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

GB/T 35690-2017

**Methods for the determination of the relative magnetic
permeability of feebly magnetic materials
(English Translation)**

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Foreword

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

This standard uses redrafted Law Amendment uses IEC 60404-15:2016 "Magnetic Materials Part 15. The relative permeability of the weak magnetic material Measurement method. " this standard compared with IEC 60404-15:2016 more structural adjustment, Appendix A lists this standard and IEC 60404-15.

2016's chapter control list.

The technical differences between this standard and IEC 60404-15:2016 are as follows.

--- On normative references, this standard made a technical difference with the adjustment to adapt to China's technical conditions, adjust the situation Concentration reflected in the second chapter "Normative references", the specific adjustments are as follows.

- Equivalent to the international standard GB/T 2900.60-2002 instead of IEC 60050-121;
- Equivalent to the international standard GB/T 9637-2001 instead of IEC 60050-221;

Use JJF 1059.1-2012 instead of ISO/IEC Guide 98-3-2008.

--- Magnetic balance method (IEC 60404-15:2016 in Chapter 5) is a relative measurement method, only the measured permeability of the material Wai, with an informative appendix (Appendix B) reflected;

--- Magnetic flux perturbation method (IEC 60404-15:2016 in Chapter 6) is a relative measurement method, only the measured permeability of the material Range, with an informative appendix (Appendix C) reflected;

--- Increase the "use of the ancient law of the magnetometer to measure the relative permeability of weak magnetic materials," the contents of a normative appendix (Appendix D) embodied.

This standard made the following editorial changes.

--- Modify the standard name.

This standard proposed by the China Electrical Equipment Industry Association.

This standard by the National Electrotechnical Standardization Technical Committee (SAC/TC228) centralized.

This standard drafting unit. China Institute of Metrology, Guilin Electric Apparatus Research Institute Co., Ltd., Baosteel Special Steel Co., Ltd., China Steel Research Technology Group Co., Ltd., China Metrology University, Beijing Institute of Automation and Control Equipment, Chengdu Southwest Electric Co., Ltd. Beijing North Metallurgical can Materials Co., Ltd., Chinese Academy of Sciences, National Space Science Center, China Shipbuilding Industry Corporation seventh one hundred Institute.

1 Scope

This standard specifies the use of solenoid method and magnetic moment method to measure the relative permeability of weak magnetic materials (including austenitic stainless steel). Above the relative permeability measurements of the two methods are given in Table 1 and the applied field strength is in the range of 5 kA/m to 100 kA/m.

Table 1 relative permeability of the method for measuring the range

Measuring method Relative permeability measurement range Solenoid method 1.003 ~ 2.0
Magnetic moment method 1.003 ~ 1.2 the standard solenoid method is recommended for

the relative permeability of weak magnetic material standard method, and the magnetic moment method is mainly used to measure the quality of the standard measuring tools Relative permeability.

This standard applies to the relative permeability of weak magnetic materials measurement.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 2900.60-2002 Electrotechnical terminology electromagnetics [eqvIEC 60050 (121) .1998] GB/T 9637-2001 Electrotechnical terminology magnetic materials and components [eqvIEC 60050 (221) .1990] Evaluation and Expression of Uncertainty in Measurement

3 Terms and definitions

GB/T 9637-2001 and GB/T 2900.60-2002 as defined by the following terms and definitions apply to this document.

Self demagnetization Magnetized objects have a magnetization inside the opposite direction of the magnetic field phenomenon.

Demagnetize the magnetic material to achieve a state of magnetic neutral process.

Weak magnetic material feeblymagneticmaterial its nature is essentially a non-magnetic material.

4.1 Overview

The method described in this chapter is a standard method of measuring the relative permeability of weakly-magnetised materials. Solenoid method requires the aspect ratio of the test sample is not less than