

Translated English of Chinese Standard: GB/T34564.1-2017

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# GB

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## GB/T 34564.1-2017

**Cold-work mould steel –**

**Part 1: High toughness and wear-resistance steels**

冷作模具钢 - 第 1 部分：高韧性高耐磨性钢

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## Foreword

Foreword

GB/T 34564 “Cold-work mould steel” is divided into two parts:

- Part 1: High toughness and wear-resistance steels;
- Part 2: Flame quenchable steels.

This part is Part 1 of GB/T 34564.

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

This part was proposed by the China Iron and Steel Association.

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

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## Cold-rolled mould steel -

### Part 1: High toughness and wear-resistance steels

#### 1 Scope

This part of GB/T 34564 specifies the ordering content, dimensions, shape, weight, technical requirements, test methods, inspection rules, packaging, marking, and quality certificates for high toughness and wear-resistance cold work mould steels.

This part applies to hot-rolled, forged, cold-drawn, silver-bright steel and machine processing delivery of high toughness and wear-resistance cold work mould steel (hereinafter referred to as “steel”).

#### 2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable 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 223.23 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 223.29 Iron steel and alloy - Determination of lead content - Carrier precipitation-xylenol orange spectrophotometric method

GB/T 223.31 Iron steel and alloy - Determination of arsenic content -

GB/T 1299-2014 Tool and mould steels

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

GB/T 3207-2008 Bright steel

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 6402 Steel forgings - Method for ultrasonic testing

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

GB/T 10561-2005 Steel - Determination of content of nonmetallic inclusions - Micrographic method using standards diagrams

GB/T 11261 Steel and iron - Determination of oxygen content - The pulse heating inert gas fusion-infra-red absorption method

GB/T 13298 Inspection methods of microstructure for metals

GB/T 14979-1994 Eutectic carbide of steel - Micrographic method using standard diagrams

GB/T 17505 Steel and steel products General technical delivery requirements

GB/T 20066 Steel and iron - Sampling and preparation of samples for the determination of chemical composition

GB/T 20124 Steel and iron - Determination of nitrogen content - Thermal conductimetric method after fusion in a current of inert gas

### 3 Order contents

Contracts or orders for steel products ordered in this part shall include the following:

- a) Standard number;
- b) Product name;
- c) Grade;

- a) Cold-drawn steels with dimensional accuracy grades h9 and h10 shall not have surface defects;
- b) Cold-drawn steels with dimensional accuracy grades h11 and h12 are allowed to have minor surface defects such as pits, individual scratches, hairline, concave, dark spots, cracks, and lubricant mark whose depth, calculated from actual size, is not greater than the nominal dimensional tolerance; as required by the purchaser and specified in the contract, the allowable defect depth may not be greater than half of the nominal dimensional tolerance.

**5.10.4** There shall be no defects on the surface of the steel delivered after machining.

**5.10.5** The surface of bright material shall meet the requirements of GB/T 3207.

**5.10.6** In accordance with the requirements of the purchaser and as negotiated between the supplier and the purchaser, the surface quality can be specified otherwise, but it shall be indicated in the contract.

## **5.11 Special requirements**

In accordance with the requirements of the purchaser, as negotiated between the supplier and the purchaser, and noted in the contract, it can supply the steel with the following special requirements:

- a) Special chemical composition;
- b) Grain size;
- c) Lateral impact;
- d) Other requirements.

## **6 Test methods**

**6.1** The inspection items, sampling quantities, sampling locations and test methods for each batch of steel shall comply with Table 11.

**6.2** The chemical composition test method of the steel shall be in accordance with GB/T 4336, GB/T 11261, GB/T 20124 or common methods; in case of arbitration, it shall be in accordance with the provisions of GB/T 223.11, GB/T 223.13, GB/T 223.23, GB/T 223.26, GB/T 223.28, GB/T 223.29, GB/T 223.31, GB/T 223.47, GB/T 223.48, GB/T 223.53, GB/T 223.58, GB/T 223.59, GB/T 223.60, GB/T 223.67, GB/T 223.69 and GB/T 223.82.

**Table 11 -- Inspection items, sampling quantities, sampling locations and**

method, the same delivery status, the same specification, and the same heat treatment furnace.

**7.2.2** Each batch of electro-slag re-melted steel shall consist of the steels of the same grade, the same sub-furnace number, the same processing method, the same delivery status, the same specification and the same heat treatment furnace. Under the conditions of stable process and guaranteeing the requirements of this part, it is allowed to batch the electro-slag re-melting mother furnace number, but for chemical composition, it shall take one from each sub-furnace number, the other items follow the sampling requirements for mother furnace number.

### **7.3 Sampling quantity**

The sampling quantity and sampling location for the steel inspection shall comply with the requirements of Table 11. If the number of samples specified in Table 11 cannot be obtained, sampling inspection may be carried out on a one-by-one basis.

### **7.4 Re-inspection and judgment rules**

**7.4.1** Rules for re-inspection and determination of steel materials shall be in accordance with the provisions of GB/T 17505.

**7.4.2** If the supplier can ensure that the steel is qualified, it is allowed to use large material to substitute small material or use blank to substitute material to test the macrostructure, non-metallic inclusion, tensile property, impact test and end hardenability of the steels of the same furnace number.

### **7.5 Numerical round-off**

The inspections and inspection measurement values of steel products are subject to rounding off by the round-off value comparison method, in accordance with the provisions of GB/T 8170.

## **8 Packaging, marking and quality certificates**

Steel packaging, marking and quality certificates shall comply with the provisions of GB/T 2101.