ICS 77.140.75
CCS H48

# NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA



# GB/T 8163-2018

## Seamless steel pipes for liquid service

输送流体用无缝钢管

**Issued on: May 14, 2018** **Implemented on: February 1, 2019**

**Issued by: State Administration for Market Regulation;**
**Standardization Administration of the PRC**

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## 1 Scope

China's national standard for seamless steel pipes for liquid service. This is the ordinary workhorse pipe of Chinese industry - the material of water, oil and general fluid lines in plants, buildings and infrastructure, made seamless by piercing and rolling a solid billet rather than by forming and welding plate. Seamless matters where the pipe is bent, threaded or subjected to pressure cycling, because a weld seam is a discontinuity in both structure and properties and is where such a pipe fails first. The requirements are correspondingly practical: the wall thickness and its tolerance, since that is what carries the

pressure and what a threading operation eats into; the mechanical properties; the hydrostatic or non-destructive test that proves each length; and the dimensional consistency that determines whether the pipe fits standard fittings. The standard specifies the order content, dimensions, shape, weight, technical requirements, test methods, inspection rules, packaging, marking and quality certificates, and applies to seamless pipe for ordinary liquid service.

This Standard specifies the order content, size, shape, weight, technical requirements, test methods, inspection rules, packaging, marks and quality certificates of seamless steel pipes for liquid service. This Standard is applicable to the seamless steel pipes for ordinary liquid service.



## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 222, Method of sampling steel for determination of chemical composition and permissible variations for product analysis

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 aluminum content - Chrom 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

GB/T 223.14, Methods for Chemical Analysis of Iron, Steel and Alloy - The N-Benzoy-N-Phenylhydroxylamine Extraction Photometric Method for the Determination of Vanadium Content

GB/T 223.19, Methods for chemical analysis of iron, steel and alloy - The neocuproine-chloroform extraction photometric method for the determination of copper content

GB/T 223.23, Iron, Steel and Alloy - Determination of Nickel Content - The Dimethylglyoxime Spectrophotometric Method

## 3 Order content

Contracts or orders for ordering steel pipes in accordance with this Standard shall include the following information.

a) reference to this Standard;

b) product name;

c) steel designation, quality grade shall include quality grade;

d) size specifications;

e) quantity ordered (total weight or total length);

## 4 Size, shape and weight

4.1 Outer diameter and wall thickness The nominal outer diameter D and the nominal wall thickness S of the steel pipe shall comply with the provisions of GB/T 17395.According to the requirements of the purchaser, other steel pipes of outer diameter and wall thickness can be supplied through negotiation between the supplier and the purchaser.



### 4.2 Allowable deviation of outer diameter and wall thickness

4.2.1 The allowable deviation of the outer diameter of the steel pipe shall comply with the requirements of Table 1.

### 4.3 Length

4.3.1 Normal length The normal length of steel pipe is 3000mm~12000mm. According to the requirements of the purchaser, the steel pipe outside the normal length can be supplied through negotiation between the supplier and the purchaser.

4.3.2 Range length According to the requirements of the purchaser, after negotiation between the supplier and the purchaser, and indicated in the contract, the steel pipe can be delivered according to the range length.

#### 4.3.3 Fixed length and multiple length

4.3.3.1 According to the requirements of the purchaser, after negotiation between the supplier and the purchaser, and indicated in the contract, the steel pipe can be delivered according to a fixed length or multiple length.

4.3.3.2 When the steel pipe is delivered in a fixed length or multiple length, the length tolerance shall comply with the following provisions.

4.3.3.3 After negotiated between the supplier and the purchaser, other steel pipes with other allowable deviation of the length can be supplied.

### 4.4 Curvature

4.4.1 The curvature per meter of steel pipe shall comply with the requirements of Table 4.

4.4.2 The full-length curvature of the steel pipe shall not exceed 0.15% of the total length of the steel pipe.

4.5 Un-roundness and uneven wall thickness According to the requirements of the purchaser, the supplier and the purchaser shall negotiate and indicate in the contract that the un-roundness and wall thickness of the steel pipe shall not exceed 80% of the nominal outer diameter tolerance and the nominal wall thickness tolerance respectively.

### 4.7 Weight

4.7.1 Steel pipes are delivered either according to actual weight or according to theoretical weight. The theoretical weight of steel pipe is calculated according to the provisions of GB/T 17395,

4.7.2 According to the requirements of the purchaser, the supplier and the purchaser shall negotiate and indicate in the contract that the allowable deviation of the actual weight of the delivered steel pipe from the theoretical weight shall comply with the following provisions.

### 5.1 Steel designation and chemical composition

5.1.1 The steel pipe is made of steels with designations of 10, 20, Q345, Q390, Q420 and Q460.

5.1.2 The chemical composition (melting analysis) of steels with designations of 10 and 20 shall comply with the requirements of Table 5.

5.1.3 The chemical composition (melting analysis) and carbon equivalent of the steels with designations of Q345, Q390, Q420 and Q460 shall comply with the requirements of Table

6.According to the requirements of the purchaser, steel pipes of other designations or chemical compositions may be supplied through negotiation between the supplier and the purchaser.

5.1.4 When the purchaser requests to do the finished product analysis, it shall be indicated in the contract. The chemical composition allowable deviation of the finished steel pipe shall comply with the provisions of GB/T 222.

### 5.2 Manufacturing method

5.2.1 Steel smelting method Steel shall be smelted by electric arc furnace plus furnace refining or oxygen converter plus furnace refining method. After negotiation between the supplier and the purchaser, other methods of higher requirements may also be used for smelting. When the purchaser specifies a certain smelting method, it shall be indicated in