

ICS 77.140.50
CCS H 46



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

GB 30814-2014

**Steel plates of carbon steel and low alloy steel for nuclear
power plants**

核电站用碳素钢和低合金钢钢板

(English Translation)

Issued on: June 24, 2014

Implemented on: April 1, 2015

Issued by: Standardization Administration of China

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Foreword

6.1.3,6.6 this standard and Annex A, Annex B, Appendix C are recommended, the rest are mandatory.

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

The standard reference ASMESA-283/SA-283M.2012 ", the low strength carbon steel", ASMESA-285/SA-285M.

2012 "Pressure Vessel, the low-intensity carbon steel", ASMESA-516/SA-516M.2010 "low temperature carbon steel pressure vessels" ASMESA-738/SA-738M.2012 "in the heat treatment temperature pressure vessels of carbon manganese silicon steel sheet", ASTM A36/A36M.2008 "Carbon Prime structural steel ", ASTM A572/A572M.2012" High Strength Low Alloy Nb - Vanadium Structural Steel "and ASTM A588/A588M.2010" Qu Service intensity minimum 50ksi (345MPa), atmospheric corrosion resistant high-strength low-alloy structural steels "to develop.

The standard proposed by China Iron and Steel Association.

This standard by the National Steel Standardization Technical Committee (SAC/TC183) centralized.

1 Scope

This standard specifies the method for nuclear power plants with grades that carbon steel and low alloy steel plate, ordering the content, size, shape, weight and allow partial Poor, technical requirements, test methods, inspection rules, packaging, marking and quality certification.

This standard applies to the thickness of 6mm ~ 250mm of nuclear power plants with carbon steel and low-alloy steel plate (hereinafter referred to as "plate").

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member, undated references, the latest edition (including all repair orders) applies to this document.

GB/T 222 chemical composition of finished steel tolerance GB/T 223.5 steel measuring soluble silicon and total silicon content reduced silicon molybdate salt spectrophotometric method GB/T 223.9 steel and aluminum alloys - Determination of chromium content Azure S Spectrophotometry GB/T 223.12 Methods for chemical analysis of iron, steel and alloys of sodium carbonate separation - diphenyl hydrazine spectrophotometric determination of chromium content GB/T 223.14 Methods for chemical analysis of iron, steel and alloys, tantalum reagent extraction and spectrophotometric determination of vanadium content Spectrophotometric determination of titanium content GB/T 223.16 Methods for chemical analysis of iron, steel and alloy The chromotropic acid GB/T 223.19 Methods for chemical analysis of iron, steel and alloy neocuproine - chloroform extraction spectrophotometric determination of copper content GB/T 223.23 steel and alloy - Determination of nickel content dimethylglyoxime spectrophotometry GB/T 223.26 steel and alloy - Determination of molybdenum content - Thiocyanate spectrophotometric GB/T 223.37 Methods for chemical analysis of iron, steel and alloy distillation - indophenol blue photometric method for the determination of nitrogen GB/T 223.40 Determination of steel and alloy niobium content sulphochlorophenol S spectrophotometry GB/T 223.62 Methods for chemical analysis of iron, steel and alloy butyl acetate extraction spectrophotometric determination of phosphorus content GB/T 223.63 Methods for chemical analysis of iron, steel and alloy The sodium (potassium) for Determination of amount GB/T 223.67 steel and alloy sulfur content - Methylene blue spectrophotometric method GB/T 223.69 after carbon and alloy steel - Determination of the pipe furnace combustion gas volumetric method GB/T 223.78 Methods for chemical analysis of iron, steel and alloy Curcumin spectrophotometric determination of boron content directly GB/T 223.79 multi-element steel Determination X-ray fluorescence spectrometry (Routine method) GB/T 223.84 steel and titanium alloys - Determination of two methane antipyrine spectrophotometry After GB/T 223.85 steel and alloy sulfur content induction furnace combustion infrared absorption method RT Test

Method. Test Part 1 GB/T 228.1 metallic materials tensile GB/T 229 metal Charpy pendulum impact test method General provisions GB/T 247 steel sheet and strip packaging, marking and quality certificate Size GB/T 709-2006 hot rolled steel sheet and strip, shape, weight and tolerance GB/T 2975 Steel and steel products for mechanical testing and sample preparation position GB/T 4336 carbon steel and low alloy steel spark source atomic emission spectrometry method (conventional method) GB/T 5313 in the thickness direction of the steel plate no plastic transition temperature GB/T 6803 ferritic steel drop weight test method General requirements GB/T 14977 hot-rolled steel surface quality GB/T 17505 Steel and steel products General technical delivery requirements GB/T 20066 Steel and iron - Sampling and determination of the chemical composition of the sample with a sample preparation method GB/T 20123 Steel - Determination of total carbon and sulfur content of the high-frequency induction furnace combustion infrared absorption method (conventional method) Inductively coupled plasma atomic GB/T 20125 low-alloy steel multi-element content Emission Spectrometry GB/T 22368 Determination of low-alloy steel multi-element contents glow discharge atomic emission spectrometry (Routine method) Determination principle value YB/T 081 standard metallurgical technology and rounding detection data

3 Grades representation

Minimum yield strength values of steel grades by the representative of "Qu" Hanyu Pinyin first letter of the word, predetermined, "nuclear power" the first word of the pinyin Composition mother of three parts. For example. Q420HD. among them.

Q --- "bend" the first letter of the Chinese phonetic alphabet;

420 --- specified minimum yield strength value, the unit MPa;

HD --- "nuclear power" the first letter of the Chinese phonetic alphabet.

When asked when the steel sheet has a thickness direction of the performance, after the grades specified above plus representatives of the thickness direction (Z direction) performance levels symbol Number, for example. Q420HDZ25.

4.1 Ordering Information

When ordering, shall provide the following information.

- a) number of this standard;
- b) grades;
- c) specification;
- d) the size, shape accuracy requirements;
- e) weight;

- f) Delivery status;
- g) special requirements.

5 Size, shape, weight and tolerance

Plate thickness tolerances shall comply with GB/T 709-2006 class C or class B specified deviation, the other size, shape, weight and allow Xu deviation should be consistent with the provisions of GB/T 709-2006 in.

6.1 Designation and chemical composition

6.1.1

Steel grade and chemical composition (melting analysis) shall comply with the requirements in Table 1.

6.1.1.1

nitrogen content in steel should not exceed 0.008%, if the steel contains aluminum, niobium, vanadium, titanium and other alloy elements having nitrogen fixation, Nitrogen content may not be greater than 0.012%, the content of alloying elements shall be indicated in the quality certificate.

6.1.1.2

Steel arsenic, antimony, bismuth, lead, tin content of harmful elements in the individual shall be not more than 0.025%, the total should not exceed 0.05%. Such as supply-side I can guarantee, can not do analysis.

6.1.1.3

should be finished steel chemical composition analysis, the tolerances shall comply with the provisions of GB/T 222's.

6.1.2

thickness greater than 15mm thickness direction of the performance guarantee of various grades steel sheet S element content should be consistent with GB/T 5313 regulations set. Other alloying elements may be required under the agreement between.

6.1.3

agreed between manufacturer and specified in the contract, various grades of steel carbon equivalent (CEV) can be specified in Table 2. Carbon equivalent shall be Composition and melting analysis using the following formula. $CEV = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$.

Table 2

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