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

GB/T 5312-2025

Replacing GB/T 5312-2009

Seamless steel tubes and pipes for ship

船舶用无缝钢管

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Foreword

This Document was drafted as per the rules specified in GB/T 1.1-2020 Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents.

This Document replaced GB/T 5312-2009 Carbon and Carbon-Manganese Steel Seamless Steel Tubes and Pipes for Ship, and GB/T 31928-2015 Seamless Stainless Steel Tubes and Pipes for Ship. This Document was based on GB/T 5312-2009, integrating the contents of GB/T 31928-2015. Compared with GB/T 5312-2009 and GB/T 31928-2015, the major technical changes of this Document are as follows besides the structural adjustments and editorial modifications.

- a) Change the scope of application (see Clause 1 of this Edition; Clause 1 of GB/T 5312-2009 and Clause 1 of GB/T 31928-2015);
- b) Add terms and definitions (see Clause 3 of this Edition);
- c) Change the manufacturing method codes (see 4.2 of this Edition; 3.1 of GB/T 5312-2009);
- d) Change the ordering details (see Clause 5 of this Edition; Clause 4 of GB/T 5312-2009)

and Clause 4 of GB/T 31928-2015);

e) Add steel designations and corresponding technical requirements (see Tables 2~5 of this Edition);

f) Change the density of stainless steel (see Table 2 of this Edition; Table 5 of GB/T 31928-2015);

g) Change the hydraulic test requirements and allowable stress (see 7.3 of this Edition; 6.5 of GB/T 5312-2009 and 6.5 of GB/T 31928-2015).

h) Change the bending test requirements (see 7.4.2 of this Edition; 6.6.2 of GB/T 5312-2009 and 6.6.2 of GB/T 31928-2015);

i) Change the pitting corrosion test requirements (see 7.6 of this Edition; 6.8 of GB/T 31928-

2015);

j) Change the surface quality requirements (see 7.8 of this Edition; 6.7 of GB/T 5312-2009 and 6.10 of GB/T 31928-2015);

k) Change the dimensional tolerances (see Tables 8 and 9 of this Edition; Table 2 of GB/T 5312-2009 and Tables 2 ~ 3 of GB/T 31928-2015);

l) Add a new clause of "Specimen" (see Clause 8 of this Edition);

m) Change the sampling quantities (see Table 10 of this Edition; Table 7 of GB/T 5312-2009 Seamless Steel Tubes and Pipes for Ship

1 Scope

This Document specifies the classification, code, ordering details, manufacturing process, technical requirements, inspection rules, packaging, marking, and quality certificate for seamless steel pipes used in shipbuilding; and describes the corresponding test methods.

This Document applies to seamless carbon steel, carbon manganese steel, alloy steel, and stainless-steel pipes (hereinafter referred to as steel pipes) used in the manufacture of ship pressure piping systems, boilers, and superheaters.

2 Normative References

GB/T 222

GB/T 223.9

GB/T 223.11

GB/T 223.12

GB/T 223.18

GB/T 223.23

GB/T 223.25

GB/T 30062

GB/T 39077

3.1 Terms and definitions

For the purposes of this Document, the terms and definitions given in GB/T 30062 apply.

3.2 Symbols

The following symbols apply to this Document.

D. Outer diameter or nominal outer diameter, in mm;

S. Wall thickness or nominal wall thickness, in mm;

S_{min}. Minimum wall thickness, in mm;

d. Nominal inner diameter, in mm.

4 Classification and Code

4.1 Steel pipes are classified into two categories according to their uses. pipes for pressure piping systems and pipes for boilers and superheaters. Steel pipes for pressure piping systems are divided into three classes according to their design pressure and design temperature, as shown in Table 1. Their categories, classes, and codes are as follows.

- a) Steel pipes for Class I pressure piping system (hereinafter referred to as Class I pressure pipes), coded as I;
- b) Steel pipes for Class II pressure piping system (hereinafter referred to as Class II pressure pipes), coded as II;
- c) Steel pipes for Class III pressure piping system (hereinafter referred to as Class III pressure pipes), coded as III;
- d) Steel pipes for boilers and superheaters, coded as G.

4.2 Steel pipes are classified into two categories according to their manufacturing method, with the following categories and codes.

- a) Hot-rolled (extruded, expanded) steel pipes, coded as W-H;
- b) Cold-drawn (rolled) steel pipes, coded as W-C.

4.3 Steel pipes are classified into two grades according to their dimensional accuracy, with the following classes and codes.

- a) Ordinary class, coded as PA;
- b) High class, coded as PC.

5 Ordering Details

Contracts or orders for steel pipes under this Document shall include, but are not limited to, the following.

- a) This Document No.;
- b) Product name;
- c) Designation or uniform numerical code;
- d) Application code for the steel pipes (for pressure piping system classes or boilers and superheaters, see 4.1);
- e) Dimensions and specifications;
- f) Ordered quantity (total weight or total length);
- g) Delivery condition;
- h) Manufacturing method;
- i) Optional requirements (the optional special requirements listed in Appendix A shall be determined through negotiation between the supplier and the purchaser);
- j) Other special requirements.

6.1 Steel smelting method

Steel shall be smelted using an electric arc furnace with ladle refining, or a converter with ladle refining, or an electroslag remelting method. Other smelting methods that meet the requirements of this Document may also be used upon negotiation between the supplier and the purchaser and specified in the contract.

6.2 Steel pipe manufacturing method

Steel pipes shall be manufactured using hot rolling (extrusion, expansion) or cold drawing (rolling) methods. If the purchaser specifies a particular method, it shall be specified in the contract.

6.3 Delivery condition

6.3.1 Steel pipes shall be delivered in a heat-treated condition, and the heat treatment