

Soft ferrite material classification

Soft ferrite material classification

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 61332:2006 sisaldab Euroopa standardi EN 61332:2005 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 14.02.2006 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 61332:2006 consists of the English text of the European standard EN 61332:2005.</p> <p>This document is endorsed on 14.02.2006 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

<p>Käsitlusala: Specifies classification rules for soft ferrite materials used in inductive components (inductors and transformers) fulfilling the requirements of the electronic industries. Provides cross-reference between materials from multiple suppliers; assistance to customers in understanding the published technical data in catalogues when comparing multiple suppliers; guidance to customers in selecting the most applicable material for each application; nomenclature for IEC standards relating to ferrites.</p>	<p>Scope: Specifies classification rules for soft ferrite materials used in inductive components (inductors and transformers) fulfilling the requirements of the electronic industries. Provides cross-reference between materials from multiple suppliers; assistance to customers in understanding the published technical data in catalogues when comparing multiple suppliers; guidance to customers in selecting the most applicable material for each application; nomenclature for IEC standards relating to ferrites.</p>
--	--

ICS 29.030

Võtmesõnad: classification systems, classifications, electrical engineering, ferrites, iron inorganic compounds, magnetic circuits, magnetic cores, soft magnetic

English version

Soft ferrite material classification
(IEC 61332:2005)Classification des matériaux ferrites doux
(CEI 61332:2005)Werkstoffeigenschaften von
Ferritmaterialien
(IEC 61332:2005)

This European Standard was approved by CENELEC on 2005-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in two official versions (English, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELECEuropean Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

Foreword

The text of document 51/832/FDIS edition 2 of IEC 61332, prepared by IEC TC 51, Magnetic components and ferrite materials, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61332 on 2005-10-01.

This European Standard supersedes EN 61332:1997.

It includes the following significant technical changes with respect to EN 61332:1997.

- a) the scope has been reviewed;
- b) the column of temperature coefficient of SP class ferrite material has been omitted;
- c) the measuring frequency for relative loss factor of SP class has been specified;
- d) the parameters of SP class has been coordinated with EN 60401-3.

The following dates were fixed:

- | | | |
|--|-------|------------|
| – latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2006-07-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2008-10-01 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61332:2005 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-221	1990	International electrotechnical vocabulary Chapter 221: Magnetic materials and components	-	-
IEC 60401-3	2003	Terms and nomenclature for cores made of magnetically soft ferrites Part 3: Guidelines on the format of data appearing in manufacturers' catalogues of transformer and inductor cores	EN 60401-3	2003

INTERNATIONAL STANDARD

IEC
61332

Second edition
2005-09

Soft ferrite material classification



Reference number
IEC 61332:2005(E)

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site** (www.iec.ch)

- **Catalogue of IEC publications**

The on-line catalogue on the IEC web site (www.iec.ch/searchpub) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.

- **IEC Just Published**

This summary of recently issued publications (www.iec.ch/online_news/justpub) is also available by email. Please contact the Customer Service Centre (see below) for further information.

- **Customer Service Centre**

If you have any questions regarding this publication or need further assistance, please contact the Customer Service Centre:

Email: custserv@iec.ch
Tel: +41 22 919 02 11
Fax: +41 22 919 03 00

INTERNATIONAL STANDARD

IEC
61332

Second edition
2005-09

Soft ferrite material classification

© IEC 2005 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

G

For price, see current catalogue

INTERNATIONAL ELECTROTECHNICAL COMMISSION

SOFT FERRITE MATERIAL CLASSIFICATION

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61332 has been prepared IEC technical committee 51: Magnetic components and ferrite materials.

This second edition cancels and replaces the first edition published in 1995. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) the scope has been reviewed;
- b) the column of temperature coefficient of SP class ferrite material has been omitted;
- c) the measuring frequency for relative loss factor of SP class has been specified;
- d) the parameters of SP class has been coordinated with IEC 60401-3.

The text of this standard is based on the following documents:

FDIS	Report on voting
51/832/FDIS	51/838/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

SOFT FERRITE MATERIAL CLASSIFICATION

1 Scope

This International Standard specifies classification rules for soft ferrite materials used in inductive components (inductors and transformers) fulfilling the requirements of the electronic industries.

This standard addresses the following purposes for ferrite suppliers and users:

- cross-reference between materials from multiple suppliers;
- assistance to customers in understanding the published technical data in catalogues when comparing multiple suppliers;
- guidance to customers in selecting the most applicable material for each application;
- setting of nomenclature for IEC standards relating to ferrite;
- establishing uniform benchmarks for suppliers for performance in new development of materials.

The numerical values given in this standard are typical values of parameters (properties) of the related materials. Direct translation from the material specification into the core specification is not always easy or possible.

Every detailed material and core specification should be agreed upon between the user and the manufacturer.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

IEC 60401-3: 2003, *Terms and nomenclature for cores made of magnetically soft ferrites – Part 3: Guidelines on the format of data appearing in manufacturers' catalogues of transformer and inductor cores*

3 Terms and definitions

For the purposes of this document, the terms and definitions in Tables 1, 2 and 3 are defined in IEC 60050-221.

4 Classification

4.1 Material classification

Soft ferrite materials may be classified by the following basic parameters:

- initial permeability and the relevant operation frequency and/or applicable maximum frequency;
- initial permeability as a function of the temperature;
- applicable maximum flux density and/or amplitude permeability;
- power loss at a given frequency, temperature and flux density;
- normalized impedance at a given frequency.