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

GB 1499.2-2024

Replacing GB/T 1499.2-2018

**Steel for the reinforcement of concrete - Part 2: Hot rolled
ribbed bars**

钢筋混凝土用钢 第2部分：热轧带肋钢筋

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Foreword

This document was drafted in accordance with the rules given in GB/T 1.1-2020 "Directives for standardization - Part

1.Rules for the structure and drafting of standardizing documents". This document is Part 2

of GB 1499 "Steel for the reinforcement of concrete". The following parts of GB 1499 have been released. - Part

1 Scope

Part 2 of GB 1499 is the standard behind most of the reinforcement in Chinese concrete: hot rolled ribbed bar. It sets the classification and designation by grade, the dimensions, rib geometry, weight and tolerances, the steelmaking and the mechanical properties in tension, bending and - for the seismic grades - the ratio requirements that govern ductility, then the test methods, the inspection rules and the marking. Annex B is the one that matters in the field: the macro-etch, Vickers hardness and microstructure checks that detect quenched-and-tempered bar sold as hot rolled. Like Part 1 it moved from GB/T to GB with this edition and is now mandatory. Issued on 25 June 2024, in force since 25 September 2024. 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 edition it replaces are taken from there. The clause text, the tables and the numeric limits are not reproduced on this page - they are in the document itself, which is delivered in full in English translation.

This document specifies the classification, designation, size, shape, weight and allowable deviation, smelting and performance, test methods, inspection rules, packaging, marks and quality certificates for the hot rolled ribbed bars the reinforcement of concrete (hereinafter referred to as steel bars). This document is applicable to hot rolled bars and hot rolled bars of fine grains for the reinforcement of concrete. This document is not applicable to recycled steel bars and waste heat treated steel bars that are re rolled from finished steel products.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 222, Permissible tolerances for chemical composition of steel products

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 223.12, Methods for chemical analysis of iron, steel and alloy. The sodium carbonate separation-diphenyl carbazide photometric method for the determination of chromium content

GB/T 223.14, Methods for chemical analysis of iron, steel and alloy. The N-benzoyl-

N-phenylhydroxylamine extraction photometric method for the determination of vanadium content

GB/T 223.17, Methods for chemical analysis of iron, steel and alloy -- The dianthipyrylmethane photometric method for the determination of titanium content

GB/T 223.19, Methods for chemical analysis of iron, steel and alloy. The neocuproine-chloroform extraction photometric method for the determination of copper content

GB/T 223.23, Iron, steel and alloy -- Determination of nickel content -- The dimethylglyoxime spectrophotometric method

GB/T 223.26, Iron, steel and alloy -- Determination of molybdenum content -- The thiocyanate spectrophotometric method

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

4 Classification, designation

4.1 Steel bars are classified into 400, 500, and 600 grades based on their yield strength characteristic values.

4.2 The composition and meaning of steel bar designations are shown in Table 1. Table 1 -- Composition and meaning of steel bar designations

5 Size, shape, weight, and allowable deviation

5.1 Nominal diameter range The nominal diameter range of steel bars is 6 mm~50 mm.

5.2 Nominal cross-sectional area and theoretical unit weight The nominal cross-sectional area and theoretical unit weight of steel bars shall comply with the provisions of Table 2. Table 2 -- Nominal cross-sectional area and theoretical unit weight of steel bars

5.4 Delivery type and allowable deviation

5.4.1 Steel bars shall be delivered in fixed length according to straight bars. The delivery length shall be specified. The allowable deviation for length is.

5.4.2 Steel bars with a diameter not exceeding 16 mm are allowed to be delivered in coils. Cut the head and tail when delivering. Each coil shall consist of one steel bar. Each batch is allowed to have 5% of the number of coils (two coils are allowed if there are less than two coils) composed of two steel bars. The weight of the inventory shall be determined through negotiation between the supplier and the purchaser.

5.6 Weight and allowable deviation

5.6.1 Steel bars shall be delivered by weight. There are two delivery methods. in actual weight and theoretical weight. The theoretical weight of steel bars is calculated by multiplying the length of the steel bars by the theoretical weight per meter of steel bars in Table 2.

5.6.2 The allowable deviation between the actual weight and theoretical weight of steel bars shall comply with the provisions of Table 4.

6 Smelting and performance

6.1 Smelting method Steel shall be smelted using a converter or electric arc furnace. HRB500E, HRBF500E, Nominal diameter d/mm Deviation between actual weight and theoretical weight $\eta/\%$ and HRB600 shall undergo external refining.

6.3 Mechanical properties

6.3.1 The mechanical property characteristic values of steel bars, such as lower yield strength R_{eL} , tensile strength R_m , elongation at break A, and maximum total elongation at break A_{gt} , shall comply with the provisions of Table

6. For the mechanical performance characteristic values listed in Table 6, R_{eL}/R_{eL} is the maximum guaranteed value and others are the minimum guaranteed values.

6.3.2 The elongation at break A of various designations of steel bars with nominal diameters ranging from 28 mm~40 mm is allowed to be reduced by 1%. The elongation at break A of each designation of steel bars with a nominal diameter greater than 40 mm is allowed to be reduced by 2%.

6.4 Process performance

6.5 Fatigue performance When applied to concrete structures or components that bear dynamic cyclic effects such as highway bridges and culverts, railway bridges and culverts, and underground structures of urban rail transit, corresponding fatigue performance test reports of corresponding designations and specifications shall be provided. Fatigue performance testing shall be conducted in accordance with GB/T 28900, with 5 steel bars cut from different pieces (coils).

6.6 Connection performance

6.6.1 The welding and mechanical connection process of steel bars, as well as the quality inspection and acceptance of joints, shall comply with the provisions of JGJ 18 and JGJ 107.