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**NATIONAL STANDARD OF THE
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GB/T 47349-2026

**Measuring methods for the magnetostrictive properties of
magnetostrictive materials**

磁致伸缩材料磁致伸缩特性测量方法

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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: National Institute of Metrology, Beijing University of Aeronautics and Astronautics, Baotou Municipal Inspection and Testing Center, and the Iron and Steel Research Institute. Limited Company, Baotou Rare Earth Research Institute, Ganjiang Innovation Research Institute of Chinese Academy of Sciences, Hunan University, University of Science and Technology Beijing, Ningbo Institute of Materials Technology and Engineering of Chinese Academy of Sciences Institute of

Technology and Engineering, China Rare Earth Group Innovation Technology Co., Ltd., Multifield Cryogenic Technology (Beijing) Co., Ltd., China Jiliang University Hunan Provincial Institute of Metrology and Testing, Guilin Electrical Science Research Institute Co., Ltd., Institute of Physics, Chinese Academy of Sciences, Ningbo Xinglong Magnetic Technology Co., Ltd. Limited Liability Company, Sanyou Lianzhong Group Co., Ltd., Jiangsu CRRC Electric Co., Ltd., Anhui Zhici New Material Technology Co., Ltd., China Southern Nanning Bureau of China State Grid Corporation Ultra-High Voltage Transmission Company, Hangzhou Special Equipment Inspection and Research Institute, Shenyang University of Technology, Zhejiang Sci-Tech University University, Hebei Shenke Magnetic Materials Co., Ltd., Inner Mongolia Northern Rare Earth New Materials Technology Innovation Co., Ltd., Sichuan Zhongyou Leyi Energy Equipment Manufacturing Co., Ltd., Qingdao Yunlu Advanced Materials Technology Co., Ltd., Wuhan Haidelong Instrument Technology Co., Ltd., Hangzhou Zheda Precision Yiji Electromechanical Technology Co., Ltd., Jiangxi Shangpeng Electronic Technology Co., Ltd., Guangdong Runyu Sensor Co., Ltd., Mianyang Metrology and Measurement Test site. The main drafters of this document are. Hou Ruifen, Liu Jinghua, Fu Xiaojuan, Mou Xing, Hao Hongbo, Xu Zhiyi, Gao Bing, Li Jiheng, Li Guowei, and Yi Tao. Guo Chenyang, Yang Hangfu, Xu Yu, Zhao Haorong, Lu Jun, Zhang Haitao, Du Xinyang, Zhao Zhen, Deng Bili, Qin Yan, Ding Wuji, He Zhenghua, Yu Xufeng, Wang Lichong Zhang Guangrui, Peng Xiaoling, Yang Dong, Fang Jun, Luo Sujun, Wang Hong, Li Haiquan, Zhang Zhigang, He Jian, Wang Jingmin, Zhang Zhiqiang, Wang Tingting, Sun Wen, Shen Shipeng Wu Qiong, Xi Xuekui, Yuan Chengyu, Zhao Jing, Cui Defeng, Dou Haizhi. Methods for measuring the magnetostrictive properties of magnetostrictive materials

1 Scope

GB/T 47349-2026 is the Chinese national standard covering how much a material changes length in a magnetic field - the effect that drives sonar transducers, ultrasonic actuators and precision positioners, and that also causes the hum of a transformer core. First edition, in force since 1 October 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 the measurement method for the DC magnetostrictive properties of magnetostrictive materials under different stresses, and specifies the corresponding measurement device. Samples, testing environment, data processing, measurement uncertainty, and test reports. This document applies to the magnetostrictive properties of materials such as terbium-dysprosium-iron alloys, iron-gallium alloys, iron-cobalt-vanadium alloys, iron-nickel alloys, pure nickel, and iron-aluminum alloys. This method can also be

used for the measurement of other magnetic materials when considering their magnetostrictive properties.

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 2900.60 Electrical Engineering Terminology. Electromagnetism

GB/T 3217-2013 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 19396 Terbium-dysprosium magnetostrictive materials

JJF1059.1 Evaluation and Expression of Measurement Uncertainty

3 Terms and Definitions

The terms and definitions defined in GB/T 2900.60, GB/T 19396 and GB/T 3217-2013, as well as the following terms and definitions, apply to this document.

3.1 The rate of change of dimensions (relative change in size) of a material under the influence of an external magnetic field.

Note. For the measurement of magnetostriction coefficient using the three-terminal capacitance method, please refer to Appendix A. 3.2 $\lambda_{\parallel}$ The rate of dimensional change of the material when the measurement direction is parallel to the direction of the external magnetic field. 3.3 $\lambda_{\perp}$ The rate of dimensional change of the material when the measurement direction is perpendicular to the direction of the external magnetic field.

3.4 The rate of change of the parallel magnetostriction coefficient caused by a unit change in magnetic field strength.