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Specification for Size Selection of Seamless and Welded Steel

Pipe Used in Piping Engineering

管道工程用无缝及焊接钢管尺寸选用规定

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Foreword

This Standard was drafted in accordance with the rules provided in GB/T 1.1-2009.

This Standard was proposed by China Machinery Industry Federation.

This Standard shall be under the jurisdiction of National Technical Committee on Piping Fittings of Standardization Administration of China (SAC/TC 237).

The drafting organizations of this Standard: SINOPEC Engineering Incorporation; Luoyang Petrochemical Engineering Corporation Ltd. of SINOPEC; China Machinery Productivity Promotion Center; MCC Capital Engineering & Research Incorporation Limited; East China Design Branch of China Petroleum Engineering and Construction Corporation; Guangdong Electric Power Design Institute.

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Specification for Size Selection of Seamless and Welded Steel Pipe Used in Piping Engineering

1 Scope

This Standard specifies the dimension series and theoretical masses of carbon steel, alloy steel, stainless steel seamless steel pipes and welded steel pipes for piping engineering.

This Standard is applicable to the selection of steel pipes for liquid delivery in piping engineering.

2 Normative References

The following documents are indispensable to the application of this document. 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 3091 Welded Steel Pipe for Low Pressure Liquid Delivery

GB/T 17395-2008 Dimensions, Shapes, Masses and Tolerances of Seamless Steel Tubes

GB/T 21835-2008 Dimensions and Masses per Unit Length of Welded Steel Pipes

3 Dimension Series and Theoretical Masses of Pipes

3.1 Outer Diameter Series of Pipes

The outer diameter of pipes is divided into Series I and Series II. Series I is a general-purpose series and a recommended series for selection; Series II is a non-universal series. The nominal dimensions and outer diameters of steel pipes are shown in Table 1.

Appendix A

(informative)

Descriptions of Pipe Schedule Number (Sch)

A.1 Definition of Pipe Schedule Number (Sch)

Pipe schedule number, code name: Sch, is defined as follows:

The ratio of the design pressure to the allowable stress of the pipe material at the design temperature is multiplied by 1,000, and rounded off, which is the code representing the pipe wall thickness series.

A.2 Source of Pipe Schedule Number (Sch)

Pipe schedule number (Sch) was firstly specified in the American standard ANSI/ASME B36.10 《WELDED AND SEAMLESS WROUGHT STEEL PIPE》 and has been used to this day.

A.3 Correspondence between Pipe Schedule Number (Sch) and Steel Pipe Wall Thickness

The calculation formula for the steel pipe wall thickness is as follows:

$$t = PD / 1.75S + 2.54$$

Where,

t ---the wall thickness, expressed in (mm);

P ---the design pressure, expressed in (MPa);

D ---the outer diameter, expressed in (mm);

S ---the allowable stress of the material at design temperature, expressed in (MPa);

2.54---the corrosion allowance and thread depth, expressed in (mm);

1.75--- $2 \times (1 - 12.5\%)$, 12.5% is the negative deviation of steel pipe wall thickness.

Take $Sch = P/S \times 1,000$. The wall thickness value corresponding to the Sch number can be approximately obtained from the above Formula. For example, the wall thickness corresponding to Sch 40 is approximately equal to the calculated value of $t = 0.040 D / 1.75 + 2.54$.

A.4 Significance of Pipe Schedule Number (Sch)

---Pipe schedule number (Sch) does not indicate the specific wall thickness, but the wall

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