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Cold rolled ribbed steel bars

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Foreword

This document is drafted in accordance with the provisions of GB/T 1.1-2020 Directives for Standardization—Part 1: Rules for the Structure and Drafting of Standardization Documents.

This document supersedes GB/T 13788-2017 Cold-rolled Ribbed Steel Bars. Compared with GB/T 13788-2017, in addition to structural adjustments and editorial revisions, the main technical changes are as follows:

— Deleted CRB680H (see 2017 edition, Clause 4.2, 5.1, 5.6.1, Table 3, Figure 5);

— Revised product specifications (see Clause 5.1, Table 1; 2017 edition, Clause 5.1, Table 1);

— Deleted the profile of four-sided ribs and its relevant provisions (see 2017 edition, Clause 5.2, Table 2);

— Revised the relevant provisions on raw materials (see Clause 6.1, Annex A; 2017 edition, Clause 6.1);

— Revised the relevant provisions on delivery condition (see Clause 6.2; 2017 edition, Clause 6.2);

— Revised the index of percentage elongation after fracture for CRB550 and the index of total elongation at maximum force for CRB650 and CRB800 (see Table 2; 2017 edition, Table 3);

— Added relevant provisions on "coils" and "rolls" in factory inspection (see Table 4);

— Revised the grade marking of steel bars (see Clause 9.2; 2017 edition, Clause 9.2).

Please note that certain contents of this document may involve patents. The issuing authority of this document shall not be liable for identifying patents. This document is proposed and administered by the Ministry of Industry and Information Technology of the People's Republic of China.

The release history of the documents superseded by this document is as follows:

— First released as GB 13788-1992 in 1992, revised for the first time in 2000 and the second time in 2008;

— Revised for the third time as GB/T 13788-2017 in 2017;

— This is the fourth revision.

Cold rolled ribbed steel bars

1 Scope

This document specifies the grades, dimensions, profiles, weights and permissible tolerances, raw materials and properties, test methods, inspection rules, packaging, marking and quality certificates of cold-rolled ribbed steel bars (hereinafter referred to as steel bars).

This document applies to cold-rolled ribbed steel bars used in ordinary reinforced concrete, the manufacture of welded fabric and prestressed concrete.

2 Normative References

The contents of the following documents are incorporated as essential provisions of this document through normative reference in the text. For dated referenced documents, only the editions corresponding to those dates apply to this document; for undated referenced documents, their latest editions (including all amendments) apply to this document.

GB/T 222 Permissible Tolerances for Finished Product Chemical Compositions of Steels

GB/T 2101 General Requirements for Acceptance, Packaging, Marking and Quality Certificates of Section Steels

GB/T 2103 General Requirements for Acceptance, Packaging, Marking and Quality Certificates of Steel Wires

GB/T 17505 Steel and Steel Products—General Technical Delivery Requirements

GB/T 21839 Test Methods for Steel Products for Prestressed Concrete

GB/T 28900 Test Methods for Steel Products for Reinforced Concrete

YB/T 081 Rounding Off of Numerical Values and Judgment of Test Values in Metallurgical Technical Standards

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Cold-rolled Ribbed Steel Bars

Steel bars with transverse ribs uniformly distributed along the length on the surface, processed by cold rolling of hot-rolled wire rods.

3.2 Nominal Diameter

The diameter of a circle with an area equal to the nominal cross-sectional area of the steel bar.

3.3 Specific Projected Rib Area

The ratio of the projected area of transverse ribs on a plane perpendicular to the steel bar axis to the product of the nominal perimeter of the steel bar and the rib spacing.

3.4 Rib Spacing

The chord length of the projection of the discontinuous part of transverse ribs on the circumference of the steel bar onto a plane perpendicular to the steel bar axis.

4 Grades

Steel bars are classified into five grades, namely CRB550, CRB600H, CRB650, CRB800 and CRB800H. CRB550 and CRB600H are intended for use in ordinary reinforced concrete, while CRB650, CRB800 and CRB800H are for prestressed concrete.

The letters C, R, B and H are the initials of Cold rolled, Ribbed, Bars and High elongation respectively; the numerals represent the characteristic value of tensile strength.

5 Dimensions, Profiles, Weights and Permissible Tolerances

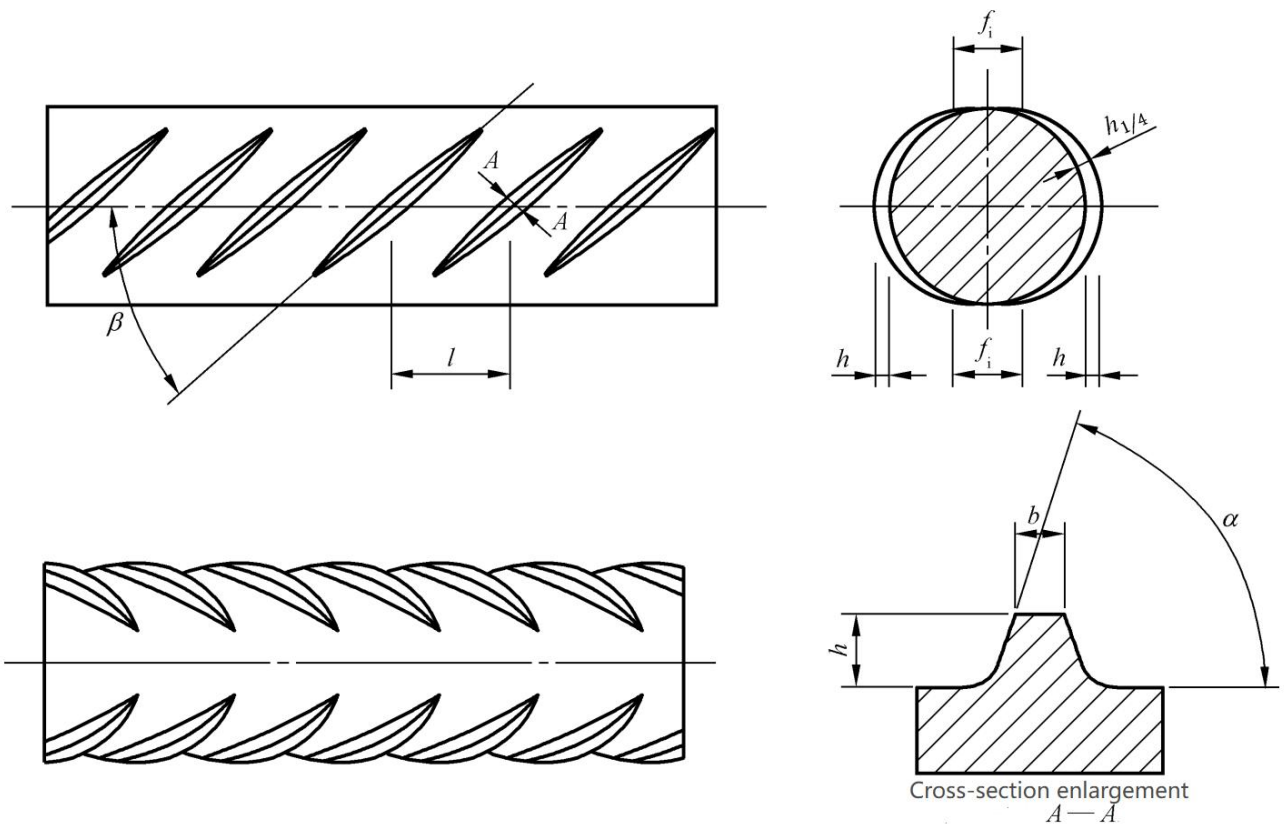
5.1 Nominal Diameter Range

The nominal diameter range of CRB550 steel bars is 4 mm~12 mm; that of CRB600H steel bars is 4 mm~16 mm; the nominal diameters of steel bars of grade CRB650 and above are 4 mm, 5 mm and 6 mm.

5.2 Profiles

5.2.1 Profile Requirements

CRB600H steel bars shall be of the two-sided rib type (see Figure 1); CRB550 and CRB650 steel bars shall be of the three-sided rib type (see Figure 2). Other profiles for CRB800 and CRB800H steel bars may be adopted by agreement between the supplier and the purchaser.



α — Transverse rib bevel angle;

β — Angle between transverse rib and steel bar axis;

h — Mid-height of transverse rib;

l — Transverse rib spacing;

b — Top width of transverse rib;

f_i — Transverse rib gap;

$H_{1/4}$ — Height of transverse rib at the 1/4 position.