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GB/T 20564.3-2017

Replacing GB/T 20564.3-2007

**Continuously Cold Rolled High Strength
Steel Sheet and Strip for Automobile –
Part 3: High Strength Interstitial Free Steel**

汽车用高强度冷连轧钢板及钢带 第3部分：高强度无间隙钢

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Foreword

GB/T 20564 *Continuously Cold Rolled High Strength Steel Sheet and Strip for Automobile* can be divided into 11 parts:

- Part 1: Bake Hardening Steel;
- Part 2: Dual Phase Steel;
- Part 3: High Strength Interstitial Free Steel;
- Part 4: High Strength Low Alloy Steel;
- Part 5: Isotropic Steel;
- Part 6: Transformation Induced Plasticity Steel;
- Part 7: Martensitic Steel;
- Part 8: Complex Phase Steel;
- Part 9: Quenching and Partitioning Steel;
- Part 10: Twinning Induced Plasticity Steel;
- Part 11: Carbon Manganese Steel.

This Part belongs to Part 1 of GB/T 20564.

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

This Part replaced GB/T 20564.3-2007 *Continuously Cold Rolled High Strength Steel Sheet and Strip for Automobile – Part 3: High Strength Interstitial Free Steel*. Compared with GB/T 20564.3-2007, this Part has the major technical changes as follows:

- Modify the nominal thickness range (see Clause 1 of this Edition; Clause 1 of Edition 2007);
- Add risk warning for non-oiled products and regulations on production completion date (see 7.3.2 of this Edition);
- Add explanation on the guarantee period of mechanical properties (see 7.4.1 of this Edition);
- Add provisions for the mechanical properties, when supplying products as per the specified parts (see 7.4.3 of this Edition);

Continuously Cold Rolled High Strength Steel Sheet and Strip for Automobile – Part 3: High Strength Interstitial Free Steel

1 Scope

This Part of GB/T 20564 specifies the terms and definitions, classification and grade expression method, ordering contents, dimension, appearance, weight, technical requirements, test methods, inspection rules, package, mark and quality certificate of cold rolled high strength interstitial free steel sheet and strip.

This Part is applicable to the steel sheet and strip with thickness of 0.50mm ~ 3.00mm (hereinafter referred to as “steel sheet and strip”) used for manufacturing automobile external and internal plates and partial structures.

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 223.5 Steel and Iron - Determination of Acid-Soluble Silicon and Total Silicon Content - Reduced Molybdsilicate Spectrophotometric Method

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

GB/T 223.14 Methods for Chemical Analysis of Iron, Steel and Alloy - The N-Benzoyl-N-Phenylhydroxylamine Extraction Photometric Method for the Determination of Vanadium Content

GB/T 223.16 Methods for Chemical Analysis of Iron, Steel and Alloy - The Chromotropic Acid Photometric Method for the Determination of Titanium Content

GB/T 223.40 Iron, Steel and Alloy - Determination of Niobium Content by the Sulphochlorophenol S 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 223.64 Iron, Steel and Alloy - Determination of Manganese Content - Flame Atomic Absorption Spectrometric Method

GB/T 223.78 Methods for Chemical Analysis of Iron, Steel and Alloy - Curcumin Spectrophotometric Method for the Determination of Boron Content

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

GB/T 228.1-2010 Metallic Materials - Tensile Testing - Part 1: Method of Test at Room Temperature

GB/T 247 General Rule of Package Mark and Certification for Steel Plates (Sheets) and Strips

GB/T 708 Dimension, Shape, Weight, and Tolerance for Cold-Rolled Steel Plate and Strip

GB/T 2523 Measuring Method of Surface Roughness and Peak Count for Cold-Rolled Metal Sheet (Strip)

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 5027 Metallic Materials-Sheet and Strip - Determination of Plastic Strain Ratio (r-values)

GB/T 5028 Metallic Materials-Sheet and Strip - Determination of Tensile Strain Hardening Exponent (n-Values)

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

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 20123 Steel and Iron - Determination of Total Carbon and Sulfur Content Infrared Absorption Method after Combustion in an Induction Furnace (Routine

products in this Part shall be delivered as per the ordinary dimension and roughness accuracy, relative-high surface, pitting surface structure, cutting edge state; and the packaging mode shall abide by the packaging mode provided by the supplier.

6 Dimension, Appearance, Weight

The dimension, appearance, weight and allowable tolerance of steel sheet and strip shall conform to the provisions of GB/T 708.

7 Technical Requirements

7.1 Chemical compositions

The reference values for the chemical compositions (smelting analysis) of steel can refer to Appendix A. If the purchaser has the requirements for the chemical compositions; it shall be negotiated when ordering. Approximate comparison between domestic and foreign standard grades can refer to Appendix B.

7.2 Smelting method

The steel used for steel sheet and strip shall be smelted by oxygen converter or electric furnace; unless otherwise specified, the smelting method shall be selected by the supplier.

7.3 Delivery state

7.3.1 Steel sheet and strip shall be delivered in a flat state after annealing.

7.3.2 Steel sheet and strip are usually supplied with oil; the applied oil film shall be removed by aqueous alkaline solution or conventional solution; under general packaging, transporting, loading/unloading, storing conditions, the supplier shall guarantee that the steel sheet and strip surface shall not become rusty within 6 months since the completion date of the production. If the purchaser request that the product shall be supplied without oil, it shall be negotiated when ordering.

NOTE: for the non-oiled products required by the purchaser, they may become rusty, or the surface may be slightly scratched during the transporting, loading/unloading, storing and using period.

7.4 Mechanical properties

7.4.1 The supplier shall guarantee that the mechanical properties (excluding the bake hardening value) of steel sheet and strip shall conform to the provisions of Table 4 within 6 months since the completion date of production.