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

GB/T 1503-2024

Replacing GB/T 1503-2008

Cast steel rolls

铸钢轧辊

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting: This document replaces GB/T 1503-2008 "Cast Steel Roller": Compared with GB/T 1503-2008, except for structural adjustments and editorial changes, In addition, the main technical changes are as follows:

- a) Added the term and definition of "outer thickness" (see 3:1);
 - b) Added alloy tool steel material categories, alloy steel, semi-steel, graphite steel, and high chromium steel varieties (see Table 1);
 - c) The chemical composition and recommended uses of some varieties of alloy steel, semi-steel and high-speed steel have been changed (see Table 1, Table 1 of the:2008 edition);
 - d) The provisions on roller body hardness uniformity have been changed (see 4:4, 3:3 of the:2008 edition);
 - e) Added the requirements for roller outer thickness difference (see 4:5:2);
 - f) Added ultrasonic testing requirements (see 4:6);
 - g) The machining requirements have been modified (see 4:7, 3:7 of the:2008 edition):
- Please note that some of the contents of this document may involve patents: The issuing organization of this document does not assume the responsibility for identifying patents: This document was proposed by the China Iron and Steel Association: This document is under the jurisdiction of the National Technical Committee on Steel Standardization (SAC/TC183): This document was drafted by: China Steel Group Xingtai Mechanical Roller

Co., Ltd.; Jiangsu Gongchang Roller Co., Ltd.; Baosteel Roller Technology Co., Ltd: Limited Liability Company, Jiangsu Keda Heavy Industry Co., Ltd.; Xingtai Delong Machinery Roller Co., Ltd.; Liaoning Yiliansheng New Materials Co., Ltd.; Metallurgical Industry Information Standards Research Institute, Beijing MCC Equipment Research and Design Institute Co., Ltd: The main drafters of this document are: Liu Di, Yang Yudong, Hu Bing, Shao Lijun, Qiu Jinhui, Liu Jianning, Chen Wei, Liang Libin, He Yanjie, Du Xujing, Gong Kailing, Qian Baineng, Su Junxin, Liang Yulai, Ma Dajiang, Zhou Jun, Liang Congtao, Xie Jing, Yue Jingchao, Ma Chaoyu, Zhou Qinzong, Zhou Guoxiang, Zhang Ruopeng, Wang Jiangwei, Chen Jian, Wang Huajun, Dong Guoqing, Gong Shilu: The previous versions of this document and the documents it replaces are as follows:

--- First published as GB 1503-1979 in 1979 and first revised in 1989;

--- In the second revision in:2008, GB/T 13316-1991 "Ultrasonic flaw detection method for cast steel rolls" was incorporated;

---This is the third revision: Cast steel roll

1 Scope

GB/T 1503-2024 is the Chinese standard for cast steel rolls: the rolls that do the work in a rolling mill, and one of the few components in heavy industry that is deliberately consumed and replaced on a schedule. A roll is bought on hardness, on hardness depth and on the soundness of the bond between the shell and the core, because a roll that spalls in service damages the mill and the product with it. The standard sets the grades and their designation, the chemical composition of each, the requirements on the manufacturing route including the casting and the heat treatment, the mechanical properties and the hardness and its permitted variation over the barrel and through the working depth, the internal quality requirements and the ultrasonic examination and its acceptance criteria, the surface quality and the dimensional and geometric tolerances, the balancing requirements, together with the test methods, the inspection rules and the marking, packaging, transport and quality certificate. The 2024 edition replaces GB/T 1503-2008. For a roll foundry or a rolling mill in China, this is the acceptance text.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document: GB/T 145 Center hole

GB/T 222 Permissible deviation of chemical composition of finished steel products GB/T 223:

11 Determination of chromium content in steel and alloys Visual titration or potentiometric titration method GB/T 223:

13 Chemical analysis methods for iron, steel and alloys - Ammonium ferrous sulfate titration method for determination of vanadium content GB/T 223:

23 Determination of nickel content in steel and alloys - Dimethylglyoxime spectrophotometric method GB/T 223:

25 Methods for chemical analysis of iron, steel and alloys - Dimethylglyoxime gravimetric method for the determination of nickel content GB/T 223:

26 Determination of molybdenum content in steel and alloys - Thiocyanate spectrophotometric method GB/T 223:

28 Methods for chemical analysis of iron, steel and alloys - alpha-Benzoin oxime gravimetric method for determination of molybdenum content GB/T 223:

38 Methods for chemical analysis of iron, steel and alloys - Ion exchange separation - Gravimetric method for determination of niobium content GB/T 223:

40 Determination of niobium content in iron, steel and alloys - Chlorosulfonphenol S spectrophotometric method GB/T 223:

43 Determination of tungsten content in steel and alloys - Gravimetric and spectrophotometric methods GB/T 223:

59 Determination of phosphorus content in iron, steel and alloys - Bismuth phosphomolybdenum blue spectrophotometric method and antimony phosphomolybdenum blue spectrophotometric method GB/T 223:

60 Chemical analysis methods for iron, steel and alloys - Determination of silicon content by perchloric acid dehydration gravimetric method GB/T 223:

62 Methods for chemical analysis of iron, steel and alloys - Determination of phosphorus content by butyl acetate extraction photometric method GB/T 223:

GB/T 1804 General tolerances Tolerances of linear and angular dimensions without tolerance indication

GB/T 9445 Qualification and certification of non-destructive testing personnel GB/T 12604: