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

GB/T 25715-2023

Replacing GB/T 25715-2010

Pipe moulds for centrifugally cast ductile iron pipe

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Foreword

This document complies with the provisions of GB/T 1:1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting: This document replaces GB/T 25715-2010 "Centrifugal Ductile Cast Pipe Mold": Compared with GB 25715-2010, this document has In addition to general and editorial changes, the main technical changes are as follows:

---Changed the content and scope of application of this document (see Chapter 1, Chapter 1 of the:2010 edition);

---Deleted the terms "ductile iron", "socket" and "socket" (see Chapter 3 of the:2010 edition), and added "pipe mold" and "water-cooled metal pipe" Terms and definitions of "mold" and "hot mold coating type metal pipe mold" (see Chapter 3);

---Changed the main specifications of the pipe mold (see Table 1, Table 1 of the:2010 version);

---Changed the dimensional tolerances of some specifications of pipe molds (see Table 2, Table 2 of the:2010 version);

---The structural diagram of the pipe mold has been changed, and the typical structural diagram of the hot mold coating type metal pipe mold has been added (see Figure 1, Figure 2,:2010 version of Figure 1);

---Change "smelting method" to "overall requirements", and add relevant regulations on forging steel ingots, forging ratio, and forging blank margin (see 5:1,:2010 version of 5:2:1);

---Deleted the material grade (see Table 3 of the:2010 version);

---Added gas content requirements for three chemical components: hydrogen, oxygen, and nitrogen (see Table 3);

---Changed the chemical composition tolerance requirements (see 5:2:2, Table 4 of the:2010 version);

---Changed the tensile strength, yield strength, elongation after break, shrinkage of area, impact energy, and hardness of the pipe mold blank after quenching and tempering heat treatment Index values of mechanical properties, and requirements for hardness difference (see Table 4, Table 5 of the:2010 edition);

---Changed the standards and level requirements that low-magnification tissue should comply with (see 5:4, 5:2:3:2 and 5:2:3:3 of the:2010 edition);

---Deleted the inspection requirements for some high-magnification structures in metallographic structures (see 5:2:3:4 of the:2010 edition);

---Changed the levels and requirements for non-metallic inclusions in pipe mold specimens (see 5:5:1, 5:2:4 of the:2010 edition);

1 Scope

China's national standard for the moulds used to cast ductile iron pipe centrifugally. It specifies the requirements, the test methods, the inspection rules and the marking, packaging, transport and storage of pipe moulds. Centrifugal casting is how essentially all ductile iron water and sewer pipe is made. Molten iron is poured into a rotating steel mould, thrown against the wall by the rotation, and solidifies as a tube of uniform wall thickness without a core - the centrifugal force also drives the denser metal outward and floats the slag and inclusions to the bore, where they are removed. The mould is the tool that makes it, and it is an unusual one. It is a heavy steel cylinder several metres long that spins at high speed while molten iron at fourteen hundred degrees is poured into it and then, having solidified a pipe, is sprayed and cooled and does it again a few minutes later. Its life is measured in thousands of castings, and it fails by thermal fatigue: the bore surface cycles through a large temperature range on every casting, and the resulting cracking network eventually prints itself onto the pipe surface and ends the mould. So the standard specifies what determines that life and the quality of the pipe made in it. The material and its heat treatment; the dimensional accuracy of the bore, which becomes the outside of the pipe and must meet the pipe standard's tolerances; the wall thickness and its uniformity, since an uneven mould wall cools unevenly and distorts; the balance, because an unbalanced mould at casting speed destroys its bearings; the surface finish of the bore; and the non-destructive examination for defects in a component that will be thermally cycled thousands of times. Issued on 27 November 2023 and in force since 1 June 2024, it replaces GB/T 25715-2010.

This document specifies the specifications, structural types, dimensions of water-cooled

metal pipe molds and hot-mold paint-type metal pipe molds for centrifugally cast ductile iron pipes: dimensional tolerance, chemical composition, mechanical properties, low-magnification structure, metallographic structure, non-destructive testing and dimensional accuracy, and describes the corresponding test methods, inspection inspection rules, labeling, packaging, transportation and storage: This document is applicable to the design, manufacture and acceptance of pipe molds for centrifugally cast ductile iron pipes made of alloy steel:

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, the dated quotations For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document:

GB/T 222 Allowable deviations in chemical composition of finished steel products GB/T 223:

82 Determination of hydrogen content in steel and iron by inert gas melting-thermal conductivity or infrared method

GB/T 226 Acid etching inspection method for low magnification structure and defects of steel GB/T 228:

3 Terms and definitions

The terms and definitions defined in GB/T 13295 and the following apply to this document: 3:1 pipe mold pipemould Molds used to produce centrifugal ductile iron pipes: