

Translated English of Chinese Standard: GB/T32977-2016

www.ChineseStandard.net

Sales@ChineseStandard.net

GB

NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

ICS 77.140.70

H 40

GB/T 32977-2016

Hot Rolled Improved Corrosion Resisting Steel Sections

改善耐蚀性能热轧型钢

GB/T 32977-2016 How to BUY & immediately GET a full-copy of this standard?

1. www.ChineseStandard.net;
2. Search --> Add to Cart --> Checkout (3-steps);
3. No action is required - Full-copy of this standard will be automatically & immediately delivered to your EMAIL address in 0~25 minutes.
4. Support: Sales@ChineseStandard.net. Wayne, Sales manager

Issued on: August 29, 2016

Implemented on: July 1, 2017

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

Standardization Administration of the People's Republic of China.

Table of Contents

Foreword.....	3
1 Scope	4
2 Normative References.....	4
3 Order Content.....	6
4 Designation System	6
5 Dimensions, Shape, Weight and Tolerances	6
6 Technical Requirements	7
7 Test Method.....	8
8 Inspection Rules	9
9 Packaging, Marking and Quality Certification.....	10
Annex A (Normative) Test Method of Corrosion Resistance for Steel Sections	11

Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard was proposed by China Iron and Steel Association.

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

The drafting organizations: Guangxi Shenglong Metallurgical Co., Ltd., Gangyan Shenghua Engineering & Research Co., Ltd., Central Research Institute of Building and Construction Co., Ltd., Hebei Jinxi Iron & Steel Group Co., Ltd. and China Metallurgical Information and Standardization Institute.

The main drafters of this Standard: Ke Xueli, Zhou Hemin, Wang Changcheng, Du Xianwei, Wang Yujie, Wang Songlin, Zhao Yichen.

Hot Rolled Improved Corrosion Resisting Steel Sections

1 Scope

This Standard specifies the order content, designation system, dimensions, shape, weight and tolerances, technical requirements, test method, inspection rules, packaging, marking and quality certification of hot rolled improved corrosion resisting steel sections (including I sections, channel steel, hot rolled equal-leg angle steel, hot rolled unequal-leg angle steel and hot rolled H sections).

This Standard applies to hot rolled improved corrosion resisting steel sections (hereinafter referred to as steel sections).

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition dated applies to this document. For undated references, the latest edition of the referenced document (including any amendments) applies to this Standard.

GB/T 222 Permissible Tolerances for Chemical Composition of Steel Products

GB/T 223.5 Steel and Iron – Determination of Acid-Soluble Silicon and Total Silicon Content – Reduced Molybdosilicate Spectrophotometric Method

GB/T 223.11 Iron, Steel and Alloy – Determination of Chromium Content – Visual Titration or Potentiometric Titration 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 223.19 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 223.40 Iron, Steel and Alloy – Determination of Niobium Content by the Sulphochlorophenol S Spectrophotometric Method

GB/T 223.49 Methods for Chemical Analysis of Iron, Steel and Alloy Extraction Separation-Chlorophosphonazo mA Spectrophotometric Method for the Determination of the Total Rare Earth Content

GB/T 223.53 Methods for Chemical Analysis of Iron, Steel and Alloy - The Flame Atomic Absorption Spectrophotometric Method for the Determination of Copper Content

GB/T 223.54 Methods for Chemical Analysis of Iron, Steel and Alloy - The Flame Atomic Absorption Spectrophotometric Method for the Determination of Nickel Content

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 223.63 Methods for Chemical Analysis of Iron, Steel and Alloy - The Sodium (Potassium) Periodate Photometric Method for the Determination of Manganese Content

GB/T 223.68 Methods for Chemical Analysis of Iron, Steel and Alloy - The Potassium Iodate Titration Method after Combustion in the Pipe Furnace for the Determination of Sulfur Content

GB/T 223.69 Iron, Steel and Alloy – Determination of Carbon Content – Gas-volumetric Method after Combustion in the Pipe Furnace

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

GB/T 229 Metallic Materials – Charpy Pendulum Impact Test Method

GB/T 232 Metallic Materials – Bend Test

GB/T 700 Carbon Structural Steels

GB/T 1266 Chemical Reagent – Sodium Chloride

GB/T 1591 High Strength Low Alloy Structural Steels

GB/T 2101 General Requirement of Acceptance, Packaging, Marking and Certification for Section Steel

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

GB/T 4336 Standard Test Method for Spark Discharge Atomic Emission Spectrometric Analysis of Carbon and Low-alloy Steel (Routine Method)

GB/T 11263 Hot-rolled H and Cut T Section Steel

elements may be added, such as Nb, V, Ti and Al.

6.1.3 In order to improve the corrosion resistance performance of steel sections, one or more alloying elements may be added: Mo $\leq$ 0.3 0%, RE $\leq$ 0.0 5% and so on.

6.1.4 The content of the residual elements Cu in steel shall not be more than 0.30%.

6.1.5 The tolerances of the chemical compositions of finished steel sections shall meet the specifications of GB/T 222.

6.2 Mechanical property and technological property

The mechanical property and technological property of steel sections shall meet the specifications of corresponding strength grades of GB/T 700 and GB/T 1591.

6.3 Delivery state

Steel sections shall be delivered in the state of hot rolling or controlled rolling.

6.4 Surface finish

6.4.1 The surface of steel section shall be free from cracks, overlays, scars, layers and inclusions.

6.4.2 The defects are allowed on the surface, such as local crazes, pits, indentations, scratches and scale impressions, but they shall not exceed the tolerances of the dimensions of steel sections.

6.4.3 It is allowed to remove the defects on the surface of steel sections. The defect removal spots shall be smooth without corners. The width of removal shall not be less than 5 times of the depth of removal. The dimensions of steel sections after removal shall not exceed the tolerances of dimensions.

6.4.4 The ends of steel section shall be free from burrs more than 5 mm.

6.5 Corrosion resistance

The corrosion resistance of steel sections shall be compared with the designation Q235 in GB/T 700 in accordance with the evaluation method in Annex A; the relative corrosion rate shall be lower than 60%. The relative corrosion rate of steel sections is calculated in accordance with Formula (1):

Relative corrosion rate = (average corrosion rate of corrosion resisting steel $\div$ average corrosion rate of Q235) $\times$ 100% (1)

7 Test Method

7.1 The test items, sampling quantity and test method for each batch of steel shall

A.3.3.2 Preparation of solution: Use 20 g of analytically pure sodium chloride conforming to GB/T 1266 to dissolve in 980 mL of deionized water or distilled water of conductivity not exceeding $20 \mu\text{S}\cdot\text{cm}^{-1}$ under room temperature. The pH value of this solution is within the range 6.5 to 7.5.

A.3.3.3 Replenisher: Deionized or distilled water.

A.3.3.4 The determination of chloride concentration: as required by GB/T 11896.

A.4 Test method

A.4.1 Clean the surface of the test pieces before the test; remove burrs and debris from the holes; and wash them. During washing, first use gasoline or petroleum ether, then use absolute ethyl alcohol, and then use acetone. Use hot air to dry them after washing.

A.4.2 Measure and record the original weight (accurate to 1 mg), external dimensions (accurate to 0.1 mm) and surface roughness and other aspects of the test pieces.

A.4.3 The test pieces shall be suspended with non-woven materials; the height of suspension shall be maintained consistent; and the position of the test pieces shall be recorded. When suspended with a plastic insulated conductor, attention shall be paid to prevent the metal wire core from contacting the solution or test pieces.

A.4.4 Pour a newly-prepared test solution into a tank to a prescribed scale: the total quantity is (10.0 ± 0.5) L. Close the door of the chamber and start up the equipment. Within half an hour, the temperature in the chamber achieves the conditions required by the test.

A.4.5 During the test, try to minimize the number of opening the chamber door, not exceeding 2 times each day at most, each time not exceeding 2 min and closing the air cycle machine when opening the door.

A.4.6 Add replenishing liquid every 24 hours. The method of replenishing: first discharge 1.5 L of the original solution in each tank, then add 2.0 L of replenishing water. The replenishing liquid shall be prepared in accordance with A.3.3.3; it shall be

This is an excerpt of the PDF (Some pages are marked off intentionally)

Full-copy PDF can be purchased from 1 of 2 websites:

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

----- The End -----