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

GB/T 28884-2024

Replacing GB 28884-2012

Seamless steel tubes for large capacity gas cylinders

大容积气瓶用无缝钢管

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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 28884-2012 "Seamless Steel Tubes for Large Volume Gas Cylinders": Compared with GB/T 28884-2012, except for the structural adjustment, In addition to the integration and editorial changes, the main technical changes are as follows:

- a) The scope of application has been changed (see Chapter 1, Chapter 1 of the:2012 edition);
- b) The size specification range of steel pipes has been changed (see 5:1:2, 4:1:2 of the:2012 edition);
- c) Added advanced precision requirements for allowable deviation of steel tube wall thickness (see 5:1:3);
- d) Straightness is changed to curvature (see 5:3, 4:3 of the:2012 edition);
- e) The requirements for terminal shape have been changed (see 5:5, 4:5 of the:2012 edition);
- f) The chemical composition requirements of steel have been changed (see 6:1:1, 5:1:1 of the:2012 edition);
- g) Added the tube manufacturing method and requirements (see 6:2:2);
- h) The delivery status requirements of steel pipes have been changed (see 6:3, 5:3 of the:2012 edition);

- i) The mechanical property requirements of steel pipes have been changed (see 6:4:1, 5:4:1 of the:2012 edition);
- j) The requirements for non-metallic inclusions have been changed (see 6:5, 5:5 of the:2012 edition);
- k) The grain size requirements have been changed (see 6:6, 5:6 of the:2012 edition);
- l) Added surface roughness requirements (see 6:8);
- m) Added the requirements for the blind area of automatic thickness measurement (see 6:9);

1 Scope

China's national standard for the seamless steel tube from which large capacity gas cylinders are made. It specifies the dimensions and their tolerances, the technical requirements, the test methods, the inspection rules and the delivery provisions for the tube used as the starting material for large seamless cylinders. A large capacity cylinder is the tube that carries compressed gas by road and rail - the long cylinders bundled into a trailer for hydrogen or natural gas, and the individual cylinders of several hundred litres used for bulk industrial gas. It is made by closing the ends of a length of seamless tube, which means the tube is not a component of the cylinder but the cylinder itself, and every defect in it becomes a defect in a pressure vessel that will be filled and emptied thousands of times and driven through traffic. That is why the requirements on it are more like those on a cylinder than those on a pipe. The 2024 revision changes the document at almost every point: the scope, the size range, the delivery condition, the chemical composition, the mechanical properties, the requirements for non-metallic inclusions and the manufacturing method are all revised, an advanced precision class is added for the wall thickness tolerance, straightness is replaced by curvature as the geometric requirement, and the requirements for the tube ends are changed. The revision also moves the document from a mandatory GB standard to a recommended GB/T one, the mandatory requirements for cylinders themselves having been consolidated elsewhere. Wall thickness is the requirement that matters most: the cylinder's design assumes a minimum wall, and a tube thinner than it anywhere along its length is a cylinder that fails there. Issued on 25 April 2024 and in force since 1 November 2024, it replaces GB 28884-2012.

This document specifies the ordering content, size, shape, weight and allowable deviation, technical requirements, test methods and other requirements of seamless steel pipes for large volume gas cylinders: methods, inspection rules, packaging, marking and quality certificates: This document is applicable to the manufacture of seamless steel pipes for gas cylinders with a volume of 150L~4500L (hereinafter referred to as "steel pipes"), bottle containers, and other Seamless steel pipes for volumetric gas cylinders can be used for reference:

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 222 Permissible deviation of chemical composition of finished steel products GB/T 223:

5 Determination of acid-soluble silicon and total silicon content of iron and steel - Reduced molybdenum silico-silicic acid spectrophotometric method GB/T 223:

11 Determination of chromium content in steel and alloys Visual titration or potentiometric titration method GB/T 223:

14 Chemical analysis methods for iron, steel and alloys - Tantalum extraction spectrophotometric method for determination of vanadium content GB/T 223:

19 Methods for chemical analysis of iron, steel and alloys - Determination of copper content by the new cuproline-chloroform extraction spectrophotometric method GB/T 223:

23 Determination of nickel content in steel and alloys - Dimethylglyoxime spectrophotometric method GB/T 223:

26 Determination of molybdenum content in steel and alloys - Thiocyanate spectrophotometric method GB/T 223:

29 Determination of lead content in iron, steel and alloys - Carrier precipitation-xyleneol orange spectrophotometric method GB/T 223:

30 Chemical analysis methods for iron, steel and alloys - Determination of arsenazo III by precipitation separation with bromomandelic acid Zirconium content GB/T 223:

31 Determination of arsenic content in iron, steel and alloys - Distillation separation - Molybdenum blue spectrophotometric method GB/T 223:

37 Determination of nitrogen content in iron, steel and alloys - Spectrophotometric method using indophenol blue distillation separation GB/T 223:

40 Determination of niobium content in iron, steel and alloys - Chlorosulfonphenol S spectrophotometric method GB/T 223:

47 Chemical analysis methods for iron, steel and alloys - Determination of antimony content by carrier precipitation-molybdenum blue photometric method GB/T 223: