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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 20564.2-2017

Replacing GB/T 20564.2-2006

**Continuously cold-rolled high strength steel sheet and strip for
automobiles - Part 2: Dual phase steel**

汽车用高强度冷连轧钢板及钢带 第2部分：双相钢

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Foreword

GB/T 20564 Continuously Cold Rolled High Strength Steel Sheet and Strip can be divided into the following 11 parts.

- 1.Brake Hardening Steel;
- 2.Dual Phase Steel;
- 3.High Strength Interstitial Free Steel;
- 4.High Strength Low Alloy Steel;
- 5.Isotropic Steel;
- 6.Transformation Induced Plasticity Steel;
- 7.Martensitic Steel;
- 8.Complex Phase Steel;
- 9.Quenching and Partitioning Steel;
- 10.Twinning Induced Plasticity Steel;
- 11.Carbon Manganese Steel. This Part belongs to Part 2 of GB/T 20564. This Part was

drafted as per the rules specified in GB/T 1.1-2009. This Part replaced GB/T 20564.2-2006 Continuously Cold Rolled High Strength Steel Sheet and Strip - Part

2. Dual Phase Steel. Compared with GB/T 20564.2-2006, this Part has the major technical changes as follows:

--- Modified the nominal thickness range (see Clause 1 of this Edition; Clause 1 of 2006 Edition);

1 Scope

China's national standard for dual phase steel sheet for automotive use. It is Part 2 of GB/T 20564 and specifies the terms and definitions, the classification and grade designation, the dimensions, shape and weight, the technical requirements, the test methods, the inspection rules, and the packaging, marking and quality certificate of cold-rolled dual phase steel sheet and strip. Dual phase steel is the workhorse of the modern car body and the first of the advanced high strength steels to reach volume production. Its microstructure is exactly what the name says: hard islands of martensite dispersed in a soft ferrite matrix, produced by intercritical annealing and controlled cooling. The combination behaves unlike either constituent. The soft ferrite gives it a low yield strength and a continuous, smooth yielding curve with no yield point elongation, so it forms without stretcher strain; the martensite gives a very high work hardening rate, so the material strengthens rapidly as it deforms, which spreads the strain over the whole panel instead of letting it localise into a neck. The result is a steel that can be pressed into structural shapes and ends up far stronger than it started, which is how body-in-white mass has been reduced while crash performance has improved. The properties depend entirely on the martensite fraction and its distribution, and therefore on the annealing and cooling schedule rather than on composition alone. So the standard grades the material by tensile strength and specifies the yield strength range, the elongation, the yield ratio and the work hardening exponent - the last being the property the press shop actually depends on - together with the test methods, the dimensional tolerances and the surface classes. Issued on 7 September 2017 and in force since 1 June 2018, it replaces GB/T 20564.2-2006.

This Part of GB/T 20564 specifies the terms and definitions, classification and grade expression method, ordering content, dimension, shape, weight, technical requirements, test methods, inspection rules, package, marking and quality certificate of cold rolled high strength dual phase steel sheet and strip. This Part is applicable to the steel sheet and strip with thickness of 0.50mm~3.00mm for manufacturing automotive structural parts, reinforcement parts and some internal and external plates (hereinafter referred to as "steel sheet and strip").

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 223.4 Iron, Steel and Alloy - 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 Aluminium Content - Chrom Azurol S Photometric Method

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 223.26 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

3 Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 Dual Phase Steel. DP The steel microstructure is mainly the ferrite and martensite, there is also small part of bainite.

4.1 Classification

4.1.1 The usage and classification of steel sheet and strip can refer to Table 1.

4.2 Grade expression method The grade of steel sheet and strip consists of three parts, namely, the initials of "Cold Rolled", specified minimum yield strength value/ specified minimum tensile strength value, and initials of "Dual Phase".

5 Ordering Content

5.1 The ordering contract or ordering list shall contain the following contents as per this Part.

5.2 If the dimension and roughness accuracy, surface quality level, surface structure type, edge state, package and the like information are not indicated in the ordering contract; then

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

6 Dimension, Shape and Weight

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

7 Technical Requirements

7.1 Chemical compositions The reference values of chemical compositions (melting analysis) of steel can refer to Appendix A.

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

7.4 Mechanical properties

7.4.1 The supplier shall guarantee the mechanical properties of steel sheet and plate conform to the provisions of Table 4 within 6 months since the manufacture completion date.

7.5 Welding The users can determine the appropriate welding process based on the chemical compositions and strength level; if necessary, they can also consult the manufacturer.

7.6 Surface quality

7.6.1 The surface of steel sheet and strip shall be exempted from the scars, cracks, inclusions, and the like defects that may be harmful for the use; the steel sheet and strip shall not have the lamination.

7.6.2 The quality of each surface of steel sheet and strip shall conform to the provisions of Table 5.

7.7 Surface structure The surface structure of steel sheet and strip shall conform to the provisions of Table

6.If the purchaser has special requirements on roughness, it shall be negotiated when ordering.

8 Test Methods

8.1 The analysis method of steel chemical compositions shall be performed as per the