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

GB/T 15019-2017

Replacing GB/T 15019-2003

Designation and classification of rapidly quenched metals

快淬金属分类和牌号

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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 15019-2003 "Quick Quenching Metal Classification and Grade", this standard is compared with GB/T 15019-2003 The changes are as follows:

--- Added normative references (see Chapter 2);

--- Increased the apparent morphology of the material (see 4.1);

---In the classification of the basic characteristics of quenched metals, the addition of quenching sensing alloys, quenching electrothermal alloys, quenching catalytic alloys, quenching fibers Eight types of reinforced alloys, quenched coating alloys, quenched high-strength and high-hard alloys, fast-quenched magnetically cooled alloys, and quenched biomedical alloys No, and the abbreviation for each alloy in parentheses is removed (see 4.2,

3.1 of the.2003 edition);

--- In the classification of the matrix composition of the quenched metal, the composition range of each matrix is adjusted, and the quenched titanium-zirconium-based alloy is split into a quenched titanium base. Alloys and quenched zirconium-based alloys, and other matrix types have been added (see 4.3,.2003 edition 3.1);

---Indicating the appearance of the apparent form of the material in the representation of the quenched metal (see 5.1);

--- Added 180 grades and listed its chemical composition, performance characteristics and main uses (see Table 1 to Table 13);

--- Revised the main use of some brands (see Table 1 to Table 13, Table 1 of the 2003 edition). This standard was proposed by the China Iron and Steel Association. This standard is under the jurisdiction of the National Steel Standardization Technical Committee (SAC/TC183). This standard was drafted by China Iron and Steel Technology Group Co., Ltd., Antai Technology Co., Ltd., Metallurgical Industry Information Standards Institute, Tsinghua University, Beijing University of Science and Technology. The main drafters of this standard are Li Deren, Lu Zhichao, Yan Yan, Li Zhun, Ni Xiaojun, Liu Tiancheng, Yao Kefu, Hui Xidong, Chen Wenzhi. The previous versions of the standards replaced by this standard are:

---GB n292-1989;

---GB/T 15019-1994, GB/T 15019-2003. Quick quenching metal classification and grade

1 Scope

GB/T 15019-2017 is the Chinese national standard on designation and classification of rapidly quenched metals, 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 12 July 2017 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 April 2018. Classification: ICS 77.140.01, CCS H58. 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 and designation of the quenched metal, the grade and chemical composition, apparent morphology and performance of the quenched metal. Requisition for main uses. This standard applies to the classification of quenched metals and the naming of various grades.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article. Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 9637 Electrotechnical terminology magnetic materials and components

GB/T 19345.1 Amorphous nanocrystalline alloys - Part 1. Iron-based amorphous soft magnetic alloy strips

GB/T 21219 Classification of magnetic materials

GB/T 21220 soft magnetic metal material

3 Terms and definitions

The following terms and definitions as defined in GB/T 21219, GB/T 21220, GB/T 19345.1 and GB/T 9637 apply to this file.

3.1 Quenched metal rapidly quenched metal Amorphous, nanocrystalline or microcrystalline metal obtained by rapid solidification of a liquid metal.

3.2 Amorphous metal A metal that is generally frozen by the atomic configuration of a liquid metal, whose structure is long-range disordered and short-range ordered.

3.3 Nanocrystalline metal nanocrystalline metal A metal having a grain size ranging from a few nanometers to several tens of nanometers and having a sudden change in properties.

3.4 Microcrystalline metal microcrystalline metal The grain size is a micron-sized metal.

3.5 Elastic diaphragm in high elastic pressure sensor Table

4 Rapid quenching alloy grade, chemical composition, performance characteristics and main uses
Material grade Chemical composition (atomic fraction) Performance characteristics main use
7K201-D Co50~75; Ni0~20; Cr18~23; W3~5; Si5~10; B5~15; (Nb, W, Ta, Zr, Hf, Ti, Mo) 0~

4 Classification

4.1 Quenched metals are classified according to their appearance.

4.2 Quenched metals are divided into basic characteristics.

- a) fast quenching soft magnetic alloy;
- b) fast quenching permanent magnet alloys;
- c) fast quenching elastic alloy;
- d) a quenched and expanded alloy;
- e) fast quenching of bimetals;
- f) fast quenching precision resistance alloy;
- g) rapid quenching alloy;
- h) fast quenching and corrosion resistant alloy;
- i) rapid quenching sensing alloys;
- j) rapid quenching of electrothermal alloys;
- k) a quenched catalytic alloy;

l) fast quenching fiber reinforced alloy;

5 Brand representation

5.1 The quenched metal grade is represented by the combination of Chinese Pinyin letters and Arabic numerals. The general form is.

5.2 The letter "K" in the grade (the first capital letter of the Chinese character "fast") means fast quenching metal.

5.3 The number before the letter "K" indicates the basic characteristic category of the quenched metal, which can be from 1 to 99, such as.

- 1Kxxxx-x Quick-hardened soft magnetic alloy;
- 2Kxxxx-x fast quenching permanent magnet alloy;
- 3Kxxxx-x fast quenching elastic alloy;
- 4Kxxxx-x Quench-expanded alloy;
- 5Kxxxx-x Quick-hardened bimetal;
- 6Kxxxx-x Quick-quenched precision resistance alloy;
- 7Kxxxx-x fast quenching alloy;
- 8Kxxxx-x Quick-tempered corrosion-resistant alloy;
- 9Kxxxx-x Quick quenching alloy;
- 10Kxxxx-x quick quenching electrothermal alloy;
- 11Kxxxx-x fast quenching catalytic alloy;

6 Naming principles for grades

6.1 For the quenched metal products in the scientific research and trial production stage, it should be named according to the standard number representation method of this standard.

6.2 Any quenched metal that has been scientifically researched, trial-produced, and certified by the competent department and transferred to mass production shall be standardized by the main production unit. The units are named according to the uniform rules stipulated in this standard.

6.3 When writing national and industrial standards related to quenching metals, the product branding method specified in this standard shall be used.

7 Quick-hardened metal grades, chemical composition, apparent morphology, performance characteristics and main uses