ICS 77.140.85
CCS J32

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 12361-2016

Replacing GB/T 12361-2003

Steel die forgings - General specification

钢质模锻件 通用技术条件

Issued on: December 13, 2016 **Implemented on: July 1, 2017**

Issued by: General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China;
Standardization Administration of China

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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 12361-2003, General Specification of Steel Die Forgings. Compared with GB/T 12361-2003, the major changes in addition to editorial modifications are as follows: -- "furnace (tank) number" is changed into "furnace number" (see 3.1;

3.1 of edition 2003); -- "for the same production card" is deleted (

3.3 of edition 2003); -- standard GB/T 5216 for the steels selected for forgings is added (see 5.2.1); -- "The steels selected shall be used in production only after they are qualified by reinspection. The reinspection items shall be determined as specified in steel inspection standards." is changed into "Steels shall be re-inspected in accordance with the inspection items determined by the supplier and the purchaser." (see 5.2.3;

5.2.3 of edition 2003); -- "isothermal annealing" is changed into "isothermal normalizing", and "controlled- temperature cooling" is changed into "controlled cooling" [see

e) of edition 2003]; -- "and when it is unable to take samples from forgings" is deleted

(5.3.7.3); -- "and when the supplier is able to satisfy" is deleted (

5.4.1 of edition 2003); -- "If the heat treatment furnace number and manufacture batch under the same furnace number are required, the addition of the provisions such as strengthened shot blasting may possibly be added" (

5.4.2 of edition 2003); -- "white patches" is deleted (

7.4.1 of edition 2003); -- "for the convenience of die manufacture, standard cutting tools are used" is deleted (A.1.3 of edition 2003); -- "But it is preferably not less than 3°" is deleted (A.1.4.1 of edition 2003). This Standard was proposed by and shall be under the jurisdiction of the National Technical Committee 74 on Forging and Pressing of Standardization Administration of China (SAC/TC 74). The drafting organizations of this Standard. Dongfeng Forging Co., Ltd., Beijing Research Institute of Mechanical and Electrical Technology. The main drafters of this Standard. Wu Yujian, Wu Tingsong, Wei Wei, Zhou Lin, Zhao Yeqin, Chen Wenjing, Cheng Chenwen. The previous editions of the standard replaced by this Standard are as follows: -- GB/T 12361-1990; GB/T 12361-2003. Steel Die Forgings - General Specification

1 Application Scope

GB/T 12361-2016 is the Chinese national standard on steel die forgings - general specification, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 13 December 2016 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 July 2017. Classification: ICS 77.140.85, CCS J32. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This Standard specifies the classification, specifications, test methods, inspection rules, marking, quality certification, packaging and transportation of steel die forgings (hereinafter referred to as "forgings"). This Standard applies to structural steel die forgings which are produced with forging- press equipment such as forging hammer, hot die forging press, screw press and horizontal forging machine. This Standard may also work as the reference for the forgings of other steel types. This Standard is the basis for product designer to determine the specifications of forgings and the supplier and purchaser to sign technical agreements, as well as the basis for the acceptance of forgings.

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 224, Determination of Depth of Decarburization of Steels

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

GB/T 228.1, Metallic Materials - Tensile Testing - Part

3 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

3.1 steel-smelting furnace number The furnace number marked on steel products of a steel mill.

3.3 manufacture batch A manufacture batch is all forgings which are produced continuously during the forging process in accordance with the same process specifications.

4 Classification of Forgings

4.1 Forgings are classified in accordance with GB/T 12363.

4.2 The categories of forgings shall be indicated in the product drawings and forging drawings. Those unindicated are of category IV.

5 Specifications

5.1 Basis for acceptance The forging drawings, technical agreements and supply contracts which are signed by the supplier and the purchaser work as the main basis for the inspection and acceptance of finished products.

5.3.1 Structural elements of forgings

5.3.1.1 Die forging draft and its value shall be as specified in A.1.

5.3.1.2 Fillet radius and its value shall be as specified in A.2.

5.3.2 Dimensional tolerances, geometrical tolerances and other tolerances shall be as specified in GB/T 12362.

5.3.3 Surface defects

5.3.4 Overburning of forgings Overburning of any category of forgings is not allowed. Overburned forgings shall be scrapped.

5.3.5 Heat treatment of forgings

5.3.5.1 The heat treatment deliver condition of forgings shall be indicated on forging drawings, normally including.

5.3.5.2 The fluctuation range of the hardness values of forgings after the heat treatment is as specified in Table 1.

5.3.6 Surface cleaning of forgings The surface oxide skin of forgings shall be removed. The surface cleaning methods include shot blasting, sand blasting and tumbling.

5.3.7 Quality test of forgings

5.3.7.1 The content of quality test of forgings normally includes geometrical dimensions, surface defects and hardness.

5.3.7.2 In accordance with the requirements of the purchaser, mechanical property test may be conducted for forgings.

5.4 Other requirements

5.4.1 Mass tolerances Mass tolerances are normally not considered for forgings. When it is required by the purchaser, mass tolerances can be adopted. Mass tolerances are usually not greater than 8% of the calculated mass of forgings; the positive and negative deviation values are usually distributed symmetrically.

6 Test Methods

6.1 All test methods of all test items shall be as specified in the standards listed in Table 2.

6.2 The test location of all test items, the cutting direction and quantity of specimens shall be as specified in special technical documents or forging drawings.

7 Inspection Rules

7.1 Inspection acceptance sequence The inspection of finished forgings shall be conducted by the quality inspection department of the supplier (manufacturer) in accordance with forging drawings, technical agreements and relevant standards;

7.2 Inspection grouping The inspection grouping of forgings is divided into two types; the selection shall be as agreed on by the supplier and the purchaser.

7.3 Inspection item and quantity The inspection items and quantity of all categories of forgings shall be as specified in Table 3.

7.4 Evaluation criteria When the first result of some test is a fail, the it shall be handled in accordance with the following principles.