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Replacing GB/T 18579-2001

High-carbon Chromium Bearing Steel Wires

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Foreword

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

This Standard serves as a replacement of GB/T 18579-2001 *High-carbon Chromium Bearing Steel Wires*.

In comparison with GB/T 18579-2001, the main changes in technical content are as follows:

---The classification of steel by metallurgical quality is added (see 3.1);

---Continuous cast steel is added (see 3.2);

---The classification of steel by product's final purposes is added (see 3.3);

---The delivery state of "phosphating cold-drawn" is added; the delivery state of polishing is deleted (see 3.4; 3.1 in Version 2001);

---The diameter range of steel wires is modified; the requirements of the allowable deviation of diameter become more rigorous (see 5.1.1 and 5.1.2; 5.1.1 and 5.1.2 in Version 2001);

---The requirements of straightness are modified (see Table 3; Table 1 in Version 2001);

---The requirements of coil weight are modified (see 5.3; 5.3 in Version 2001);

---Designation G8Cr15 and relevant requirements are added (see 6.1.1);

---The requirements of low magnification of steel wires are modified (see 6.4; 6.4 in Version 2001);

---The requirements of steel wire fractures are deleted (see 6.4 in Version 2001);

---The requirements of mechanical property of cold-drawn and phosphating cold-drawn steel wires are added (see 6.5);

---Quenching hardness test of sample is deleted (see 7.5 in Version 2001);

---The requirements of carbide band are added (see 6.7);

---The requirements of steel wire decarburization layer and surface quality are modified (see 6.9 and 6.11; 6.6.5 and 6.7 in Version 2001);

---In re-inspection and determination rules, the stipulation that allows the replacement of materials with billets and the replacement of large pieces with small pieces is added (see 8.4.3).

High-carbon Chromium Bearing Steel Wires

1 Scope

This Standard stipulates the classification and code, order content, dimensions, appearances, weights and allowable deviations, technical requirements, test methods, inspection rules, packaging, marking and quality certificate of high-carbon chromium bearing steel wires.

This Standard is applicable to high-carbon chromium bearing steel wires used in the manufacturing of bearing rolling elements and rings (hereinafter referred to as steel wires).

2 Normative References

The following documents are indispensable to the application of this document. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 223.5 *Steel and Iron - Determination of Acid-soluble Silicon and Total Silicon Content - Reduced Molybdosilicate Spectrophotometric Method*

GB/T 223.9 *Iron Steel and Alloy - Determination of Aluminum Content - Chrome Azurol S Photometric Method*

GB/T 223.11 *Iron, Steel and Alloy - Determination of Chromium Content - Visual Titration or Potentiometric Titration Method*

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*

GB/T 223.29 *Iron, Steel and Alloy - Determination of Lead Content - Carrier Precipitation-xylenol Orange Spectrophotometric Method*

GB/T 223.31 *Iron, Steel and Alloy - Determination of Arsenic Content - Distillation - molybdenum Blue Spectrophotometric Method*

GB/T 223.47 *Method for Chemical Analysis of Iron, Steel and Alloy - The Carrier Precipitation - Molybdenum Blue Photometric Method for the Determination of Antimony Content*

GB/T 223.50 Methods for *Chemical Analysis of Iron, Steel and Alloy - The Phenylfluorone - CTMAB Direct Photometric Method for the Determination of Tin Content*

GB/T 223.53 *Methods for Chemical Analysis of Iron, Steel and Alloy - The Flame Atomic Absorption Spectrophotometric Method for the Determination of Copper Content*

GB/T 223.62 *Methods for Chemical Analysis of Iron, Steel and Alloy - The Butyl Acetate Extraction Photometric Method for the Determination of Phosphorus Content*

GB/T 223.63 *Methods for Chemical Analysis of Iron, Steel and Alloy - The Sodium (potassium) Periodate Photometric Method for the Determination of Manganese Content*

GB/T 223.77 *Methods for Chemical Analysis of Iron, Steel and Alloy - The Flame Atomic Absorption Spectrometric Method for the Determination of Calcium Content*

GB/T 223.85 *Steel and Iron - Determination of Sulfur Content - Infrared Absorption Method after Combustion in an Induction Furnace*

GB/T 223.86 *Steel and Iron - Determination of Total Carbon Content - Infrared Absorption Method after Combustion in an Induction Furnace*

GB/T 224 *Determination of the Depth of Decarburization of Steels*

GB/T 228.1 *Metallic Materials - Tensile Testing - Part 1: Method of Test at Room Temperature*

GB/T 231.1 *Metallic Materials - Brinell Hardness Test - Part 1: Test Method*

GB/T 2103 *General Requirements for Acceptance, Packing, Marking and Quality Certification of Steel Wire*

GB/T 4336 *Carbon and Low-alloy Steel - Determination of Multi-element Contents - Spark Discharge Atomic Emission Spectrometric Method (routine method)*

GB/T 11261 *Steel and Iron - Determination of Oxygen Content - The Pulse Heating Inert Gas Fusion - Infrared Absorption Method*

GB/T 18254-2016 *High-carbon Chromium Bearing Steel*

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)*

b) Designation;

c) Serial No. of this Standard;

d) Specification and appearance (when being delivered in straight state as requested, this shall be indicated in the contract);

e) Weight and/or quantity;

f) Casting method (when it is not indicated, comply with continuous cast);

g) Delivery state;

h) Product's final purposes;

i) Others.

5 Dimensions, Appearances, Weights and Allowable Deviations

5.1 Dimensions

5.1.1 The nominal diameter range of steel wires is 1.00 mm ~ 20.00 mm.

5.1.2 The allowable deviations of diameter of steel wires shall comply with the stipulations in Table 2. The allowable deviations of diameter of steel wires shall be indicated in the contract; when it is not indicated, products shall be provided in accordance with Level-10. In accordance with the demand-side's demands, and through negotiation between both sides, steel wires of other specifications and allowable deviations may also be provided.

7.2.3 Titanium content analysis method shall be determined by the demand-side and the supply-side through negotiation.

7.3 Mechanical Property

7.3.1 Tensile strength test: from both ends (in terms of straight steel wire: from any end) of steel wire coil, take a sample whose length is not less than 250 mm; test the tensile strength. Test method shall comply with the stipulations in GB/T 228.1.

7.3.2 Brinell hardness test: from both ends (in terms of straight steel wire: from any end) of steel wire coil, take a sample. Test method shall comply with the stipulations in GB/T 231.1.

7.4 Low Magnification

On different coils (PCS) of steel wire, randomly take 6 samples. In accordance with the stipulations in 7.5 in GB/T 18254-2016, test the low magnification.

7.5 Surface Quality

7.5.1 From both ends of each coil of steel wire, respectively take a sample whose length is not less than 250 mm, under acid pickling, inspect the surface quality of the steel wire (firstly, remove one end whose length is not less than 500 mm, then, take a sample, under acid pickling, inspect the surface quality). After sulfuric acid or hydrochloric acid pickling, inspect the sample.

7.5.2 The surface quality of steel wires shall be inspected through visual inspection or other effective methods.

7.6 Other Items

The test methods of other items of steel wires shall comply with the stipulations in Table 9.

Table 9 -- Inspection Items, Sampling Parts and Quantity, Test Methods

No.	Inspection Items	Sampling Quantity	Sampling Parts	Clause of Requirements	Test Methods
1	Dimensions	Per coil (PCS)	Not less than 3 parts per coil (PCS)	5.1, 5.2	7.1
2	Chemical Composition	1 PCS per furnace	GB/T 20066	6.1	7.2.1
3	Oxygen Content	1 PCS per furnace	8.3.2 in GB/T 18254-2016	6.1	7.2.2
4	Low Magnification	6 PCS	7.4	6.4	7.5 in GB/T 18254-2016
5	Tensile Test	When the number of coils	Both ends per	6.5	7.3.1

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