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GB/T 47009-2026

**Test method for the durability of rare earth permanent magnet
materials under high temperature and a reversed magnetic field**

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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 and is under the jurisdiction of the National Rare Earth Standardization Technical Committee (SAC/TC229). This document was drafted by: Fujian Jinlong Rare Earth Co., Ltd., China National Institute of Metrology, Jiangxi University of Science and Technology, and Anhui Dadi Xiong. New Materials Co., Ltd., Ningbo New Materials Testing and Evaluation Center Co., Ltd., Ningbo Yunsheng Co., Ltd., Ningbo Ketian Magnetics Co., Ltd. Limited Liability Company, Baotou Tianhe Magnetic Materials Technology Co., Ltd., Jinlong Rare Earth New Materials (Baotou) Co., Ltd., Baotou Rare Earth Research Institute, Baotou City Instek Rare Magnetic New Materials Co., Ltd., Hangzhou Meici Technology Co., Ltd., Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences GRINM Rare Earth (Rongcheng) Co., Ltd., Ningbo Tongchuang Magnetics Co., Ltd., and Zhejiang Yingluohua Magnetics Co., Ltd. The main drafters of this document are. Wang Jinfeng, Zhang Jiulei, Gong Wenjie, Chen Dakun, Jiang Qingzheng, Ku Jinfeng, Feng Quanyu, Jiang Qiuxiao, and Zhong Tianyu. Yan Changjiang, Wu Zhifeng, Fu Jianlong, Dong Gaihua, Zhan Lichun, Wang Jinxiang, Sun Xiaojun, Chen Dongyang, Zhou Qiaoying, Chen Kan, Guo Shuai, Jia Shenglin, Xiao Fangfei Huang Xiulian, Yu Lijia, Li Zejiang, Guo Lizhen, Zhao Dongliang. High-Temperature Reverse Magnetic Field Durability of Rare Earth Permanent Magnet Materials Test methods

1 Scope

GB/T 47009-2026 is the Chinese national standard covering the condition that actually demagnetises a magnet in service - hot and pushed against by the field of the machine it sits in, which is exactly what happens to a traction motor's magnets during a hard overload. First edition, with the magnet footprint and traceability standards GB/T 47102-2026 and

GB/T 47011-2026. It was issued on 28 January 2026 and has been in force since 1 August 2026, as a first edition. The document is under the responsibility of the Standardization Administration of China. 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 test method for the high-temperature reverse magnetic field durability of rare earth permanent magnet materials. This document applies to the testing of the durability of rare earth permanent magnet materials such as rare earth iron boron and rare earth cobalt under high temperature reverse magnetic field.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are listed below. 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 3217-2019 Magnetic Test Methods for Permanent Magnet (Hard Magnetic) Materials

GB/T 8170 Rules for rounding off numerical values and the representation and determination of limiting values

GB/T 24270-2009 Method for measuring the temperature coefficient of magnetic properties of permanent magnet materials

GB/T 38437-2019 Method for measuring the magnetic dipole moment of ferromagnetic material samples by pull-out or rotation

GB/T 43264-2023 Test Method for Magnetic Field Distribution on the Surface of Permanent Magnets

JJF1829 Calibration Specification for Magnetic Measuring Instruments for Permanent Magnet Materials

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Durability The degree of change in the magnetic properties of rare earth permanent magnet materials under an applied magnetic field and a specified high temperature for a period of time.

3.2 An external magnetic field is applied that is opposite to the magnetization direction of the rare earth permanent magnet material.

4.Principles Rare-earth permanent magnet materials that have been magnetized to saturation are placed in a test apparatus with a specified high temperature and a constant reverse magnetic field for a period of time, and the resulting... Magnetic property loss. This loss can be characterized by changes in magnetic flux, remanence, or surface magnetic field before and after the test.

5 Measuring device

5.1 Magnetic Flux Measurement Device The magnetic flux measuring device shall meet the requirements for the detection coil and magnetic flux integrator in GB/T 38437-2019.