

ICS 77.140.40



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

GB/T 32286.1-2015

Soft magnetic alloys - Part 1: Nickel-iron alloys

软磁合金 第1部分：铁镍合金

(English Translation)

Issued on: December 10, 2015

Implemented on: November 1, 2016

Issued by: General Administration of Quality Supervision, Inspection and

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Foreword

This Part is Part 1 of GB/T 32286 Soft magnetic alloys.

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

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

This Part shall be under the jurisdiction of National Technical Committee on Iron and Steel of Standardization Administration of China (SAC/TC 183).

Drafting organizations of this Part. Dongbei Special Iron & Steel Group Dalian Precision Alloy Co., Ltd., China Metallurgical Information and Standardization Institute.

Main drafters of this Part. Xu Xiaoping, Luan Yan, Yan Chengming.

Soft magnetic alloys - Part 1: Nickel-iron alloys

1 Scope

This part of GB/T 32286 specifies the classification, order content, dimensions, appearance, technical requirements, test methods, inspection rules, packaging, marking

and quality certification for nickel-iron soft magnetic alloy materials.

This Part applies to cold-rolled strips, cold-drawn wires, cold-drawn (rolled) pipes, hot-rolled (forged) rods and flat bars of higher permeability and higher saturation magnetic induction intensity nickel-iron alloys 1J46, 1J50, 1J54 and high permeability nickel-iron alloys 1J76, 1J77, 1J79, 1J80, 1J85, 1J86; cold-rolled sheets of high permeability nickel-iron alloys 1J79 and 1J85; cold-rolled strips of nickel-iron rectangular magnetic alloys 1J34, 1J51, 1J52, 1J65, 1J67, 1J83, 1J403; cold-rolled strips of magnetic temperature compensation nickel-iron alloys 1J30, 1J31, 1J32, 1J33, 1J38; and cold-rolled strips of permanent permeability nickel-iron alloy 1J66.

This Part does not apply to high hardness, high resistance and high permeability nickel-iron alloy materials, corrosion-resistant nickel-iron alloys and nickel-iron alloy materials for magnetic heads (hereinafter referred to as alloy materials).

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 222-2006, Permissible tolerances for chemical composition of steel products GB/T 223.8, Methods for chemical analysis of iron, steel and alloy - The sodium fluoride separation - EDTA titration method for the determination of aluminium content GB/T 223.11, Iron, steel and alloy - Determination of chromium content - Visual titration or potentiometric titration method GB/T 223.18, Methods for chemical analysis of iron steel and alloy - The sodium thiosulfate separation iodimetric method for the determination of copper content GB/T 223.20, Methods for chemical analysis of iron steel and alloy - The Potentiometric titration method for the determination of cobalt content GB/T 223.25, Methods for chemical analysis of iron, steel and alloy - The dimethylglyoxime gravimetric method for the determination of nickel content GB/T 223.28, Methods for chemical analysis of iron steel and alloy - The D-denzoinoxime gravimetric method for the determination of molybdenum content

3 Classification

3.1

Classified into the following five categories by the main characteristics.

3.2

Classified into the following four categories by the nickel content.

4 Order content

The contract for ordering under this Part shall include the following.

5.1.1 Dimensions and permissible deviations

5.1.1.1

The dimensions and thickness permissible deviations of cold-rolled strips shall comply with the provisions of Table 1. Positive and negative deviations may also be adopted after consultation between the supplier and the buyer and specified in the contract.

5.1.1.2

The width permissible deviation of cold-rolled strips shall comply with the requirements of Table 2 and Table 3 in GB/T 14986-2008.

5.1.2 Appearance

The appearance of cold-rolled strips shall comply with the requirements of 5.1.2 in GB/T 14986-2008.

5.2.1 Dimensions and permissible deviations

5.2.1.1

The range of sizes of cold-rolled sheets. nominal thickness 0.50 mm ~ 2.00 mm;
nominal width 600 mm ~ 1 000 mm; nominal length 1 000 mm ~ 2 000 mm.

5.2.2 Appearance

5.2.2.1

For cold-rolled sheets delivered without heat treatment, the unevenness shall not exceed 30 mm/m.

5.3 Cold-drawn wires

The dimensions and appearance of cold-drawn wires shall comply with the provisions of 5.3 in GB/T 14986-2008. For cold-drawn wires with a nominal diameter greater than 6.0 mm ~ 10.0 mm, the permissible diameter deviation is ± 0.050 mm.

5.4 Cold drawn (rolled) pipes

The dimensions, appearance and permissible deviation of cold drawn (rolled) pipes shall be subject to the agreement between the supplier and the buyer.

5.5.2 Appearance

The appearance of hot rolled (forged) flat bars and rods shall comply with the requirements of 5.5.2 in GB/T 14986-2008.

6.1 Designation and chemical composition

The alloy designation and chemical composition shall comply with the provisions of Table 5.

6.2 Smelting method

Smelt the alloy in a vacuum induction furnace. Other smelting methods that meet the requirements of this Part may also be used, but this shall be noted in the quality certification. Special requirements, if any, shall be negotiated between both parties and indicated in the contract.

6.3.1 Alloy materials are delivered without heat treatment. The delivery state is shown

in Table 6.

6.4 Magnetic properties

6.4.1

The magnetic properties of alloy samples after heat treatment shall comply with the provisions of Tables 7 ~ 13. The recommended heat treatment system is shown in Appendix A.

6.4.2 According to the requirements of the buyer, magnetic temperature stability test

can be carried out, and the indicators shall be determined by negotiation between the supplier and the buyer.

6.4.3 If the buyer requires delivery in other states (such as soft, polished, peeled, turned, etc.), the magnetic properties shall be negotiated by the supplier and the buyer and specified in the contract. If not specified, the supplier shall provide the actual measured data.

6.5 Other properties

The basic physical parameters and typical mechanical properties of the alloy are shown in Appendix B.