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

GB/T 47344-2026

**Durability test method for permanent magnets under multi-field
coupling - Elevated temperature and reverse magnetic field**

永磁体多场耦合耐久性测试方法 高温和反向磁场

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the China Electrical Equipment Industry Association. This document is under the jurisdiction of the National Technical Committee on Standardization of Electrical Alloys (SAC/TC228). This document was drafted by: China National Institute of Metrology, Fujian Jinlong Rare Earth Co., Ltd., and Guilin Electrical Science Research Institute Co., Ltd. The company, China Iron & Steel Research Institute Co., Ltd., Baotou Testing and Inspection Center, Guilin University of Technology, China Jiliang University, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences Materials Technology and Engineering Research Institute, Ningbo Songke Magnetic Materials Co., Ltd., China Rare Earth Group Innovation Technology Co., Ltd., Ningbo Zhaobao Magnetic Industry Co., Ltd. Limited Liability Company, Inlohua Technology Co., Ltd., Zhejiang

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1 Scope

GB/T 47344-2026 is the Chinese national standard covering testing a magnet under the conditions that actually demagnetise it - heat and a reversed field applied together, which is what happens to a traction motor magnet during a hard fault, and which is far more severe than either alone. First edition, in force since 1 October 2026, with the high-temperature magnetic measurement standard GB/T 47896-2026. It was issued on 31 March 2026 and takes effect on 1 October 2026, as a first edition. The document is under the responsibility of the China Electrical Equipment Industry Association. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes a method for measuring the durability of permanent magnets under high temperature and multi-field coupling of reverse magnetic fields, and specifies the corresponding specimens and measuring equipment. Setup, data processing, uncertainty, and test reports. This document applies to the durability of permanent magnets such as rare earth iron boron, rare earth cobalt, rare earth iron nitrogen, AlNiCo, and permanent magnet ferrites under high-temperature reverse magnetic fields. The test.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 1184-1996 Geometric Tolerances - Tolerances Without Specified Values

GB/T 2900.60 Electrical Engineering Terminology. Electromagnetism

GB/T 3217 Magnetic Test Methods for Permanent Magnet (Hard Magnetic) Materials

GB/T 9637 Electrical Engineering Terminology. Magnetic Materials and Components

GB/T 24270 Method for measuring the temperature coefficient of magnetic properties of permanent magnet materials

GB/T 38437 Method for measuring the magnetic dipole moment of ferromagnetic material samples by pull-out or rotation

3 Terms and Definitions

The terms and definitions defined in GB/T 2900.60, GB/T 3217, GB/T 9637, GB/T 24270, and GB/T 38437, as well as the following terms and definitions, shall apply. Used in this document.

3.1 A permanent magnet, after being subjected to a specified high temperature and a magnetic field opposite to its magnetization direction for a period of time, maintains its magnetic dipole moment. ability.

3.2 After the permanent magnet was removed from the high-temperature and reverse magnetic field durability test environment and allowed to return to room temperature, the portion of its magnetic dipole moment that could not be recovered was... The ratio before the experiment, expressed as a percentage (%).

Note. In the industrial field, this is commonly referred to as irreversible magnetic flux loss, see Appendix A.

4.Measurement Principle A high-temperature reverse magnetic field durability testing device was used to test a saturated permanent magnet under high temperature and constant reverse magnetic field conditions. After a period of time, a high-temperature reverse magnetic field durability test was conducted.

Note. Based on the characteristics of the service environment of permanent magnets, a vibration field is added on this basis, see Appendix B.