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GB/T 17951-2022

Specification for magnetically hard materials

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Preview: page 1 of 4 shown, full document available. Complete English PDF, instant download:
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Table of Contents

foreword

1 Scope

2 Normative references

3 Terms and Definitions

4 Types of materials and their applications

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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 of Standardization Documents"

drafted.

This document replaces GB/T 17951-2005 "General technical conditions for hard magnetic materials", compared with GB/T 17951-2005, except for editorial

In addition to the changes, the main technical changes are as follows.

--- Increased the grades and related properties of anisotropic bonded REFeN magnets (see Table 19);

--- Increase the high magnetic energy product La/Co substitute permanent magnet ferrite grades and related properties (see Table 14);

--- Added RECo552/52p and RECo568/60p two rare earth cobalt grades (see Table 16);

--- Increased the definition and mathematical determination of the demagnetizing field strength HD (see 13.2 and 13.3);

--- Changed some contents to be compatible with the test methods for hard magnetic materials GB/T 3217-2013 and GB/T 13888-2009.

This document uses the redrafting method to modify the use of IEC 60404-8-1.2015 "Magnetic Materials Part 8-1.Individual Material Specification Hard

Magnetic Materials".

Compared with IEC 60404-8-1.2015, this document has the following structural adjustments.

--- Added Appendix A;

--- Adjust Annex A of IEC 60404-8-1.2015 to Annex B.

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Compared with IEC 60404-8-1.2015, this document has many technical differences. Appendix A gives the corresponding technical differences and their origins.

Because of the list.

The following editorial changes have been made to this document.

--- Change the standard name to "General Specifications for Hard Magnetic Materials".

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

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1 Scope

This document specifies minimum values and dimensional tolerances for the main magnetic properties of hard magnetic materials (also known as permanent magnetic materials). To provide some reference information,

This document also gives density values and chemical composition ranges for materials.

This document applies to the inspection of hard magnetic materials.

Note. Table B.1 in Appendix B gives additional mechanical and physical property values related to magnetic materials for reference and comparison.

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, dated citations

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to

this document.

GB/T 2900.60-2002 Electrotechnical term Electromagnetics (eqvIEC 60050-121.1998)

GB/T 2900.83-2008 Electrical terminology electrical and magnetic devices (IEC 60050-151.2001, IDT)

GB/T 3217 Magnetic Test Methods for Permanent Magnetic (Hard Magnetic) Materials (GB/T 3217-2013, IEC 60404-5.1993, MOD)

GB/T 9637-2001 Electrotechnical Terminology Magnetic Materials and Components (eqvIEC 60050-221.1990)

GB/T 13888 Method for measuring the coercive force of magnetic materials in an open magnetic circuit (GB/T 13888-2009, IEC 60404-7.1982,

IDT)

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https://chinastandards.org/standards/gb-t-17951-2022

GB/T 29628 Guidelines for Measurement Methods of Permanent Magnet (Hard Magnetic) Pulses (GB/T 29628-2013, IEC TR62331.2005, NEQ)

3 Terms and Definitions

Terms and definitions defined in GB/T 2900.60-2002, GB/T 2900.83-2008 and GB/T 9637-2001 apply to this

document.

4 Types of materials and their applications

Hard magnetic materials are divided into R type (hard magnetic alloy material), S type (hard magnetic ceramic material) and U type (bonded hard magnetic material).

Hard magnetic materials have a magnetic polarization coercivity greater than 1kA/m, and can provide a material-dependent magnetic field after magnetization saturation.

or dynamic magnetic circuit applications.

Hard magnetic materials are very common in life. They are based on electromagnetic principles and are used in measuring devices, engines, generators, and loudspeakers.

realize the function of coupling, modulation or regulation in office equipment, computer hardware, entertainment appliances, radio communications, household appliances and medical equipment

is also essential. At the same time, hard magnetic materials can also be used for driving electric vehicles [including hybrid electric vehicles (HEV), electric vehicles (EV)]

machine, or used in jigs and clamps, templates in mechanical engineering.

In GB/T 21219-2007, the possible and typical applications of these hard magnetic materials that can be supplied in large quantities are described in more detail.

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