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

GB/T 18248-2021

Replacing GB/T 18248-2008

Seamless steel tubes for gas cylinder

气瓶用无缝钢管

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1 Scope

GB/T 18248-2021 is the Chinese national standard on seamless steel tubes for gas cylinder, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 20 August 2021 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 March 2022. Classification: ICS 77.140.75, CCS H48. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the

numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the order content, size, shape, weight and allowable deviation, technical requirements, test methods, inspection rules, packaging, marking and quality certificate of seamless steel tubes for gas cylinder. This document applies to seamless steel tubes for the manufacture of gas cylinders and accumulator shells (hereinafter referred to as steel tubes).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 222, Permissible tolerances for chemical composition of steel products

GB/T 223.5, Steel and iron - Determination of acid-soluble silicon and total silicon content - Reduced molybdosilicate spectrophotometric method

GB/T 223.9, Iron, steel and alloy - Determination of aluminium content - Chrome azurol S photometric method

GB/T 223.11, Iron, steel and alloy - Determination of chromium content - Visual titration or potentiometric titration method

GB/T 223.12, Methods for chemical analysis of iron, steel and alloy - The sodium carbonate separation-diphenyl carbazide photometric method for the determination of chromium content

3 Terms and definitions

Terms and definitions defined in GB/T 222 and GB/T 30062 apply to this document.

4 Symbols

The following symbols apply to this document.

5 Order content

A contract or order for ordering steel tubes under this document shall include, but not be limited to, the following.

6.1 Outside diameter and wall thickness

6.1.1 Unless otherwise specified in the contract, the steel tubes shall be delivered according to the nominal outer diameter (D) and nominal wall thickness (S). According to

the requirements of the buyer, after negotiation between the supplier and the buyer, the steel tubes can be delivered according to the nominal outer diameter and the minimum wall thickness (S_{min}).

6.1.4 Unless otherwise specified in the contract, the allowable deviation of the wall thickness of the steel tubes shall comply with the provisions of ordinary grade PA.

6.1.5 According to the requirements of the buyer, if it is negotiated between the buyer and the supplier AND indicated in the contract, steel tubes of the dimensional allowable deviation other than those that are specified in Tables 1 and 2 may be supplied.

6.2 Length

6.2.1 Normal length The normal length of the steel tube is 4 000 mm ~ 12 000 mm. After it is negotiated between the supplier and the buyer, and indicated in the contract, steel tubes with a length greater than 12 000 mm or less than 4 000 mm but not less than 3 000 mm can be delivered; the quantity of steel tubes with a length less than 4 000 mm shall not exceed 5% of the total delivery of the batch of steel tubes.

6.3 Curvature

6.3.1 The curvature per meter of the steel tube shall meet the following requirements.

6.3.2 The full-length curvature of the steel tube shall not exceed 0.15% of the length of the steel tube.

6.4 Out-of-roundness and uneven wall thickness According to the requirements of the buyer, if it is negotiated between the supplier and the buyer, and indicated in the contract, the out-of-roundness and uneven wall thickness of the steel tube shall not exceed 80% of the outer diameter allowance and wall thickness allowance, respectively.

6.5 End shape The end faces of the steel tube shall be perpendicular to the axis of the steel tube; the burrs of the cut shall be removed.

7.1 Steel designation and chemical composition

7.1.1 The steel designation and chemical composition (melting analysis) shall comply with the requirements of Table

3. After negotiation between the supplier and the buyer, the order can be placed as per other designations and chemical compositions in Appendix A.

7.2 Manufacturing method

7.2.1 Smelting method of steels The steel shall be refined outside the furnace with an electric arc furnace and processed by vacuum refining, OR refined outside the furnace with an oxygen converter and processed by vacuum refining.

7.4 Mechanical properties

7.4.1 The supplier shall select one option from the following three options of mechanical properties to provide mechanical properties for reference.

7.4.2 Unless otherwise specified in the contract, the supplier shall provide reference values of mechanical properties by means of mechanical properties option I.

7.7 Surface quality

7.7.1 There shall be no visible cracks, folds, breaks, delamination and scars on the inner and outer surfaces of the steel tubes. These defects shall be completely removed; the depth of removal shall not exceed 10% of the wall thickness; the actual wall thickness of the cleaned part shall not be less than the minimum allowable wall thickness; the removal part shall have a smooth transition.

7.7.2 The depth of the straight on the inner and outer surfaces of the steel tube shall meet the following requirements.

7.7.3 Other local imperfections where the depth does not exceed the lower deviation of the wall thickness are allowed.

7.8 Non-destructive testing

7.8.1 When the electromagnetic testing method is used to test the compactness, the steel tubes shall be subjected to ultrasonic testing one by one. When the hydraulic testing is used to test the compactness, the steel tubes shall be subjected to ultrasonic testing or magnetic flux leakage testing one by one.

7.8.4 When the steel tubes are delivered as per the minimum wall thickness, the groove depth of the control tube for the non-destructive testing shall be calculated according to the average wall thickness of the steel tube.

8 Test methods

8.1 Sampling for chemical composition analysis of steel tubes shall comply with the rules of GB/T 20066. Chemical composition analysis usually abides by the provisions of GB/T 4336, GB/T 20123 or other general methods; arbitration shall comply with the provisions of GB/T 223.5, GB/T 223.9, GB/T 223.11, GB/T 223.12, GB/T 223.14,

8.2 The size and shape of the steel tubes shall be measured one by one by gauges that meet the accuracy requirements.

8.3 The inner and outer surfaces of the steel tubes shall be inspected visually under full lighting conditions.