



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

GB/T 33811-2017

Alloy Tool and Mould Steel Sheets and Plates

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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 Steels (SAC/TC 183).

The drafting organizations of this Standard. Northeast Special Steel Shares Co., Ltd., China Metallurgical Information and Standardization Institute.

1 Application Scope

This Standard specifies the ordering content, dimensions, shape, weight, specifications, test methods, inspection rules, and packaging, marking and quality certification of alloy tool and mould steel sheets and plates (hereinafter referred to as "steel sheets and plates").

This Standard applies to cold-rolled steel sheets and plates of thickness not greater than 4 mm and hot-rolled steel sheets and plates of thickness not greater than 10 mm.

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 documents (including all amendments) applies to this Standard.

GB/T 223.11, Iron, Steel and Alloy - Determination of Chromium Content - Visual Titration or Potentiometric Titration Method

GB/T 223.13, Methods for Chemical Analysis of Iron, Steel and Alloy- the Ammonium Ferrous Sulfate Titration Method for the Determination of Vanadium 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 223.22, Methods for Chemical Analysis of Iron, Steel and Alloy - The Nitroso-R-Salt Spectrophotometric Method for the Determination of Cobalt 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 223.28, Methods for Chemical Analysis of Iron Steel and Alloy - The alpha - Benzoin Oxime Gravimetric Method for the Determination of Molybdenum Content

GB/T 223.40, Iron, Steel and Alloy - Determination of Niobium Content by the Sulphochlorophenol S Spectrophotometric Method

GB/T 223.43, Iron Steel and Alloy - Determination of Tungsten Content - Gravimetric Method and 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 223.60, Methods for Chemical Analysis of Iron, Steel and Alloy - The Perchloric Acid Dehydration Gravimetric Method for the Determination of Silicon

Content

GB/T 223.62, Methods for Chemical Analysis of Iron, Steel and Alloy - The Butyl

Acetate Extraction Photometric Method for the Determination of Phosphorus

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 223.71, 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 224, Determination of Depth of Decarburization of Steels

GB/T 225, Steel - Hardenability Test by End Quenching (Jominy Test)

GB/T 226, Test Method for Macrostructure and Defect of Steel by Etching

GB/T 231.1, Metallic Materials - Brinell Hardness Test - Part 1. Test Method

GB/T 247, 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 708, Dimensions, Shape, Weight and Tolerances for Cold-Rolled Plates and

Sheets

GB/T 709-2006, Dimension, Shape, Weight and Tolerances for Hot-Rolled Steel

Plates and Sheets

GB/T 1299-2014, Tool and Mould Steels

GB/T 4336, Carbon and Low-alloy Steel - Determination of Multi-element Contents

- Spark Discharge Atomic Emission Spectrometric Method (Routine Method)

GB/T 6394, Metal - Methods for Estimating the Average Grain Size

GB/T 8651, Flaw Detection Method by the Ultrasonic Plate Wave for Metal Plates

4.4.1 Steel plates and sheets of other dimensions may be supplied, which shall be

as agreed on by the supplier and the purchaser and stated in the contract.

4.4.2 Steel plates and sheets of higher rolling precision may be supplied, which shall

be as agreed on by the supplier and the purchaser and stated in the contract.

5.1 Designation and chemical composition

The designation and chemical composition (product analysis composition) of steels shall be as specified in Table 3. Steels of other designations in GB/T 1299-2014 may also be supplied as required by the purchaser, which shall be stated in the contract.

5.2 Smelting method

Steels shall be smelted with the method of electric furnace + vacuum refining or electroslag remelting. When the electroslag remelting smelting is required, it shall be stated in the contract.

5.3.2 Steel plates and sheets may be delivered in the state of acid pickling as required by the purchaser, which shall be stated in the contract.

5.4.1 The Brinell hardness of steel plates and sheets under the delivery condition shall be as specified in Table 4.

5.4.2 For steel plates and sheets of thickness not greater than 1.5 mm, when the supplier is capable of ensuring the hardness under the delivery condition is as specified in Table 4, the testing for hardness under the delivery condition may be omitted.

5.5 Macrostructure

There shall be no visible shrinking hole remnants, cracks and inclusions on the acid pickling macrostructural test pieces of steel plates and sheets or steel billets.

5.6 Nonmetallic inclusions

The nonmetallic inclusions of steel plates and sheets shall be tested and assessed in accordance with Method A in GB/T 10561-2005; the results shall be as specified in Table 5. When delivery is made as required for Group 1, it shall be stated in the contract,