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Spring Steels for Automotive Suspension System – Part 1: Hot Rolled Spring Steel Flat Bars

汽车悬架系统用弹簧钢 第 1 部分：热轧扁钢

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Foreword

GB/T 33164 *Spring Steels for Automotive Suspension System* can be divided into the following two parts:

- Part 1: Hot Rolled Spring Steel Flat Bars;
- Part 2: Hot Rolled Round Steel Bar and Wire Rod.

This Part belongs to Part 1 of GB/T 33164.

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

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

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

Drafting organizations of this Part: Fangda Special Steel Technology Co., Ltd., Qingdao Special Steel Co., Ltd., and China Metallurgical Information and Standardization Institute.

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Spring Steels for Automotive Suspension System – Part 1: Hot Rolled Spring Steel Flat Bars

1 Scope

This Part of GB/T 33164 specifies the ordering contents, dimension, shape, weight and permissible deviation, technical requirements, test methods, inspection rules, package, mark and quality certificate, etc. of hot rolled spring steel flat bars for automotive suspension system.

This Part is applicable to the hot rolled spring steel flat bars for automotive suspension system (hereinafter refers to as flat bar) with width no greater than 160mm, thickness no greater than 60mm.

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 Permissible Tolerances for Chemical Composition of Steel Products

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 223.11 Methods for Chemical Analysis of Iron, Steel and Alloy - Ammonium Sulfate Oxidation Volumetric Method for the Determination of Chromium Content

GB/T 223.13 Methods for Chemical Analysis of Iron, Steel and Alloy - the Ammonium Ferrous Sulfate Titration Method for the Determination of Vanadium 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 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 223.59 Iron, Steel and Alloy - Determination of Phosphorus Content - Bismuth Phosphomolybdate Blue Spectrophotometric Method and Antimony Phosphomolybdate Blue Spectrophotometric Method

GB/T 223.60 Methods for Chemical Analysis of Iron, Steel and Alloy - The Perchloric Acid Dehydration Gravimetric Method for the Determination of Silicon Content

GB/T 223.64 Iron, Steel, and Alloy – Determination of Manganese Content – Flame Atomic Absorption Spectrometric Method

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

GB/T 223.75 Iron Steel and Alloy - Determination of Boron Content - Methanol Distillation-Curcumin Photometric Method

GB/T 223.76 Methods for Chemical Analysis of Iron, Steel and Alloy - The Flame Atomic Absorption Spectrometric Method for the Determination of Vanadium Content

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

GB/T 224 Determination of Depth of Decarburization of Steel

GB/T 225 Steel – Hardenability Test by End Quenching (Jominy Test)

GB/T 226 Test Method for Macrostructure and Defect of Steel by Etching

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 1222 Spring Steel

GB/T 1979 Standard Diagrams for macrostructure and Defect of Structural Steel

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 7736 Ultrasonic Inspecting Method for Macro-Structure and Imperfection of Steel

GB/T 8170-2008 Rules of Rounding off for Numerical Values & Expression and Judgement of Limiting Values

GB/T 10561-2005 Steel - Determination of Content of Nonmetallic Inclusions - Micrographic Method Using Standards Diagrams

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

GB/T 13299 Steel - Determination of Microstructure

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 20213 Expand Perlite Powder for Firecrackers

3 Ordering Contents

The ordering contract or order form in this Part include the following contents:

- a) Standard number of this Part;
- b) Product name;
- c) Grade;
- d) Weight (or quantity);
- e) Dimension and accuracy (see Clause 4);
- f) Group of non-metallic inclusions (see Table 12);
- g) Special requirements (if have, see Sub-clause 5.11).

GB/T 223.64, GB/T 223.72, GB/T 223.75, GB/T 223.76, GB/T 223.86, GB/T 4336, GB/T 20123, or general test method; however, when arbitrating, it shall abide by GB/T 223.5, GB/T 223.11, GB/T 223.13, GB/T 223.19, GB/T 223.23, GB/T 223.26, GB/T 223.59, GB/T 223.60, GB/T 223.64, GB/T 223.72, GB/T 223.75, GB/T 223.76, GB/T 223.86.

7 Inspection Rules

7.1 Inspection and acceptance

7.1.1 The exit-factory inspection and acceptance of steel shall be performed by the Quality Technical Supervision Department of the supplier.

7.1.2 The supplier shall ensure the delivered steel to conform to the provisions of this Standard or contract; if necessary, the purchaser shall have the right to perform inspection and acceptance against any inspection item specified by this Standard or contract.

7.2 Batching rules

The steel shall be performed inspection and acceptance as per batch; each batch consists of the steel with the same grade, the same furnace number, the same cross-section shape, and the same dimension.

7.3 Sampling quantity and sampling position

The sampling quantity and sampling position of each batch of steel shall conform to the provisions of Table 14.

7.4 Re-inspection and judgment rules

7.4.1 The re-inspection and judgment rules of steel shall be performed as per the provisions of GB/T 17505.

7.4.2 If the supplier can guarantee the steel qualified, the inspection results on oxygen content, mechanical property, macrostructure, end hardenability, non-metallic inclusion of steel with the same furnace number are allowed to replace the bar by billet, and replace the small one by the large one.

7.4.3 The inspection and testing results of bar shall be rounded off, by adopting rounding value comparison method, to the same numerical digit marked by the standard digit of specified value; the rounding off rules shall conform to the provisions of Clause 3 in GB/T 8170-2008.

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