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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 5223.3-2017

Replacing GB/T 5223.3-2005

Steel bars for the prestressing of concrete

预应力混凝土用钢棒

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Foreword

This Part was drafted in accordance with the rules given in GB/T 1.1-2009.

This Part replaces GB/T 5223.3-2005, Steel Bars for Prestressed Concrete. Compared with GB/T 5223.3-2005, the major technical changes are as follows:

-it cancels the common relaxation varieties of prestressed steel bars;

-it adds the specifications of steel bars (see Clause 6);

-it cancels cross sectional area measurement for plain steel bars and adds the specifications for diameter tolerances (see 6.1);

and helical ribbed steel bars into the weight per m measurement, and adjusts the weight tolerances for helical ribbed steel bars (see 6.2 and 6.3);

-it increases the requirement for coil weight (see 6.6);

-it adds the dimensional measurement for steel bars (see 8.2.1);

-the test method is changed into as specified in GB/T 21839 (8.4.1).

This Standard was redrafted by referencing ISO 6934-3:1991, Steel for the prestressing of concrete – Part 3: Quenched and tempered wire. This Standard is not equivalent to ISO 6934-3:1991, the major technical changes are as follows:

-quenched and tempered steel wires are changed into steel bars for prestressed concrete;

-it adds helical ribbed steel bars;

-it adds the specifications of steel bars;

-it adds the indexes of elongation after fracture as a routine inspection item;

-it adds impact test for the helical ribbed steel bars for mine supporting projects.

This Standard was proposed by China Iron and Steel Association.

This Standard shall be under the jurisdiction of National Technical Committee 183 on Steels of Standardization Administration of China (SAC/TC 183).

Changshu Longteng Special Steel Co., Ltd., Fujian Sangang (Group) Co., Ltd., Tianjin Silver Dragon Prestressed Materials Co., Ltd., Huludao Beifang Metalware Co., Ltd., Baoding Sifangsanyi Electric Co., Ltd., Tianjin Iron and Steel Group Co., Ltd., China Metallurgical Information and Standardization Institute.

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The previous editions of the standard replaced by this Standard are as follows:

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1 Scope

This Standard specifies the terms and definitions, classification, codes and designation, ordering content, dimensions, shapes, weights and tolerances, technical requirements, test methods, inspection rules, packaging, marking and quality certification for steel bars for the prestressing of concrete.

This Standard applies to plain, helical grooved, helical ribbed and ribbed round bars for the prestressing of concrete.

2 Normative references

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

3 Terms and definitions

Steel bars which are made of wire rod by processing and heating to austenitizing temperature before rapid cooling, and then heating at the phase-transition temperature for tempering.

Time-dependent stress loss for a constant length.

Steel bars whose cross section is circular.

Steel bars which have continuous helical grooves at regular spacings along the longitudinal direction of the surface [see Figures 1a] and 1b)].

Steel bars which have continuous helical ribs at regular spacings along the longitudinal direction of the surface (see Figure 2).

Steel bars whose cross section is normally circular and whose surface is ribbed [see Figures 3a) and 3b)].

Uniform continuous rib parallel to the axis of steel bars.

Other ribs not parallel to the axis of steel bars.

4 Classification, codes and designation

4.1 Classification

4.2 Codes

4.3 Designation

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4.3.1 Designation content

The designation of the products delivered in accordance with this Standard shall include the following content:

Prestressed steel bar, nominal diameter, nominal tensile strength, code, ductility level (ductility 35 or 25), low relaxation (L) and standard number.

4.3.2 Example for designation

Example: The helical grooved steel bar for the prestressing of concrete, of nominal diameter 9.0 mm, nominal tensile strength 1 420 MPa and ductility level 35, is designated as: PCB 9.0-1420-35-L-HG-GB/T 5223.3.

5 Ordering content

The contract based on this Standard shall include the following content:

a) a reference to this Standard;

NOTE: Theoretical weight per m = nominal cross sectional area × steel density for calculation; at the theoretical weight per m, the density of steel bars is 7.85 g/cm3.

6 Dimensions, shapes, weights and tolerances

NOTE: Helical ribbed steel bars have 4 helical ribs.

NOTE 1: The bevel angle of longitudinal rib θ is 0° ~ 30°. NOTE 2: Dimensions a and b are for reference.

6.5 Steel bars of specifications beyond Tables 1, 2, 3, 4 and 5 can be manufactured as required by the purchaser.

6.6 Each coil of steel bars comprises one bar, whose weight shall not be less than 700 kg; 10% of the coils in each batch is allowed to be less than 700 kg, but not less than 200 kg.

NOTE: Dimension b is for reference.

6.7 Normally, the diameter of the inner ring of steel bars shall not be less than 2 000 mm. Products of other inner coil diameters can also be supplied as agreed by the purchaser and the supplier.

7 Technical requirements

7.1 Raw material

7.1.1 The dimensions, shapes and tolerances of the wire rods for steel bars shall be as specified in accuracy grade B of GB/T 14981; the surface quality shall be as specified in GB/T 24587. 7.1.

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