ICS 77.140.65
CCS H 49

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 18579-2019

Replacing GB/T 18579-2001

High-carbon chromium bearing steel wires

高碳铬轴承钢丝

Issued on: December 10, 2019 **Implemented on: July 1, 2020**

Issued by: State Administration for Market Regulation;
Standardization Administration of China

Table of Contents

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;

5.1.2 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;

1 Scope

China's national standard for high-carbon chromium bearing steel wire - the drawn wire from which bearing balls, rollers and small rings are made. It specifies the classification and code, the order content, the dimensions, appearance, weight and permissible deviations, the technical requirements, the test methods, the inspection rules, and the packaging, marking and quality certificate, and it applies to wire used to manufacture rolling elements and rings. A bearing ball starts as a slug cut from wire and cold-headed into shape, and everything that will limit the finished bearing is already present in that wire. The steel is the same high-carbon chromium composition as bar bearing steel, and the same governing property applies: fatigue life is set by inclusion cleanliness, not by strength. But wire adds requirements of its own. The diameter tolerance and the ovality determine the mass of each slug and therefore the finished ball size and the amount of grinding stock. The surface must be free of seams, laps and scratches, because a surface defect on wire becomes a subsurface defect in a headed ball, folded in where it cannot be seen. The decarburised layer has to be limited, since decarburised material at the surface of a rolling element is soft and spalls. And the wire has to be soft enough and uniform enough to cold-head without cracking - so annealed hardness, the spheroidised microstructure and the reduction in area matter as much as the composition. The standard sets the low-magnification macrostructure requirements, revised in this edition, together with the inclusion ratings, the carbide requirements and the surface and dimensional tolerances. Issued on 10 December 2019 and in force since 1 July 2020, it replaces GB/T 18579-2001.

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

3 Classification and Code

3.1 By metallurgical quality, steel can be divided into.

3.2 By casting process, steel can be divided into.

3.3 By product's final purpose, steel can be divided into.

3.4 The classification and code of steel wires by the delivery state are shown in Table

1.When other delivery states are requested, this shall be indicated in the contract.

4 Order Content

Order content shall be indicated in the contract and shall include the following content.

5.1 Dimensions

5.1.1 The nominal diameter range of steel wires is

5.2 Appearances

5.2.1 Coil state Each coil of steel wire shall be constituted of one steel wire. Coil shall be put in order. When open a coil, steel wire shall not be scattered, twisted, tangled or knotted.

5.2.2 Straight state

5.2.3 Out-of-roundness Out-of-roundness of steel wires shall be not more than a half of diameter tolerance of steel wires.

5.3 Weights

5.3.1 The minimum internal diameter and minimum weight of each coil of steel wire shall comply with the stipulations in Table 4.

5.3.2 Steel wire whose coil weight is less than the minimum coil weight, but not less than 50 kg, is allowed. However, its weight shall not exceed 5% of the weight of that batch.

6.1 Designation and Chemical Composition

6.1.1 The designations of steel are. GCr15 and G8Cr

15.The chemical composition (smelting analysis) shall comply with the stipulations in GB/T 18254-2016.

6.2 Smelting Method Steel shall adopt vacuum degassing. Unless user's consent has been obtained, the manufacturer shall not intentionally add calcium and its alloy deoxidation, or, control

6.4 Low Magnification The low magnification of steel wires used for rolling elements shall comply with the stipulations in Table

5.The low magnification of steel wires used for rings shall comply with the stipulations of high-quality steel and advanced high-quality steel in GB/T 18254-2016.

6.5 Mechanical Property In terms of steel wires whose nominal diameter is not more than 10 mm, inspect tensile strength. In terms of steel wires whose nominal diameter is more than 10 mm, inspect Brinell hardness. The result shall comply with the stipulations in Table 6.

6.6 Microstructure The microstructure of steel wires shall be fine, uniform and completely spheroidized pearlite structure. Inspect in accordance with the 5th rating chart in Appendix A of GB/T 18254-2016; the qualification level is Level 2 ~ Level 4.