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

GB/T 19346-2003

Replacing GB/T 19346-2003

**Amorphous and nanocrystalline alloys measurement methods
-- Part 1: AC magnetic properties by the use of ring specimens
(English Translation)**

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Foreword

This part is part 1 of GB/T 19346.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part of the replacement GB/T 19346-2003 "amorphous nanocrystalline soft magnetic alloy AC magnetic properties test method".

Compared with GB/T 19346-2003, the main contents are as follows.

- name changed to "amorphous nanocrystalline alloy test method part 1. ring sample AC magnetic performance";
- Added terms and definitions (see Chapter 3);
- removed the voltammetric method of AC magnetic measurement (see Chapter 3 of the 2003 edition);
- Added general rules and modified sample requirements (see Chapter 4, Chapter 4 of the 2003 edition);
- Added technical requirements for digital peak ammeter, voltage digital-to-analog converters and power meters (see 5.4, 5.5, 5.16, 2003) Chapter 6);
- a method of measuring the permeability and magnetization curves by voltammetry (see Chapter 6);
- Removal of the voltammetric method (see 5.1 of 2003);
- increased method of measuring total loss with a power meter (see Chapter 7);
- modified and supplemented the digital sampling method and increased the measurement method of apparent power (see Chapter 8, Edition 5.2 of 2003);
- Increased requirements for reproducibility and uncertainty assessment of measurement

results (see Chapter 9);

- Added the measurement report (see Chapter 10, Chapter 8 of the 2003 edition).

This part is made by China Iron and Steel Industry Association.

This part is headed by the National Steel Standardization Technical Committee (SAC/TC183).

This part of the drafting unit. China Steel Research Technology Group Co., Ltd., Metallurgical Industry Information Standards Institute, China Institute of Metrology.

1 Scope

This part of GB/T 19346 specifies the measurement method for the alternating magnetic properties of amorphous nanocrystalline alloy wound ring specimens.

This part is suitable for measuring a variety of transformer and inductance components and magnetic shielding with amorphous nanocrystalline soft magnetic alloy at 50Hz ~ 200kHz frequency range of the relative amplitude of the permeability, than the total loss, compared to the apparent power AC magnetic performance. If there is a suitable calibration of the instrument, the frequency upper limit can be extended to 1MHz, but this time the reproduction should be appropriate to relax the requirements.

2 Normative reference documents

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

GB/T 2900.1 Basic terminology for electrical terminology Electrotechnical terminology - Magnetic materials and components GB/T

3 Terms and definitions

GB/T 2900.1 and GB/T 9637 and the following terms and definitions apply to this document.

Than the total loss of specific total loss the total power absorbed by the unit mass of the homogeneous magnetized material in watts per kilogram (W/kg).

More specific than the apparent power Than apparent power the total apparent power delivered to the uniform magnetization of the unit mass in volts per kilogram (VA/kg).

4.1 Specimen

4.1.1

Measurement of AC magnetic properties of amorphous nanocrystalline soft magnetic alloys
An annular specimen made of strip is used. If no special requirements, winding system the strip surface does not take insulation measures when the sample is taken.

4.1.2

Recommended specimen diameter of $35\text{mm} \pm 2\text{mm}$, the sample diameter and diameter ratio should be less than 1.25. If you need to use other feet the sample should be stated in the measurement report.

4.1.3

Specimens should be flat, burr, deformation and other defects.

4.1.4

The specimen shall be subjected to appropriate heat treatment prior to measurement. Specimen in the heat treatment process, should use non-ferromagnetic metal or ceramic lining support Hold the specimen inside the window to prevent the specimen from being deformed. The diameter of the lining should be slightly smaller than the diameter of the specimen and the height is comparable to that of the specimen. Sample heat treatment should be in a protective atmosphere to prevent surface oxidation.