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YB

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

YB/T 5235-2005

**Sealed iron-nickel-chromium, iron-nickel alloy with permanent
expansion**

定膨胀封接铁镍铬、铁镍合金

(English Translation)

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Foreword

This Standard replaced YB/T 5235-1993 Sealed Iron-Nickel-Chromium, Iron-Nickel Alloys Technical Requirement.

Compared with YB/T 5235-1993, this Standard has the major changes as follows.

- Modify the standard name into "Sealed Iron-Nickel-Chromium, Iron-Nickel Alloy with Permanent Expansion";
- Add "normative references", "order contents" and "classification and code";
- Combine the contents of Table 3 in the original standard into the Table 2;
- Modify the tensile strength of the cold-rolled strip delivered in a hard state from more than 820MPa to more than 700MPa;
- Delete the "intrinsic quality" provisions in the original standard;
- Delete the content of "the texture is caused due to excessive rolling final deformation rate of the alloy" in "process performance" of the original standard;
- Delete the content of "the thickness of the tested sample shall be indicated in the contract; otherwise, the test shall be carried out according to the Shift-A specimen specified in the GB/T 5778 standard" in the "air tightness" of the

original standard. This content is included in GB/T 14985 standard.

The Appendix A of this Standard is informative.

This Standard was proposed by China Iron and Steel Industry Association.

This Standard shall be under the jurisdiction of National Technical Committee for Standardization of Steel.

Drafting organizations of this Standard. Shaanxi Precision Alloy Co., Ltd.; and Shanghai Iron and Steel Research Institute.

Chief drafting staffs of this Standard. Zhang Ailing, and Liu Yongqing.

The historical editions replaced by this Standard are as follows.

--- GBn 103-1981, GBn 103-1987, YB/T 5235-1993.

Sealed Iron-Nickel-Chromium, Iron-Nickel Alloy with Permanent Expansion

1 Scope

This Standard specifies the size, shape, technical requirements, test methods, inspection rules, packaging, marking, and quality certificates, etc. of iron-nickel-chromium 4J6, 4J47, 4J49 alloy and iron-nickel 4J42, 4J45, 4J50 alloy

This Standard is applicable to sealed iron-nickel-chromium and iron-nickel alloy with permanent expansion matched sealed on electrical components with soft glass or ceramic.

2 Normative References

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 14985 General Rules of Dimensions Shape Surface Quality Testing Method and Inspection for Expansion Alloys

3 Order Contents

The contract or order placed according to this Standard shall include the following.

4 Classification and Code

According to the delivery status, the alloy may be divided into.

5 Size and Shape

The size, shape and allowable deviation of the alloy materials shall conform to the relevant provisions of GB/T 14985.

6.1 Smelting method

Unless specified in the contract, the smelting method is at the discretion of the manufacturer.

6.3 The designation and chemical composition (melting composition) of the alloy shall

meet the requirements of Table 1. When the average linear expansion coefficient meets the requirements of this Standard, the content of nickel and chromium is allowed to deviate from range specified in the standard.

6.4.5 Wires and pipes are delivered in either soft state (S) or hard state (H).

Table 1

6.5 Mechanical properties

The tensile strength of the strips, and the hardness of the strips with thickness greater than 0.2mm, and delivered in the deep drawing state shall conform to the provisions of the Table 2.

6.6 Physical properties

The average linear expansion coefficient of the alloy shall conform to the provisions of Table 3.

6.8 Air tightness

Bars with a diameter or side length of no less than 15mm shall be tested for air tightness without leakage.

6.9 Process performance

After proper heat treatment, deep-drawing or hard-state strips shall have good deep-drawing properties, and no ears are allowed to appear during deep-drawing.

6.10 Surface quality

The surface quality of the alloy material shall conform to the provisions of GB/T 14985.

7 Test Methods

The quality inspection methods of alloy materials shall comply with the relevant regulations of GB/T 14985.

8 Inspection Rules

The inspection rules for alloy materials shall comply with the relevant regulations of GB/T 14985.

9 Packaging, Marking and Quality Certificates

The packaging, marking and quality certificate of the finished alloy material shall comply with the relevant regulations of GB/T 14985.

Appendix A

(Informative)

Typical Expansion Coefficient of Alloy

The typical expansion coefficient of the alloy is shown in Table A.1.

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FERROUS METALLURGY INDUSTRY STANDARD

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Replacing YB/T 5235-1993