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Replacing GB/T 17505-1998

Steel and steel products – General technical delivery requirements

(ISO 404:2013, MOD)

钢及钢产品 交货一般技术要求

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Foreword

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

This Standard replaces GB/T 17505-1998 *Steel and Steel Products - General Technical Delivery Requirements*.

Compared with GB/T 17505-1998, the main technical changes are as follows:

- changed the name of standard to “Steel and steel products - General technical delivery requirements”;
- moved “This Standard must be used together with other technical standards; it cannot be used for ordering” from “Foreword” to “Scope” (see NOTE in Clause 1 of this edition; Foreword of 1998 edition);
- deleted terms and definition, relevant requirements of continuous inspection (see 3.3, 8.1.2 of 1998 edition);
- added terms and definitions for “manufacturer” and “intermediary”; defined the respective rights and obligations (see 3.14, 3.15, 6.4 of this edition);
- modified the definition of “inspection representative” as well as its relevant rights and obligations (see 3.6, 8.3.1.3 of this edition; 3.5, 8.3.1.3 of 1998 edition);
- modified the definition of “cast analysis”; added relevant instructions and general provisions on methods for chemical analysis (see 3.11, 7.2 of this edition; 3.12, 7.2 of 1998 edition);
- modified the name of Clause 4 from “Ordering content” to “Ordering information provided by user” (see Clause 4 of this edition);
- modified requirements for “intermediary” (see Clause 6 of this edition);
- specified requirements for “inspection documents” and “quality certificate” (see 6.1, Clause 8 of this edition);
- supplemented with relevant surface quality inspection standards (see NOTE in 7.4.1.2 of this edition; 7.4.1 of 1998 edition);
- added requirements for “welding repair” (see 7.4.4.1 of this edition; 7.4.4 of 1998 edition);
- added requirements for protection of “safety and health” (see 7.1 of this edition; 7.1 of 1998 edition);

Steel and steel products – General technical delivery requirements

1 Scope

This Standard specifies general technical delivery requirements for steel and steel products contained in GB/T 15574 (excluding steel and powder metallurgy products).

When the provisions of product's standard or agreement in the contract are inconsistent with the provisions of this Standard, the provisions of product's standard or agreement in the contract shall prevail.

NOTE This Standard must be used together with other technical standards; it cannot be used for ordering.

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 1467 *Method for chemical analysis of metallurgy product - General rules and regulations*

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 8170-2008 *Rules of rounding off for numerical values & expression and judgement of limiting values*

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 15574 *Steel products classification and definitions* (GB/T 15574-2016, ISO 6929:2013, MOD)

- b) representative entrusted by user;
- c) inspection representative designated by the third party.

3.6 test unit

according to requirements of product standard or contract, taking the test conducted for sample product as reference, the number or tons of once accepted or rejected products

NOTE 1 See Figure 1.

NOTE 2 This term can be also called as “inspection lot” or “batch”.

3.7 sample product

during inspection, testing, partial products extracted from test unit (e.g. one plate)

NOTE See Figure 1.

3.8 sample

in order to prepare one or few samples, cut a sufficient amount of material from sample product

NOTE 1 See Figure 1.

NOTE 2 Under some circumstances, sample refers to sample product.

3.9 rough specimen

In order to prepare sample, sample after mechanical processing and heat treatment under appropriate situation thereafter

NOTE 1 See Figure 1.

3.10 test piece

after mechanical processing or non-mechanical processing, test piece with qualified size, which can meet test requirement state

NOTE 1 See Figure 1.

NOTE 2 Under some circumstances, test piece refers to sample or test piece.

3.11 cast (heat) analysis

- d) tolerance of a) and c) characteristic values;
- e) steel designation;
- f) delivery status (heat treatment, surface treatment, etc.);
- g) particular requirements for surface quality and internal quality (see 7.4);
- h) required inspection document type or quality certificate, inspection and testing type (only refer to the one when product standard does not specify) (see Clause 8);
- i) when necessary, it adopts GB/T 19001 quality management system;
- j) packaging, marks, storage and transport;
- k) any selection requirements proposed by product standard or any additional terms specified other than product standard.

4.3 The content in 4.2 shall also specify to use any method of the following ones:

- a) adopt the standard of one or several countries (or industries);
- b) when there is no standard, the property values and terms specified in the contract;
- c) if the reference standards in the contract are undated, it shall use the effective version when the contract is signed; if there is any disagreement with the current version of the standard, the version used shall be negotiated and agreed by the supplier and the purchaser.

5 Manufacturing process

Unless there is an agreement at the time of order or as otherwise specified in the product standard, the manufacturing process shall be selected by the manufacturer.

NOTE The manufacturing process includes each procedure from steel making to product delivery.

6 Supply by intermediary

6.1 If the intermediary does not conduct any processing to the product, the inspection documents or quality certificates of manufacturer shall be submitted at the same time of delivery. The type of inspection document shall comply with the requirements of GB/T 18253. The quality certificate shall comply with

Unless otherwise specified in the contract or the product standard, the mechanical properties values all refer to the measurement values of product on delivery state.

7.3.3 Evaluation on impact absorption energy value

Unless otherwise specified in the contract or the product standard, the impact absorption energy value shall be represented by the average of all individual trial values measured in 8.3.4.2.

7.4 Surface quality and internal quality

7.4.1 General requirements

7.4.1.1 All products shall have good quality. If there are slight surface and internal defects produced under normal production state, it shall not be the reason for rejection.

7.4.1.2 When required, the specific requirements for surface quality and internal quality shall refer to corresponding standards and be determined via negotiation during contract signing.

NOTE GB/T 14977, GB/T 28330 and YB/T 4427 are standards related to surface quality.

7.4.2 Defect detection

When required, the special technology for defect detection (such as X-ray detection, ultrasonic inspection, magnetic particle testing, etc.) as well as its number of product testing unit, processing method of test results shall be in accordance with product standard or determined via negotiation during ordering.

7.4.3 Removal of surface discontinuities

Unless otherwise specified in the contract or the product standard, surface discontinuities can be removed by use of mechanical method or flame. However, it shall ensure that the product size and performance comply with the limit value specified in the contract or product standard.

7.4.4 Welding repair

7.4.4.1 Welding repair is only applicable to the situation permitted by user; and it shall not damage material's performance (for example: over hardness, crack formation).

7.4.4.2 If welding repair is allowed by the provisions in the contract or product standard, user shall permit to use welding method for partial repair.

manufacturer receives the report of inspection results, the product cannot be delivered.

8.3.1.3 Specific inspection and testing delivery

Manufacturer or entrusted representative shall, in accordance with contract requirements, at appropriate time, notify inspection representative the date of specific inspection and testing for partial or all delivery batch. In order to avoid affecting the manufacturer's normal production and delivery of relevant documents, the manufacturer and inspection representative shall determine the date and time of inspection and testing through negotiation.

8.3.1.4 Rights and obligations of inspection representative

In order to carry out the agreed inspection and testing, within the agreed time, the inspection representative shall have free access to the production plant and warehouse for the required testing and inspection product; shall select sample product from test unit according to relevant provisions and cut sample; shall have right to participate in test piece's selection, preparation (cutting and processing) as well as experimental work. The inspection representative shall comply with manufacturer's all relevant systems, especially safety regulations. Manufacturer has right to require any inspection representative to accompany. During testing and inspection, it shall try to reduce interference to the normal production.

8.3.1.5 Test traceability

During testing, manufacturer shall ensure the traceability between sample product, sample, test piece and test unit.

8.3.2 Testing frequency

8.3.2.1 Test unit composition

8.3.2.1.1 For each kind of testing, the composition of test unit shall be specified in the product standard or contract. Usually, test unit consists of following one or few items:

- a) same designation;
- b) same furnace No.;
- c) same cast;
- d) same rolling (forging) system (or batch);
- e) same heat treatment system (or furnace batch);

requirements of its specific values and deviation.

8.3.4.1.3 Steel's chemical composition can be determined by chemical analysis or spectral analysis method. During arbitration, the supplier and the purchaser shall agree and determine the method used.

8.3.4.1.4 Common standards for steel product's other testing methods can refer to Bibliography [1] ~ [7], [13] and [14].

8.3.4.2 Assessment of sequential testing results

Sequential testing results shall be assessed by the following methods (take impact testing results as an example):

- a) the average of a set of three test pieces shall comply with the requirements for the specified minimum value; the single value of one test piece is allowed to be less than the specified value but not be less than 70% of the specified value;
- b) if it does not comply with a)'s requirements, the number of test piece less than the specified minimum value shall not exceed two, the number of test piece less than 70% of specified value shall not exceed one; the manufacturer can extract another set of three test pieces from the same sample product; after the second group of test piece testing, if it meets the following conditions at the same time, its test unit shall be accepted:
 - 1) the average value of six test pieces shall not be less than the specified minimum value;
 - 2) the number of test piece less than the specified minimum value shall not exceed two;
 - 3) the number of test piece less than 70% of specified minimum value shall not exceed one;
- c) if the following conditions are not met, its sample product shall be sentenced to waste; then re-sample from the rest of this test unit for re-inspection (see 8.3.4.3.3).

8.3.4.3 Re-inspection

8.3.4.3.1 General requirements

8.3.4.3.1.1 When results of one or few testing do not comply with the requirements, except the following special situations, manufacturer can sentence the corresponding test unit to waste, or carry out the re-inspection according to 8.3.4.3.2 and 8.3.4.3.3. However, when there are white spots, re-inspection shall not be permitted.

Figure 3 Flow chart of non-sequential testing results carried out according to single value as assessment reference when test unit consists of many products

8.3.4.3.3 Sequential testing

When testing results obtained by sequential method fail (see Figure 4), for example, the impact testing stated in 8.3.4.2, re-inspection shall be carried out according to the following provisions:

Pick the sample product of which the testing results fail according to 8.3.4.2 and discard as useless. Then according to the method specified in 8.3.4.3.2b) 1), respectively extract two sample products from the rest of test unit; respectively extract another new three test pieces on each sample product. The testing results of these two test pieces shall comply with the provisions of 8.3.4.2a). Under such situation, 8.3.4.2b) shall not be applicable any more.

8.4 Testing results invalid

The testing results obtained by inappropriate sampling, sample preparation and testing shall be regarded as invalid.

8.5 Testing results rounding

When it requires to assess if the testing results comply with the specified values, the given testing results shall use rounding value comparison method to round it consist with the numerical digit marked by standard digit of specified value. Its rounding rules shall comply with the provisions of Clause 3 in GB/T 8170-2008.

NOTE When it uses digital display measuring device, the displayed digits shall not be less than the precision of testing device and/or testing method.

9 Reclassification and repair

Manufacture has right to conduct reclassification or repair to unqualified product before or after re-inspection (for example: heat treatment, cutting, rolling, drawing, etc.), then according to 8.3.2, submit those products for acceptance as new test units. If there is only reclassification but not repair, the inspection program shall be only for the first testing and unqualified testing items. Manufacturer shall use reclassification or repair's method to notify the inspection representative.

10 Marks

Manufacture shall make marks according to product standard or contract

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