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**Test methods for physical property of rare earth permanent
magnetic materials - Part 3: Determination of resistivity**

稀土永磁材料物理性能测试方法 第3部分：电阻率的测试

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 3 of GB/T 31967.GB/T 31967 has been published as follows.

- Part 1: Determination of magnetic flux-temperature characteristics;
- Part 2: Determination of flexural strength and fracture toughness;
- Part 3: Test of resistivity.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document was proposed and coordinated by the National Rare Earth Standardization Technical Committee (SAC/TC229).

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Introduction

Rare earth permanent magnet material is one of the most important rare earth functional materials, and is widely used in new energy vehicles, wind turbines, etc.

The purpose of GB/T 31967 is to establish a complete, feasible and And it is a method standard for physical performance testing of rare earth permanent magnet materials that is suitable for application and trade needs.

Due to the scope of application and the technical independence of the analytical methods, GB/T 31967 consists of three parts.

- Part 1: Determination of magnetic flux-temperature characteristics. The purpose is to determine the open circuit reversible magnetic flux-temperature characteristics of various rare earth permanent magnet materials.

Measuring device and procedures.

- Part 2: Determination of flexural strength and fracture toughness. The purpose is to determine the flexural strength and fracture toughness of various rare earth permanent magnet materials.

The measuring device, specimen size and test procedures are as follows.

- Part 3: Resistivity test. The purpose is to provide a complete and reliable resistivity test solution for rare earth permanent magnet materials.

This document selects factors related to resistivity measurement (area, thickness, external temperature, surface smoothness) for testing in order to more accurately Measure the resistivity of rare earth permanent magnet materials. Provide more accurate performance indicators for downstream companies when selecting rare earth permanent magnet materials, so as to make correct decisions.

Accurately evaluate its usage status in different working conditions in applications, thereby

promoting the healthy development of the upstream and downstream industries.

Test methods for physical properties of rare earth permanent magnet materials Part 3: Test of resistivity

1 Scope

This document describes the test methods for the resistivity of rare earth permanent magnet materials, including the Kelvin method, the Van der Pauw method, and the four-probe method.

This document is applicable to the test of resistivity of sintered NdFeB permanent magnet materials and sintered SmCo permanent magnet materials. Kelvin method is applicable to the test of rare earth permanent magnet material is perpendicular to the easy magnetization direction, parallel to the easy magnetization direction or at other angles to the easy magnetization direction (referring to the direction of the test current and the easy magnetization direction).

The Van der Pauw method is suitable for testing the resistivity of rare earth permanent magnet materials perpendicular to the easy magnetization direction, especially for testing The four-probe method is suitable for testing the resistivity of rare earth permanent magnet materials perpendicular to the easy magnetization direction. Resistivity.

This document is not applicable to the test of resistivity of bonded rare earth permanent magnet materials.

2 Normative references

GB/T 2900.60

GB/T 8170

JJF1059.1

JJG508

3 Terms and Definitions

The terms and definitions defined in GB/T 2900.60 and the following apply to this document.

3.1 voltage terminal

A needle-shaped probe or a cylindrical or knife-edge fixture used to detect the potential difference between any two points on the sample to be tested.

3.2 current terminal

A needle-like probe or fixture used to apply current to a sample.

3.3 distance of probes

The distance between any two nearest probe tips contacting the sample surface.

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