefied gas, which are used under a normal ambient temperature of ?40 ?C ~ +60 ?C, and with a nominal operating pressure of 10 MPa ~ 35 MPa, and a nominal water capacity greater than 150 L, and less than or equal to 3,000 L.

Steel cylinders with a nominal capacity greater than 3,000 L, and less than or equal to 4,200 L may take the relevant stipulations of this document as a reference.

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/T 196 General Purpose Metric Screw Threads - Basic Dimensions (GB/T 196-2003, ISO

724.1993, MOD)

GB/T 222-2006 Permissible Tolerances for Chemical Composition of Steel Products

GB/T 223 (all parts) Methods for Chemical Analysis of Iron, Steel and Alloy

GB/T 224 Determination of the Depth of Decarburization of Steels (GB/T 224-2019, ISO

3887.2017, MOD)

GB/T 226 Test Method for Macrostructure and Defect of Steel by Etching

GB/T 228.1 Metallic Materials - Tensile Testing - Part 1.Method of Test at Room Temperature

(GB/T 228.1-2021, ISO 6892-1.2019, MOD)

GB/T 229 Metallic Materials - Charpy Pendulum Impact Test Method (GB/T 229-2020, ISO

148-1.2016, MOD)

GB/T 231.1 Metallic Materials - Brinell Hardness Test - Part 1.Test Method (GB/T 231.1-2018,

ISO 6506-1.2014, MOD)

3.1 Terms and Definitions

What is defined in GB/T 13005, and the following terms and definitions are applicable to this

document.

3.2 Symbols

The following symbols are applicable to this document.

A compression area of internal thread opening, (mm2);

An shear area of internal thread profile, (mm2);

Aw shear area of external thread profile, (mm2);

4.1 Type

Generally, the structural type of the cylinder body is shown in Figure 1.

Figure 1 -- Structural Type of Cylinder Body

4.2 Parameters

Generally, the nominal water capacity and nominal diameter of the gas cylinders shall comply

with the stipulations of Table 1.

4.3 Model

The model of the gas cylinder is composed of the following parts.

5.1.1.1 The materials used to manufacture the cylinder body shall be non-aging killed steel that

is subject to off-furnace refining by electric arc furnace and vacuum refining treatment, or off-

furnace refining by an oxygen converter and vacuum refining treatment.

5.1.1.2 The selection of the cylinder body materials shall be compatible with the medium that

it contains.

5.1.1.6 The manufacturing organization of seamless steel pipes shall provide a quality

certificate for seamless steel pipes and steel billets, or a quality certificate of seamless steel

pipes with quality certification information of steel billets.

5.2.1.1 The steel cylinders are only allowed to contain compressed gas or liquefied gas that is

compatible with the cylinder material and complies with the corresponding standards; when