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**Continuously Cold Rolled High Strength Steel Sheet and
Strip for Automobile – Part 13: Medium Manganese Steel**

汽车用高强度冷连轧钢板及钢带 第 13 部分：中锰钢

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Table of Contents

Foreword.....	3
Introduction.....	5
1 Scope.....	7
2 Normative References.....	7
3 Terms and Definitions.....	8
4 Designation Expression and Classification.....	9
5 Order Contents.....	10
6 Size, Shape and Weight.....	10
7 Technical Requirements.....	10
8 Test Method	12
9 Inspection Rules.....	13
10 Packaging, Marking and Quality Certificate	13
Appendix A (Informative) Reference Value on Chemical Composition (Smelting Analysis) of Steel.....	14
Bibliography	15

Foreword

This Document was drafted as per the rules specified in GB/T 1.1-2020 *Directives for Standardization – Part 1: Rules for the Structure and Drafting of Standardizing Documents*.

This Document is Part 13 of GB/T 20564 *Continuously Cold Rolled High Strength Steel Sheet and Strip for Automobile*. GB/T 20564 consists of the following 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;
- Part 12: Dual Phase Steel with high Formability;
- Part 13: Medium Manganese Steel;
- Part 14: Low Density Steel.

Please note some contents of this Document may involve patents. The issuing agency of this Document shall not assume the responsibility to identify these patents.

This Document was proposed by China Iron & Steel Association.

This Document shall be under the jurisdiction of National Technical Committee on Steel of Standardization Administration of China (SAC/TC 183).

Drafting organizations of this Document: Angang Steel Company Limited; China Metallurgical Information and Standardization Institute; Hunan Valin Lianyuan Iron and Steel Co., Ltd.; and Shougang Group Co., Ltd.

Continuously Cold Rolled High Strength Steel Sheet and Strip for Automobile – Part 13: Medium Manganese Steel

1 Scope

This Document specifies the designation expression method and classification, ordering content, size, shape, weight, technical requirements, test methods, inspection rules, packaging, marking and quality certificate of continuously cold-rolled medium-manganese high-strength steel sheets and strips for automobile.

This Document applies to continuously cold-rolled medium-manganese high-strength steel sheets and strips (hereinafter referred to as "steel sheets and strips") with a thickness of 1.0mm~2.5mm, which are mainly used to make structural parts and reinforcement parts of the automobile.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in 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) is applicable to this Document.

GB/T 223.4 Alloyed steel - Determination of manganese content - Potentiometric or visual titration method

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 - Chrom azurol S photometric method

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 223.76 Methods for chemical analysis of iron, steel and alloy The flame atomic

absorption spectrometric method for the determination of vanadium content

GB/T 223.84 Steel and iron - Determination of titanium content - Diantipyrilmethane spectrophotometric method

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 228.1-2021 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 strip and sheet

GB/T 2523 Measuring method of surface roughness, peak count and waviness for cold-rolled metal sheet and strip

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

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

3 Terms and Definitions

For the purposes of this Document, the following terms and definitions apply.

3.1 Medium manganese steel

The steel with manganese content of 3% ~ 10%; it forms a complex phase structure containing metastable austenite through reverse transformation of austenite; its strength and plasticity are improved through phase change induced plasticity or twin induced plasticity; and its strong plastic product is generally no less than 30 GPa%.

5 Order Contents

5.1 A contract or order based on this Document includes the following contents:

- a) Product name (steel sheet or strip);
- b) This Document number;
- c) Designation;
- d) Specification, dimension, and unevenness accuracy;
- e) Surface quality level;
- f) Surface structure;
- g) Edge state;
- h) Packaging method;
- i) Weight;
- j) Purpose;
- k) Other special requirements.

5.2 If the size and unevenness accuracy, surface quality level, surface structure type, edge condition, packaging and other information are not specified in the order contract, the products in this Document shall be supplied as per the cutting-edge steel sheets and strips based on ordinary size and unevenness accuracy, higher surface, and pitting surface structure. They are packaged according to the packaging method provided by the supplier.

6 Size, Shape and Weight

The size, shape, weight and tolerance of steel sheets and strips shall comply with the provisions of GB/T 708.

7 Technical Requirements

7.1 Chemical composition

See Appendix A for reference values of chemical composition (smelting analysis) of steel. If there are other special requirements for chemical composition, they shall be negotiated when ordering.

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