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Structural steels - Part 1: General technical delivery condition for hot-rolled products

结构钢　第 1 部分:热轧产品一般交货技术条件

(ISO 630-1:2011, MOD)

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Standardization Administration Committee.

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Foreword

GB/T 34560 "Structural steels" consists of 6 parts:

- Part 1: General technical delivery condition for hot-rolled products;
- Part 2: Technical delivery conditions for structural steels for general purposes;
- Part 3: Technical delivery conditions for fine-grained structural steel;
- Part 4: Technical delivery conditions for high yield strength quenched and tempered structural steel plates;
- Part 5: Technical delivery condition for atmospheric corrosion resisting steels;
- Part 6: Technical delivery conditions for seismic-improved structural steels for building.

This Part is Part 1 of GB/T 34560.

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

This Part uses redrafting method to modify and adopt ISO 630-1:2011 "Structural steels - Part 1: General technical delivery conditions for hot-rolled products".

Compared with ISO 630-1:2011, this Part made an adjustment in the structure. Annex A lists the control list on clause number between this Part and ISO 630-1:2011.

Compared with ISO 630-1:2011, there is technical differences in this Part. The terms involved in these differences have been marked by a vertical single line (|) at the outer margins. Annex B gives a list of the corresponding technical differences and reasons.

For easy use, this Part made the following editorial modifications:

- deleted Annex A of ISO 630-1:2011;
- deleted Bibliography of ISO 630-1:2011.

This Part was proposed by China Iron and Steel Association.

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

Structural steels - Part 1: General technical delivery condition for hot-rolled products

1 Scope

This Part of GB/T 34560 specifies the terms and definitions, classification and designation representation method, order content, size, shape, weight, technical requirements, inspection rules, test methods, packaging, marks and quality certificate of structural steels.

This Part is applicable to hot-rolled steel plate (band), wide flat steel, section steel, steel bar for welding, bolting, and riveting engineering structure use (hereinafter referred to as "steels").

The specific requirements of structural steels are given in each part of GB/T 34560.

2 Normative references

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

GB/T 221, *Notations for designations of iron and steel*

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

GB/T 223 (all parts), *Methods for chemical analysis of iron, steel and alloy*

GB/T 228.1, *Metallic materials - Tensile testing - Part 1 : Method of test at room temperature* (GB/T 228.1-2010, ISO 6892-1:2009, MOD)

GB/T 229, *Charpy Notch Impact Test* (GB/T 229-2007, ISO148-1:2006, MOD)

GB/T 232, *Metallic materials - Bend test* (GB/T 232-2010, ISO 7438:1985, MOD)

GB/T 247, *General rule of package, mark and certification for steel plates (sheets) and strips*

GB/T 702, *Hot-rolled steel bars - Size, shape, weight and tolerances*

GB/T 706, *Hot rolled section steel*

GB/T 709, *Size, shape, weight and allowable deviation of hot-rolled steel plates and strips*

GB/T 2101, *General requirement of acceptance packaging marking and certification for section steel*

GB/T 2970, *Thicker steel plate - Method for ultrasonic inspection*

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 5313, *Steel plates with through-thickness characteristics*

GB/T 8170, *Rules of rounding off for numerical values & expression and judgement of limiting values*

GB/T 11263, *Hot-rolled H and cut T section steel*

GB/T 13304.1, *Steels classification - Part 1: Classification of according to chemical composition* (GB/T 13304.1-2008, ISO 4948-1:1982, MOD)

GB/T 13304.2, *Steels Classification - Part 2: Classification of According to Main Quality Classes and Main Property or Application* (GB/T 13304.2-2008, ISO 4948-2:1981, MOD)

GB/T 14977, *General requirement for surface condition of hot-rolled steel plates*

GB/T 15574, *Steel products classification* (GB/T 15574-2016, ISO 6829:2014, MOD)

GB/T 17505, *Steel and steel products General technical delivery requirements* (GB/T 17505-2016, ISO 404:2013, MOD)

GB/T 17600.1, *Steel - Conversion of elongation values - Part 1: Carbon and low alloy steels* (GB/T 17600.1-1998, eqv ISO 2566-1:1984)

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)

GB/T 28300, *Surface quality classes for hot-rolled bars and rods technical*

g) additional inspection (see 7.7);

h) chemical analysis methods (see 9.1);

i) test frequency (see 8.3.2);

j) impact test specimen direction (see 9.3);

k) packaging and marks (see Clause 10);

l) hot galvanizing method agreed upon under relevant standards;

m) non-destructive inspection negotiated under relevant standards.

6 Size, shape, weight

6.1 The size, shape, weight and tolerance of hot-rolled steel bar shall comply with the provisions of GB/T 702.

6.2 The size, shape, weight and tolerance of hot-rolled steel shall comply with the provisions of GB/T 706.

6.3 The size, shape, weight and tolerance of hot-rolled steel plate and strip shall comply with the provisions of GB/T 709.

6.4 The size, shape, weight and tolerance of hot-rolled H-section steel and some T-shaped steel shall comply with the provisions of GB/T 11263.

6.5 After negotiation between the supplier and the purchaser, the steels of other sizes, shapes and tolerances can be supplied.

7 Technical requirements

7.1 Smelting method

Unless otherwise specified in the contract or order, the smelting method of steel is generally selected by the supplier in accordance with the requirements of individual parts of GB/T 34560. After negotiation between the supplier and the purchaser, and indicated in the contract, other smelting method can be used.

7.2 Delivery status

The delivery status is given in individual parts of GB/T 34560. In accordance with the requirements of individual parts of GB/T 34560, the delivery status is specified by the purchaser and specified in the contract.

7.3 Chemical composition

7.5.1.3 Steel surface defects are allowed to be removed by grinding or other methods. The clearance shall be smooth and free of edges. The clearance depth shall not be greater than the negative deviation of the thickness of the steel plate, and the minimum allowable thickness of the steel plate shall be guaranteed.

7.5.1.4 For the defect on the surface of the steel plate that cannot be cleaned according to the provisions of 7.5.1.3, after negotiation between the supplier and the purchaser, welding repairs can be performed in accordance with the following requirements:

a) use appropriate welding methods;

b) completely remove the harmful defects on the steel plate by using shoveling or grinding equal methods before welding; the depth of the removed part is within 20% of the nominal thickness of the steel plate; the total area of one-sided dressing shall be within 2% of the area of the steel plate;

c) there must be no undercut or overlap on the edge of the welded area of the steel plate; the stack height shall be more than 1.5mm above rolling surface, then use a shovel or mill to remove pile height;

d) heat treatment plate shall be heat-treated again after welding.

7.5.1.5 After negotiating between the supplier and the purchaser, the surface quality of the steel plate can also comply with the requirements of GB/T 14977.

7.5.2 Steel strip and its shear steel plate

7.5.2.1 The surface of the steel strip shall not have defects such as scars, cracks, folds, inclusions, bubbles, and intrusion of the oxide scale, etc., which are harmful to the use. Strips shall not have visually visible layers.

7.5.2.2 The surface of the steel strip is allowed to have partial defects such as thin oxide scale, rust and minor pits, scratches, etc. that do not affect the use. The unevenness shall not exceed half of the thickness tolerance of the strip, and the minimum allowable thickness of the strip shall be guaranteed.

7.5.2.3 The steels are allowed to be delivered with partial defects, but the defective part shall not exceed 6% of the total length of each strip.

7.5.2.4 After negotiations between the supplier and the purchaser, the surface quality of the sheared steel plate can also be implemented in accordance with the provisions of GB/T 14977.

7.5.3 Section steel

shall not be less than 10 mm.

8.4.3 Charpy (V-notch) impact specimen

The preparation of impact test specimens shall meet the requirements of GB/T 229. Steels with a nominal thickness of not less than 12 mm or a nominal diameter of not less than 16 mm shall be prepared from specimens with 10mm × 10mm × 55mm standard impact specimens. Steels with a nominal thickness of 6mm ~ 12mm or a nominal diameter of 12mm ~ 16mm require processing of small-size specimens (10mm × 5mm × 55mm or 10mm × 7.5mm × 55mm). Impact specimen notch shall be perpendicular to the steel surface.

8.4.4 Bending specimen

Preparation of bending specimens shall comply with the provisions of GB/T 232, the specific requirements specified in individual parts of GB/T 34560.

8.5 Re-inspection and determination rules

8.5.1 The re-inspection and determination rules of section steel are carried out according to GB/T 2101.

8.5.2 The re-inspection and determination rules of other steels shall be carried out according to the provisions of GB/T 17505.

8.5.3 When the results of the Charpy (V-notch) test of the steel material are unqualified, the unqualified specimen steel shall be scrapped. Then retake 2 specimens of steel from the remaining steel in the inspection lot. Select a new set of 3 specimens on each specimen steel. The test results of these two sets of specimens shall meet the requirements of 9.3.2a). At this point, 9.3.2b) is no longer applicable.

8.5.4 The analytical values of chemical analysis and mechanical properties use rounding off comparison method. The numerical rounding rules shall meet the requirements of GB/T 8170.

9 Test methods

9.1 Chemical analysis

9.1.1 Unless otherwise specified, chemical analysis methods shall be determined by the supplier.

9.1.2 If there is a dispute over the chemical analysis method, the wet method [such as GB/T 223 (all parts)] or the methods approved by both parties shall be tested.