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NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

ICS 77.140.65

H 49

GB/T 4232-2019

Replacing GB/T 4232-2009

Stainless steel wire for cold heading and cold forging

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Issued on: June 04, 2019

Implemented on: May 01, 2020

Issued by: State Administration for Market Regulation;

Standardization Administration of the PRC.

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Foreword

This Standard is drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard replaces GB/T 4232-2009 “Stainless steel wire for cold heading and cold forging”. Compared with GB/T 4232-2009, the main technical content changes of this Standard are as follows:

- UPDATE all referenced documents to the current latest edition;
- Modify the tolerances for diameter of steel wire (see 6.2 and Table 2; 6.2 of the 2009 edition);
- Modify the tolerance requirement for the length of straight steel wire (see 6.5; 6.5 of the 2009 edition);
- CHANGE the designation ML16Cr17Ni2 in the former standard to ML14Cr17Ni2; CHANGE ML022Cr17Ni13Mo3 to ML022Cr17Ni12Mo2; CHANGE ML06Cr12Ti to ML06Cr11Ti; CHANGE ML06Cr12Nb to ML04Cr11Nb (see Table 1, Table 3, Table 4, and Table 5; Table 1, Table 2, Table 3, and Table 4 of the 2009 edition);
- ADD the chemical composition and related requirements of 7 designations: ML022Cr19Ni10, ML06Cr19Ni10Cu, ML022Cr18Ni14Mo2Cu2, ML06Cr18Ni11Ti, ML022Cr11NiNbTi, ML20Cr13, ML30Cr13 (see Table 1, Table 3, Table 4, and Table 5; Table 1, Table 2, Table 3, and Table 4 of the 2009 edition);
- Modify the requirements for the surface state of steel wire, the former standard’s “When the purchaser fails to specify, the surface state is decided by the supplier” is changed to “The specific requirements are negotiated between the supplier and the purchaser and indicated in the contract” (see 7.3.3; 7.3.3 of the 2009 edition);
- ADD soft mechanical property requirements for designations such as ML06Cr11Ti, ML04Cr11Nb, ML10Cr15, ML04Cr17, ML06Cr17Mo (see Table 4);
- ADD the technical requirement and method for intergranular corrosion test of austenitic stainless steel (see 7.7.2 and Table 6);
- ADD the comparison of designations of different editions of this Standard (see Appendix A).

This Standard was proposed by China Iron and Steel Association.

Stainless steel wire for cold heading and cold forging

1 Scope

This Standard specifies the terms and definitions, order content, classification and designation, dimension, shape, technical requirements, test methods, inspection rules, packing, marking, and quality certification of stainless steel wire for cold heading and cold forging.

This Standard applies to the round-section stainless steel wire (hereinafter referred to as steel wire) for the manufacture of fasteners such as bolts, screws, and rivets and of cold-formed parts.

2 Normative references

The following documents are indispensable for the application of this document. For the dated references, only the editions with the dates indicated are applicable to this document. For the undated references, the latest edition (including all the amendments) are applicable to this document.

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

GB/T 223.4 Alloyed steel - Determination of manganese content - Potentiometric or visual titration method

GB/T 223.5 Steel and iron - Determination of acid-soluble silicon and total silicon content - Reduced molybdenosilicate spectrophotometric method

GB/T 223.11 Iron, steel and alloy - Determination of chromium content - Visual titration or potentiometric titration method

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

GB/T 223.18 Methods for Chemical Analysis of Iron, Steel and Alloy - The Sodium Thiosulfate Separation Iodimetric 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 4334-2008 Corrosion of metals and alloys - Test methods for intergranular corrosion of stainless steels

GB/T 4356 Stainless steel wire rods

GB/T 11170 Stainless steel - Determination of multi-element contents - Spark discharge atomic emission spectrometric method (Routine method)

GB/T 20066 Steel and Iron - Sampling and Preparation of Samples for the Determination of Chemical Composition

GB/T 20123 Steel and iron - Determination of total carbon and sulfur content - Infrared absorption method after combustion in an induction furnace (routine method)

GB/T 20124 Steel and iron - Determination of nitrogen content - Thermal conductimetric method after fusion in a current of inert gas

GB/T 20878 Stainless and heat-resisting steels - Designation and chemical composition

YB/T 5293 Metallic materials - Forging test

3 Terms and definitions

The terms and definitions defined in GB/T 4240 and GB/T 20878 apply to this document.

4 Order content

The contract or order for ordering shall include the following:

- a) This Standard number;
- b) Product name;
- c) Designation;
- d) Dimension and shape (see Clause 6);
- e) Mass (or quantity);
- f) Delivery state (see 7.3);
- g) Other requirements.

7.7 Special requirements

7.7.1 According to the requirements of the purchaser, through consultation between the supplier and the purchaser, the steel wires with other mechanical property ranges may be provided.

7.7.2 According to the requirements of the purchaser, the austenitic stainless steel wire with a nominal diameter of more than 1.00 mm may be tested for intergranular corrosion. The test method is agreed between the supplier and the purchaser and is indicated in the contract.

8 Test methods

The inspection items and test methods of steel wire shall comply with the requirements of Table 6.

9 Inspection rules

9.1 Inspection and acceptance

The exit-factory inspection and acceptance of steel wire are carried out by the supplier's quality department.

9.2 Lot grouping rules

The steel wire shall be inspected and accepted in lots. Each lot consists of steel wires of the same designation, the same heat number, the same dimension, and the same delivery state.

9.3 Sampling locations and sampling quantities

The sampling locations and sampling quantities of each lot of steel wires shall comply with the requirements of Table 6.

9.4 Re-inspection and decision rules

The re-inspection and decision rules of steel wire shall comply with the provisions of GB/T 2103-2008. When the test results of mechanical properties are unqualified, the wire coil shall be removed at both ends for a certain length; then double quantity of samples shall be taken for re-inspection. The results shall comply with the provisions of this Standard. If one of the samples fails the re-inspection, this lot shall be judged as unqualified. The inspection may also be carried out on a coil-by-coil basis; the qualified ones are delivered.

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