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Utgåva 1

**Magnetiska material – Specifikation för sintrade
mjukmagnetiska material**

**Magnetic materials – Specification for sintered
soft magnetic materials**

ICS 29.030

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ICS 29.030

English version

Magnetic materials - Specification for sintered soft magnetic materials

Matériaux magnétiques - Spécification des matériaux magnétiques doux frittés

Magnetische Werkstoffe - Anforderungen an weichmagnetische Sintermetalle

This European Standard was approved by CEN on 21 February 2003.

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EN 10331:2003 (E)

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Foreword

This document (EN 10331:2003) has been prepared by Technical Committee ECISS/TC 24, "Electrical steel sheet and strip qualities - Qualities dimensions, tolerances and specific tests", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2003, and conflicting national standards shall be withdrawn at the latest by October 2003.

This document is equivalent to IEC 60404-8-9.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

EN 10331:2003 (E)

1 Scope

This European Standard specifies some magnetic and mechanical properties of sintered soft magnetic metals which are used for components made by a powder metallurgical process only.

This standard does not apply to magnetically soft castings or to semi-finished products.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

prEN 10281, *Magnetic materials – Methods of measurement of the magnetic properties of isotropic nickel-iron soft magnetic alloys, types E1, E3 and E4.*

EN 24498-1, *Sintered metal materials, excluding hardmetals - Determination of apparent hardness - Part 1: Materials of essentially uniform section hardness (ISO 4498-1:1990)*

IEC 60050-121:1998, *International Electrotechnical Vocabulary (IEV) – Chapter 121: Electromagnetism.*

IEC 60050-221:1990, *International Electrotechnical Vocabulary (IEV) – Chapter 221: Magnetic materials and components.*

EN ISO 2738, *Sintered metal materials, excluding hardmetals - Permeable sintered metal materials – Determination of density, oil content and open porosity (ISO 2738:1999).*

ISO 3369, *Impermeable sintered metal materials and hardmetals – Determination of density.*

ISO 4498-2, *Sintered metal materials, excluding hardmetals – Determination of apparent hardness – Part 2: Case-hardened ferrous materials, surface enriched by carbon or carbon and nitrogen*

ISO 5755, *Sintered metal materials – Specifications.*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in IEC 60050-121:1998 and IEC 60050-221:1990, and the following apply:

3.1

sintered density, ρ_s

quotient of mass m and volume V of the sintered structural part (including pores) :

$$\rho_s = \frac{m}{V} \quad (1)$$

NOTE The sintered density ρ_s , given in equation (1) in grammes per cubic centimetres, is calculated from m in grammes and V in cubic centimetres.

3.2

porosity, P_s

content of pores relative to the total volume of the part in volume per cent

NOTE 1 Porosity of the sintered metal with the sintered density is calculated as follows:

$$P_s = (1 - \rho_s / \rho) \times 100 \% \quad (2)$$