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Hot Rolled Section Steel

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Standardization Administration of the People's Republic of China.

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Foreword

This Standard integrates and revises GB/T 706-1988 “Hot-rolled Beam Steel - Dimensions, Shape, Weight and Tolerances”, GB/T 707-1988 “Hot-rolled Channel Steel - Dimensions, Shape, Weight and Tolerances”, GB/T 9787-1988 “Hot-rolled Equal-leg Angle Steel - Dimensions, Shape, Weight and Tolerances”, and GB/T 9788-1988 “Hot-rolled Unequal-leg Angle Steel - Dimensions, Shape, Weight and Tolerances” and GB/T 9946-1988 “Hot-rolled L-sectional Steel - Dimensions, Shape, Weight and Tolerances”.

This Standard replaces GB/T 706-1988 “Hot-rolled Beam Steel - Dimensions, Shape, Weight and Tolerances”, GB/T 707-1988 “Hot-rolled Channel Steel - Dimensions, Shape, Weight and Tolerances”, GB/T 9787-1988 “Hot-rolled Equal-leg Angle Steel - Dimensions, Shape, Weight and Tolerances”, and GB/T 9788-1988 “Hot-rolled Unequal-leg angle - Dimensions, Shape, Weight and Tolerances” and GB/T 9946-1988 “Hot-rolled L-sectional Steel - Dimensions, Shape, Weight and Tolerances”.

Compared with GB/T 706-1988, GB/T 707-1988, GB/T 9787-1988, GB/T 9788-1988 and GB/T 9946-1988, the main changes of this Standard are as follows:

- Normative references are added;
- Additional specifications are involved;
- Tolerances for some of the dimensions, shapes are adjusted;
- Technical requirements, and requirements for testing methods, inspection rules, packaging, marking, quality certificate are added;
- Appendix A is added.

Appendix A of this Standard is normative.

This Standard was proposed by China Steel and Iron Association.

This Standard shall be under the jurisdiction of National Steel and Iron Standardization Committee.

Drafting organizations of this Standard: Maanshan Iron and Steel Co., Ltd., Metallurgical Industry Information and Standard Research Institute, Tangshan Iron and Steel Co., Ltd., Laiwu Iron and Steel Co., Ltd., Anshan Baode Iron and Steel Co., Ltd. AND Capital Steel Hongye Iron and Steel Co.

The main drafters of this Standard: Gong Qinghua, Feng Chao, Wang Lijuan, Deng Cuiqing, Du Chuanzhi, Wang Hongxin, Li Guang, Xi Tie, Wu Jiecai, Sun

Hot-rolled section steel

1 Scope

This Standard specifies the dimensions, shape, weight, tolerances, technical requirements, requirements for testing methods, inspection rules, packaging, marking and quality certificate for hot-rolled beam steel, hot-rolled channel steel, hot-rolled equal-leg angle steel, hot-rolled unequal-leg angle steel and hot-rolled L-sectional steel.

This Standard is applicable to hot-rolled equal-leg angle steel, hot-rolled unequal-leg angle steel, hot-rolled L-sectional steel, hot-rolled channel steel and beam steel of which the inner side of the flange has an inclination (hereafter abbreviated as section steel).

2 Normative references

The following normative documents contain the provisions which, through reference in this text, constitute the provisions of this Standard. For dated references, the subsequent amendments (excluding corrections) or revisions of these publications do not apply. However, the parties who enter into agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document applies.

GB/T 228 Metallic Materials - Method for Tensile Testing at Ambient Temperature (GB/T 228-2002, eqv ISO 6892:1998 (E))

GB/T 229 Metallic Materials - Charpy Pendulum Impact Test Method (GB/T 229-2007, ISO 148-1:2006, MOD)

GB/T 232 Metallic Materials - Bending Test Method (GB/T 232-1999, eqv ISO 7438:1985 (E))

GB/T 700 Carbon Structural Steel

GB/T 1591 High Strength Low Alloy Structural Steel

GB/T 2101 General Requirements 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 2975-2008, eqv ISO 377:1997)

3 Dimensions, shape, weight and tolerances

3.1 Dimensions and expression method

3.1.1 The sectional drawings of section steel and their marking symbols are shown in Figure 1 ~ Figure 5.

3.1.2 The sectional dimensions, area, theoretical weight as well as sectional properties shall comply with the requirements in Figure A.1 ~ Figure A.5 in Appendix A.

3.2 Dimensions, shape and tolerances

3.2.1 The dimensions, shape and tolerances for section steel shall comply with the requirements in Figure 1 ~ Figure 3. Depending on the requirements from the demanding party, the dimensions, shape and tolerances for section steel are subject to agreement by both supplying and demanding parties.

3.2.2 The flange end of the beam steel shall be made obtuse; the flange end, shoulder end of channel steel shall be made obtuse so that a round bar whose diameter is 0.18t shall not be able to pass through the roll grooves. The leg end and corner of angle steel shall be made obtuse so that a round bar whose diameter is 0.18t shall not be able to pass through the roll grooves.

3.2.3 The flange slope, web deflection of beam steel and channel steel, the right angle at the corner of angle steel shall be inspected at the place not less than 750 mm from the end.

3.2.4 The tolerance of average flange thickness for beam steel and channel steel shall be ± 0.06t, and shall be inspected on the roll after it is being turned.

3.2.5 Subject to agreement by both parties, the degree of asymmetry for the flange relative to the vertical axis of beam steel shall not exceed half of the tolerance of the same flange.

3.2.6 The section steel shall be free of noticeable distortion.

3.3 Length and tolerances

3.3.1 The usual length of angle steel is 4000 mm ~ 19000 mm, while that of other steel sections is 5000 ~ 19000mm. Depending on the requirement from the demanding party, products of other lengths can also be provided.

3.3.2 The tolerances for cut lengths shall be in accordance with the provisions in the Table 4.

lamination and inclusions.

4.4.2 The hairline, depressions, mechanical pitting, scratches and rolled-in scale are locally allowed on the section steel surface, but shall not exceed the dimensional tolerance for the section steel.

4.4.3 The defects on the surface of section steel are allowed to be removed; the place after removal shall be smooth and free of sharp edges. But the removal in the traverse direction shall not be carried out. The removed width shall not be less than five times of the removed depth. The dimension of the section steel due to removal shall not exceed the dimensional tolerance.

4.4.4 The section steel shall be free of burrs of more than 5 mm.

5 Testing method

5.1 The inspection items, sample quantity and testing method for each steel batch shall be in accordance with the requirements in the Table 6.

Table 6 Inspection items, sample size and testing method

No.	Inspection items	Sample quantity (pcs)	Sampling method	Testing method
1	Chemical ingredient	See the provisions of the standards for the corresponding designations.		
2	Tensile strength	1	GB/T 2975	GB/T 228
3	Bending strength	1		GB/T 232
4	Impact strength at ambient T	3		GB/T 229
5	Impact strength at low T	3		
6	Surface quality	Piece by piece	—	Visually or by measuring tool
7	Dimensions, shape	Piece by piece	—	By measuring tool

5.2 For beam steel and channel steel, the sample shall be taken from its web.

6 Inspection rules

6.1 The inspection and acceptance shall be carried out by the technical quality supervision department from the supplier.

6.2 Group-batching of section steel shall be carried out in accordance with GB/T 700, GB/T 1591 and other corresponding standards.

6.3 Re-inspection and acceptance rules of section steel shall be in accordance with the provisions of GB/T 2101.

7 Packaging, marking and quality certificate

The packaging, marking and quality certificate for section steel shall be in accordance with the provisions of GB/T 2101.

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