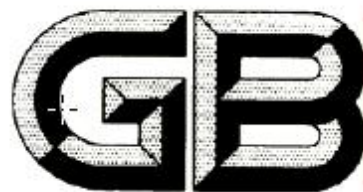


ICS 77.140.50  
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# **National Standard of the People's Republic of China**

GB912 - XXXX  
GB/T 912-1989 **is annulled**

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## **Hot-rolled sheets and strips of carbon structural steels and high strength low alloy structural steels**

**(ISO4995:2001 (E), ISO4996:1999 (E), NEQ)**

Draft for approval

Issue Date: 200X – XX – XX

Implementation Date: 200X – XX – XX

**Issued by the General Administration of Quality Supervision, Inspection and  
Quarantine  
of the People's Republic of China**

**Standardisation Administration of the People's Republic of China (SAC)**

## Foreword

**This Standard contains mandatory provisions; sections 5.1.2, 5.4.1, 5.4.3, and 8.2 are mandatory articles.**

The consistency of this Standard with ISO 4995:2000 (E), Hot-rolled steel sheet of structural quality (English version) and ISO 4996:1999 (E), Hot-rolled steel sheet of high yield stress structural quality (English version) is non-equivalent.

**Standard GB/T 912-1989, Hot-rolled plain carbon and low alloy structural steel sheets and strips is annulled from the date of implementation of this Standard.**

In comparison with GB/T 912-1989, the main changes to this Standard are:

- the Standard has been modified from being a recommendatory standard to a mandatory provisions standard;
- relevant contents regarding rolled steel sheet in the original standard have been cancelled;
- the product thickness range has been revised;
- the content of the goods order has been added;
- the goods delivery state has been changed;
- the requirements for appearance quality have been modified.

This standard is proposed by the China Iron and Steel Association.

This standard is under the jurisdiction of the National Technical Committee for Standardisation of Iron and Steel.

The main organisations that participated in the drafting of this standard are:

Guangdong Entry-Exit Inspection and Quarantine Bureau;  
China Metallurgical Information & Standardisation Institute;  
Benxi Iron & Steel (Group) Co., Ltd.

Main drafters of this standard: LiChengMing, PengXiaoGang, WangXiaoHu, ZhangZhenKun, ZhouQi, ZhangXianFeng, LiuJianBin, CaoBiao, PeiYu.

This standard was first issued in 1989.

# Hot-rolled sheets and strips of carbon structural steels and high strength low alloy structural steels

## 1 Scope

This standard sets the requirements for the testing methods, inspection rules, packaging, marking, dimensions, appearance, weight, technical requirements, permissible tolerance, content of orders and quality certificates of hot-rolled sheets and strips of carbon structural steels and high strength low alloy structural steels.

This standard applies to hot-rolled sheets and strips of carbon structural steels and high strength low alloy structural steels with a thickness of less than 3mm.

## 2 Normative References

The provisions of the following documents become provisions of this Standard after being referenced. For dated reference documents, all later amendments (excluding corrigendum) and versions do not apply to this Standard; however, the parties to the agreement are encouraged to study whether the latest versions of these documents are applicable. For undated reference documents, the latest versions apply.

GB/T 222 Permissible tolerances for the chemical composition of steel products;

GB/T 223.3 Methods for chemical analysis of iron, steel and alloy - The dianthipyrylmethane phosphomolybdate gravimetric method for the determination of phosphorus content;

GB/T 223.5 Methods for chemical analysis of iron, steel and alloy - The reduced molybdosilicate spectrophotometric method for the determination of acid-soluble silicon content;

GB/T 223.10 Methods for chemical analysis of iron, steel and alloy• The cupferron separation-chrome azurol S photometric method for the determination of aluminium content;

GB/T 223.11 Methods for chemical analysis of iron, steel and alloy - The ammonium persulphate oxidation volumetric method for the determination of chromium content;

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 223.17 Methods for chemical analysis of iron steel and alloy - The dianthipyrylmethane photometric method for the determination of titanium content;

GB/T 223.18 Methods for chemical analysis of iron, steel and alloy - The sodium thiosulphate separation iodimetric method for the determination of copper 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 223.24 Methods for chemical analysis of iron, steel and alloy - The extraction separation - The dimethylglyoxime spectrophotometric method for the determination of nickel content;

GB/T 223.32 Methods for chemical analysis of iron, steel and alloy - The hypophosphite reduction-iodimetric method for the determination of arsenic content;

GB/T 223.37 Methods for chemical analysis of iron steel and alloy - The indophenal blue photometric method for the determination of nitrogen content after distillation separation;

GB/T 223.40 Iron steel and alloy—Determination of niobium content by the sulphochlorophenol-S spectrophotometric method;

GB/T 223.58 Methods for chemical analysis of iron, steel and alloy - The sodium arsenite-sodium nitrite titrimetric method for the determination of manganese content;

GB/T 223.59 Methods for chemical analysis of iron, steel and alloy - The reduced molybdoantimonyl phosphoric acid photometric method for the determination of phosphorus content;

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 223.63 Methods for chemical analysis of iron, steel and alloy - The sodium (potassium) periodate photometric method for the determination of manganese content;

GB/T 223.64 Methods for chemical analysis of iron, steel and alloy - The flame atomic absorption spectrometric method for the determination of manganese content;

GB/T 223.68 Methods for chemical analysis of iron, steel and alloy - The potassium iodate titration method after combustion in the pipe furnace for the determination of sulphur content;

GB/T 223.71 Methods for chemical analysis of iron, steel and alloy - The gravimetric method after combustion in the pipe furnace for the determination of carbon content;

GB/T 223.72 Methods for chemical analysis of iron, steel and alloy - The alumina chromatographic separation-barium sulphate gravimetric method for the determination of sulphur content;

GB/T 228 Metallic materials--Tensile testing at ambient temperature;

GB/T 232 Metallic materials--Bend test;

GB/T 247 General rules of acceptance, packaging, marking and certification for steel plates (sheets) and strips;

GB/T 700 Carbon structural steels;

GB/T 709 Dimension, shape, weight and tolerances for hot-rolled steel plates and sheets;

GB/T 1591 High strength low alloy structural steels;

GB/T 2975 Steel and steel products - Location and preparation of test pieces for mechanical testing (GB/T 2975-1998, eqv ISO 377:1997);

GB/T 4336 Standard test method for spark discharge atomic emission spectrometric analysis of carbon and low-Alloy steel (routine method);

GB/T 17505 Steel and steel products - General technical delivery requirements (GB/T 17505-1998,eqv ISO 404:1992);

GB/T 18253 Steel and steel products - Types of inspection documents (GB/T 18253-2000, eqv ISO 10474: 1991)

GB/T 20066, Steel and iron - Sampling and preparation of samples for the determination of chemical composition (GB/T 20066-2006, ISO14284: 1996 IDT);

YB/T 081 Rule for rounding off numerical values and judgement of testing values for technical standards of metallurgy.

### **3 Order contents**

3.1 According to this Standard, the contract or order form for goods orders should include the following contents:

- a) Standard serial number;
- b) Product name (sheets, strips);
- c) Trademark;
- d) Dimension;
- e) Edge state (edge trimmed EC, edge non-trimmed EM);
- f) Thickness precision (PT.A, PT.B);
- g) Weight;
- h) Delivery state;
- i) Applications;
- j) Special requirements.

3.2 If contents e), f) are not clarified in the purchase contract, the following rules apply:

- a) Strips usually delivered as edge non-trimmed, but delivered sheets cut from strips usually as edge trimmed;
- b) Thickness precision should conform to general precision (PT.A category).

### **4 Dimension, appearance, weight and permissible tolerance**

The dimensions, appearance, weight and permissible tolerances of the strips and sheets

should conform to the requirements set out in GB/T709.

## 5. Technical requirements

### 5.1 Trademark and chemical composition

5.1.1 The trademark and chemical composition of the steel should conform to the requirements set out in GB/T 700 and GB/T 1591.

5.1.2 The content of arsenic in the steel should not exceed 0.080%; the content of arsenic in steel smelted using arsenic mine to smelt pig iron should be decided by the supplier and should be agreed upon by both parties. If there is no arsenic content in the raw materials, it is not necessary to carry out arsenic analysis.

5.1.3 The permissible tolerance of the chemical composition of finished steel sheets and strip products should conform to the requirements set out in GB/T 222.

### 5.2 Smelting methods

The steel should be smelted in a converter or electric furnace.

### 5.3 Delivery state

The delivery state of the steel sheets and strips should be hot rolling state or annealing state.

### 5.4 Mechanical property and technological property

5.4.1 The tensile strength and elongation of the steel sheets and strips should conform to the requirements set out in GB/T700 and GB/T1591; however, elongation is permitted to be lower than 5% of the elongation set out in GB/T700 or GB/T1591 (absolute value).

5.4.2 According to the request of the buyer, the yield strength of the steel sheets and strips may conform to the requirements set out in GB/T700, GB/T1591.

5.4.3 The steel sheets and strips should pass the 180<sup>0</sup>C bend test. The bend diameter of the test sample should conform to the requirements set out in GB/T700, GB/T1591.

5.4.4 According to the requests of the buyer, low alloy structural steels and Q235 carbon structural steels used for cold stamping may undergo the bend test regarding bend diameter equals sample thickness.

### 5.5 Appearance quality

5.5.1 There should be no faults on the surface of the steel sheets and strips which may cause damage to the use of the steel, such as scabs, cracks, folds, inclusions, bubbles and rolled-in scales, and the steel sheets and strips may not be stratified.

5.5.2 Minor faults that do not affect the use of the steel, such as thin layers of scale, iron rust, slight spots, or scratch marks, are permitted on the surface of the steel sheets and strips. The degree of unevenness of these flaws may not exceed one half of the tolerance of the thickness of the steel sheets and strips, and the permissible minimum thickness of the steel sheets and strips should be ensured.

5.5.3 Treatments for steel sheets surfaces are allowed. The treatment location should be level with no edges and corners, and the permissible minimum thickness of the steel sheets and strips should be ensured.

5.5.4 With regard to strips, there is no chance of cutting off a faulty part, and so delivery with faults is permitted; however, faulty part should not exceed 8% of the total length of each roll strip.

## 6. Test methods

6.1 The test items, sample quantity, sample methods and test methods of each batch of steel sheets and strips should conform to the requirements set out in Table 1.

**Table 1 Test item, sample quantity, sample method and test method**

Serial number	Test item	Sample quantity (number)	Sample method	Test method
1	Chemical composition	1 per each furnace	GB/T20066	GB/T223, GB/T4336
2	Tensile test	1	GB/T2975	GB/T228
3	Bend test	1	GB/T2975	GB/T232

6.2 Carry out a visual inspection to check the surface quality of the sheets and strips.

## 7. Test rules

7.1 The Quality and Technology Supervision Department of the supplier should be responsible for the checking and acceptance of the steel sheets and strips. The buyer has the right to carry out checking and acceptance according to any one of the test items set out in this Standard or the purchase contract.

7.2 The acceptance of the steel sheets and strips should be made in the form of batches; each batch of steel sheets and strips should comprise the same trademarks, same furnace numbers, same quality grades, and same delivery states, and the weight of each batch should not exceed 60 tonnes.

7.3 Mixed batches of steel sheets and strips smelted in a steel-smelting furnace with lower nominal capacity should conform to the relevant requirements set out in GB/T700 and GB/T1591.

7.4 The re-checking and determination of steel sheets and strips should conform to the requirements set out in GB/T17505.

## 8 Packaging, marking and quality certificate

8.1 The packaging, marking and quality certificate of the steel sheets and strips should conform to the requirements set out in GB/T247. The type of quality certificate of the sheets and strips may conform to the requirements set out in GB/T18253.

8.2 The supplier should provide illustration marks and quality certificates in Chinese for the sheets and strips.

## 9. Rounding off of numerical value

9.1 The rounding off of numerical values should conform to the requirements set out in YB/T081.