

**Laminations for transformers and inductors  
Part 1: Mechanical and electrical  
characteristics**

Laminations for transformers and inductors Part 1:  
Mechanical and electrical characteristics

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 60740-1:2005 sisaldab Euroopa standardi EN 60740-1:2005 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 28.10.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 60740-1:2005 consists of the English text of the European standard EN 60740-1:2005.</p> <p>This document is endorsed on 28.10.2005 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>
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<p><b>Käsitlusala:</b> Specifies the characteristics of laminations normally used as cores for transformers and inductors. The laminations are made of sheets and strips of magnetic materials, specified in IEC 60404-8-4 and IEC 60404-8-7.</p>	<p><b>Scope:</b> Specifies the characteristics of laminations normally used as cores for transformers and inductors. The laminations are made of sheets and strips of magnetic materials, specified in IEC 60404-8-4 and IEC 60404-8-7.</p>
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**ICS** 29.100.10

**Võtmesõnad:**

**Laminations for transformers and inductors**  
**Part 1: Mechanical and electrical characteristics**  
(IEC 60740-1:2005)

Tôles découpées pour transformateurs  
et inductances  
Partie 1: Caractéristiques électriques  
et mécaniques  
(CEI 60740-1:2005)

Kernbleche für Transformatoren  
und Drosseln  
Teil 1: Mechanische und elektrische  
Eigenschaften  
(IEC 60740-1:2005)

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## Foreword

The text of document 51/823/FDIS, future edition 1 of IEC 60740-1, 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 60740-1 on 2005-08-01.

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) | 2006-05-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn                                               | (dow) | 2008-08-01 |

Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of the International Standard IEC 60740-1:2005 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 61797-1	NOTE	Harmonized as EN 61797-1:1996 (not modified).
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## 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	- 1)	International electrotechnical vocabulary Chapter 221: Magnetic materials and components	-	-
IEC 60404-1	2000	Magnetic materials Part 1: Classification	-	-
IEC 60404-8-4	1998	Part 8-4: Specifications for individual materials - Cold-rolled non-oriented electrical steel sheet and strip delivered in the fully-processed state	-	-
IEC 60404-8-7	1998	Part 8-7: Specifications for individual materials - Cold-rolled grain-oriented electrical steel sheet and strip delivered in the fully-processed state	-	-
IEC 60404-11	1991	Part 11: Method of test for the determination of surface insulation resistance of magnetic sheet and strip	-	-
A1	1998		-	-
IEC 61021-1	1990	Laminated core packages for transformers and inductors used in telecommunication and electronic equipment Part 1: Dimensions	EN 61021-1	1997
IEC 61021-2	1995	Part 2: Electrical characteristics for cores using YEE 2 laminations	EN 61021-2	1997
ISO 286-1	1988	ISO system of limits and fits Part 1: Bases of tolerances, deviations and fits	EN 20286-1	1993

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1) Undated reference.

# INTERNATIONAL STANDARD

**IEC**  
**60740-1**

First edition  
2005-08

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## **Laminations for transformers and inductors –**

### **Part 1: Mechanical and electrical characteristics**



Reference number  
IEC 60740-1:2005(E)

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# INTERNATIONAL STANDARD

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## **Laminations for transformers and inductors –**

### **Part 1: Mechanical and electrical characteristics**

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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

## LAMINATIONS FOR TRANSFORMERS AND INDUCTORS –

### Part 1: Mechanical and electrical characteristics

#### FOREWORD

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International Standard IEC 60740-1 has been prepared by IEC technical committee 51: Magnetic components and ferrite materials.

IEC 60740-1 cancels and replaces IEC 60740 published in 1982 and its amendment 1 (1991). The main changes are listed below:

- a) ranges with lamination strips YS, YSUI 1, YSUI 2 and laminations YEE 2-...L added;
- b) range YEI 1 extended at the above end;
- c) ranges YED 2, YEF 2, YEL 2, YES 2, Type YM 1-5a and YM 1-7a cancelled;
- d) national designations cancelled;
- e) electrical characteristics for the laminations specified;
- f) mechanical characteristics for laminations added;
- g) holes added for lamination types YEI 1, YUI 1, YUI 2, YM 1;
- h) in Annex A, a conversion of the polarisation  $\hat{J}$  and the field strength  $\hat{H}$  in a specific total apparent power is defined. For the characteristics of the reactive power and the power loss, equations and constants are specified.

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

FDIS	Report on voting
51/823/FDIS	51/836/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.

IEC 60740 consists of the following parts under the general title *Laminations for transformers and inductors*:

Part 1: Mechanical and electrical characteristics

Part 2: Specification for the minimum permeabilities of laminations made of soft magnetic metallic materials.

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.

## LAMINATIONS FOR TRANSFORMERS AND INDUCTORS –

### Part 1: Mechanical and electrical characteristics

#### 1 Scope

This part of IEC 60740 specifies the characteristics of laminations. Their preferred use is cores for transformers and inductors. The laminations are made of sheets and strips of magnetic materials, specified in IEC 60404-8-4 and IEC 60404-8-7.

#### 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, *International Electrotechnical Vocabulary (IEV) – Chapter 221: Magnetic materials and components*

IEC 60404-1:2000, *Magnetic materials – Part 1: Classification*

IEC 60404-8-4:1998, *Magnetic materials – Part 8-4: Specifications for individual materials – Cold-rolled non-oriented electrical steel sheet and strip delivered in the fully-processed state*

IEC 60404-8-7:1998, *Magnetic materials – Part 8-7: Specifications for individual materials – Cold-rolled grain-oriented electrical steel sheet and strip delivered in the fully-processed state*

IEC 60404-11:1999, *Magnetic materials – Part 11: Method of test for the determination of surface insulation resistance of magnetic sheet and strip*

IEC 61021-1:1990, *Laminated core packages for transformers and inductors used in telecommunication and electronic equipment – Part 1: Dimensions*

IEC 61021-2:1995, *Laminated core packages for transformers and inductors used in telecommunication and electronic equipment – Part 2: Electrical characteristics for cores using YEE 2 laminations*

ISO 286-1:1988, *ISO system of limits and fits – Part 1: Bases of tolerances, deviations and fits*