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

GB/T 1504-2024

Replacing GB/T 1504-2008

Cast iron rolls

铸铁轧辊

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1 Scope

GB/T 1504-2024 is the Chinese national standard on cast iron rolls, 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 15 March 2024 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 October 2024. Classification: ICS 77.180, CCS H94. 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 technical requirements, test methods, inspection rules, marking, packaging and quality certificates for cast iron rolls. This document applies to cast iron rolls used in metal material processing and composite rolls (including roll rings) with the working layer made of cast iron.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. 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 145 Center Holes

GB/T 222 Permissible Tolerances for Chemical Composition of Steel Products

GB/T 223.3 Methods for Chemical Analysis of Iron, Steel and Alloy - The Diantipyryl Methane Phosphomolybdate Gravimetric Method for the Determination of Phosphorus Content

GB/T 223.5 Steel and Iron - Determination of Acid-soluble Silicon and Total Silicon Content - Reduced Molybdosilicate Spectrophotometric Method

GB/T 223.11 Iron, Steel and Alloy - Determination of Chromium Content - Visual Titration or Potentiometric Titration Method

GB/T 223.13 Methods for Chemical Analysis of Iron, Steel and Alloy - The Ammonium Ferrous Sulfate Titration Method for the Determination of Vanadium Content

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

GB/T 223.25 Methods for Chemical Analysis of Iron, Steel and Alloy - The Dimethylglyoxime Gravimetric Method for the Determination of Nickel Content

GB/T 223.26 Iron, Steel and Alloy - Determination of Molybdenum Content - The Thiocyanate Spectrophotometric Method

GB/T 223.28 Methods for Chemical Analysis of Iron, Steel and Alloy - The -benzoinoxime Gravimetric Method for the Determination of Molybdenum Content

3 Terms and Definitions

The terms and definitions defined in GB/T 12604.1 and GB/T 15546, and the following are applicable to this document.

3.1 outer layer thickness The thickness of the same material of the working layer of the composite roll.

3.2 single defect At the specified sensitivity, the spacing between adjacent defects is greater than 8 times the equivalent of the larger defect. NOTE. the spacing between defects is determined by the center position of the probe at the peak of the defect echo.

3.3 concentrated defect At the specified sensitivity, the spacing between adjacent defects is less than or equal to 8 times the equivalent of the larger defect. NOTE. the indication area of concentrated defect is determined by the specified sensitivity as the boundary.

3.4 backwall echo attenuation zone The area where the radial back wave is attenuated to less than 10% f.s due to internal defects of the roll.

4.1 General Requirements

4.1.1 Manufactured in accordance with this document and the purposes of the roll and the order drawings and technical agreements confirmed by the supply-side and the

demand-side.

4.1.2 Technical requirements other than this document shall be determined by negotiation between the supply-side and the demand-side.

4.2 Chemical Composition and Surface Hardness

4.2.1 The chemical composition and surface hardness of the outer layer shall comply with the provisions of Table 1.

4.2.2 The core of the centrifugally cast composite roll should be made of high-strength ductile cast iron, or high-strength steel.

5 Test Methods

5.1 Chemical composition analysis shall be carried out in accordance with the provisions of relevant standards in Table 8, and GB/T 223.79 or GB/T 14203. During arbitration, the relevant standards in Table 8 shall be used. The allowable deviation of the chemical composition of finished products shall be implemented in accordance with the provisions of GB/T 222.

5.2 Hardness test shall be carried out in accordance with the provisions of GB/T 13313.

5.3 The test of mechanical properties shall be carried out in accordance with the provisions of GB/T 228.1.

5.4 When the core is made of ductile cast iron, the metallographic structure inspection shall be carried out in accordance with the provisions of Appendix A.

5.5 Ultrasonic testing of cast iron rolls shall be carried out in accordance with the provisions of Appendix B.

6 Inspection Rules

6.1 The chemical composition shall be inspected furnace by furnace in accordance with the smelting furnace, and the specimen shall be taken from the ladle before pouring. When the chemical composition analysis is disqualified, sampling can be carried out on the working layer of the roll for two re-inspections, and as long as it passes the re-inspection once, the result is qualified.

6.2 The surface hardness of the roll body and roll neck shall be tested one by one, and the number and position of the measurement points shall comply with the provisions of GB/T 13313.

6.3 The chill depth of the chilled cast iron rolls shall be checked and determined by the distance between the first batch of gray spots on the end face of the roll body and the delivery roll surface. The number of gray spots to be measured shall be no less than 3

within a 10 mm wide range along the radius tangent direction of the end face of the roll body.

6.4 The roll neck structure of the cast iron rolls shall be inspected in accordance with the proportion specified in the contract. The inspection position of the ductile cast iron rolls is the roll neck surface on the transmission side, and the inspection position of the ball core composite rolls is the roll neck surface on the operating side.

6.5 The surface quality, main dimensions and surface roughness shall be inspected one by one.

6.6 Ultrasonic testing shall be carried out on centrifugal composite cast iron rolls one by one, and ultrasonic testing of other rolls shall be determined by negotiation between the supply-side and the demand-side.

7 Marking, Packaging and Quality Certificate

7.1 After the finished product is qualified in the inspection, the manufacturer's logo and roll No. shall be engraved on the end face of the roll neck on the transmission side. If the demand-side has specific requirements for the roll logo, it can be indicated in the order drawings or agreement.

7.2 Before packaging, the key parts of the roll surface shall be protected with rust-proof materials; the packaging should take into account the safety of the rolls during transportation and hoisting, prevent damage and rust during transportation, and meet the requirement of no rust within 6 months of indoor storage.

7.3 The packaged rolls shall be placed flat in a dry and ventilated indoor environment.

7.4 The rolls shall be accompanied by a quality certificate filled in by the quality inspection department when exiting the factory, including.

- a) Name of the supply-side;
- b) Name of the demand-side;
- c) Serial No. of this document;
- d) Contract No., product No., roll No.;
- e) Product specifications;
- f) Material code, chemical composition range, hardness, ultrasonic testing results, roll weight, production date;
- g) Heat treatment status shall be indicated when blank exits the factory.