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**Wire Rods for Conversion to Wire  
without Intermediate Heat Treatment**

免铅浴淬火钢丝用热轧盘条

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## Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009.

This Standard was proposed by China Iron and Steel Industry Association.

This Standard shall be under the jurisdiction of National Technical Committee for Standardization of Steel (SAC/TC 183).

Drafting organizations of this Standard: Angang Steel Company Limited, Jiangsu Shagang Group Co., Ltd., Jiangsu Yonggang Group International Trading Co., Ltd., and China Metallurgical Information and Standardization Institute.

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# Wire Rods for Conversion to Wire without Intermediate Heat Treatment

## 1 Scope

This Standard specifies the terms and definitions, grade expression method, ordering content, dimension, shape, weight and allowable deviation, technical requirements, test methods, inspection rules, package, marking and quality certificate of wire rods for conversion to wire without intermediate heat treatment.

This Standard is applicable to the hot-rolled wire rod for wire-making without intermediate heat treatment or final heat treatment during the wire-making process; namely, wire rods for conversion to wire without intermediate heat treatment (hereinafter referred to as wire rod).

## 2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this document.

GB/T 222 Method of Sampling Steel for Determination of Chemical Composition and Permissible Variation for Product Analysis

GB/T 223.5 Methods for Chemical Analysis of Iron, Steel and Alloy - the Reduced Molybdsilicate Spectrophotometric Method for the Determination of Acid-Soluble Silicon Content

GB/T 223.12 Methods for Chemical Analysis of Iron, Steel and Alloy - The Sodium Carbonate Separation-Diphenyl Carbazide Photometric Method for the Determination of Chromium Content

GB/T 223.19 Methods for Chemical Analysis of Iron, Steel and Alloy - The Neocuproine-Chloroform Extraction Photometric Method for the Determination of Copper Content

GB/T 223.23 Methods for Chemical Analysis of Iron, Steel and Alloy - The Dimethylglyoxime Spectrophotometric Method for the Determination of Nickel Content

GB/T 223.26 Iron, Steel and Alloy - Determination of Molybdenum Content - The Thiocyanate Spectrophotometric Method

GB/T 223.37 Methods for Chemical Analysis of Iron, Steel and Alloy - the Indophenol Blue Photometric Method for the Determination of Nitrogen Content after Distillation Separation

GB/T 223.59 Iron, Steel and Alloy - Determination of Phosphorus Content - Bismuth Phosphomolybdate Blue Spectrophotometric Method and Antimony Phosphomolybdate Blue Spectrophotometric Method

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 223.67 Iron, Steel and Alloy - Determination of Sulfur Content - Methylene Blue Spectrophotometric Method

GB/T 223.69 Iron, Steel and Alloy - Determination of Carbon Contents - Gas-volumetric Method after Combustion in the Pipe Furnace

GB/T 223.72 Iron, Steel and Alloy - Determination of Sulfur Content - Gravimetric Method

GB/T 224 Determination of Depth of Decarburization of Steels

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

GB/T 2101 General Provisions on Acceptance, Package, Marking and Quality Certificate for Profile Steel

GB/T 2975 Steel and Steel Products - Location and Preparation of Test Pieces for Mechanical Testing

GB/T 4336 Carbon and Low-Alloy Steel - Determination of Multi-Element Contents -Spark Discharge Atomic Emission Spectrometric Method (Routine Method)

GB/T 6394 Metal - Methods for Estimating the Average Grain Size

GB/T 8170 Rules of Rounding off for Numerical Values & Expression and Judgement of Limiting Values

GB/T 10561 Steel - Determination of Content of Nonmetallic Inclusions - Micrographic Method Using Standards Diagrams

GB/T 13298 Metal - Inspection Method of Microstructure

GB/T 14981-2009 Dimension Shape Mass and Tolerance for Hot-Rolled Round Wire Rod

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

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

GB/T 24242.1-2009 Non-Alloy Steel Wire Rods for Conversion to Wire—Part 1: General Requirements

YB/T 169 Metallographic Test Method for the Sorbit Percent in the High Carbon Steel Wire Rod

YB/T 4411 Evaluation Method for Center Martensite of High Carbon Steel Wire Rod

YB/T 4412 Evaluation Method for Reticular Cementite of High Carbon Steel Wire Rod

### 3 Terms and Definitions

The following terms and definitions are applicable to this document.

#### 3.1 Easy drawing cooling: EDC

It is one easy drawing cooling process. After the wire rod spinning, it quickly enters into the water medium for cooling, and finish the organizational transition. Compared with the ordinary air-cooled process, the wire rod cooling in water medium is featured by high uniformity and fast cooling speed; it is conducive to increase the sorbite rate and expand the refine sheet spacing, and improve the processing performance of the wire rod.

#### 3.2 Wire rods for conversion to wire without intermediate heat treatment

For the wire rod produced by adopting the EDC process, the organizational performance of wire rod can reach or be close to the level of lead bath; so the steel wire can be directly pulled-out, which eliminates the intermediate and final lead bath, salt bath, and the like heat treatment process.

#### 3.3 Total reduction of area

### **9.3 Sampling quantity**

The sampling quantity for each item inspection of wire rod shall conform to the provisions of Table 5.

### **9.4 Re-inspection and judgment**

The re-inspection and judgment of wire rod shall conform to the provisions of GB/T 17505.

## **10 Rounding off for Values**

The rounding off for values of each item inspection results of wire rod shall conform to the provisions of GB/T 8170.

## **11 Package, Marking and Quality Certificate**

The package, marking and quality certificate of wire rod shall conform to the provisions of GB/T 2101. Other special package and protection requirements can be adopted through the negotiation between the supplier and the purchaser, and indicated in the contract.

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