SLOVENSKI STANDARD

SIST EN 60401-1:2005

december 2005

Pojmi in nomenklatura za jedra iz mehkomagnetnih feritov – 1. del: Pojmi, uporabljeni za fizikalne nepravilnosti (IEC 60401-1:2002)

Terms and nomenclature for cores made of magnetically soft ferrites – Part 1: Terms used for physical irregularities (IEC 60401-1:2002)

ICS 01.040.29; 29.100.10

Referenčna številka
SIST EN 60401-1:2005(en)

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60401-1

February 2005

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English version

Terms and nomenclature for cores made of magnetically soft ferrites Part 1: Terms used for physical irregularities

(IEC 60401-1:2002)

Termes et nomenclature pour noyaux en matériaux ferrites magnétiquement doux
Partie 1: Termes utilisés pour les irrégularités physiques
(CEI 60401-1:2002)

Begriffe und Bezeichnungssystem für Kerne aus weichmagnetischen Materialien
Teil 1: Begriffsfestlegungen für physikalische Beschädigungen
(IEC 60401-1:2002)

This European Standard was approved by CENELEC on 2005-02-01. 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.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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

Ref. No. EN 60401-1:2005 E

Foreword

The text of the International Standard IEC 60401-1:2002, prepared by IEC TC 51, Magnetic components and ferrite materials, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60401-1 on 2005-02-01 without any modification.

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) 2006-02-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2008-02-01

Endorsement notice

The text of the International Standard IEC 60401-1:2002 was approved by CENELEC as a European Standard without any modification.

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Termes et nomenclature pour noyaux en matériaux ferrites magnétiquement doux –

Partie 1:
Termes utilisés pour les irrégularités physiques

Terms and nomenclature for cores made of magnetically soft ferrites –

Part 1:
Terms used for physical irregularities

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

TERMS AND NOMENCLATURE FOR CORES MADE OF MAGNETICALLY SOFT FERRITES –

Part 1: Terms used for physical irregularities

FOREWORD

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International Standard IEC 60401-1 has been prepared by IEC technical committee 51: Magnetic components and ferrite materials.

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

FDIS	Report on voting
51/692/FDIS	51/698/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 60401 consists of the following parts, under the general title: *Terms and nomenclature for cores made of magnetically soft ferrites*:

Part 1: *Terms used for physical irregularities*

Part 2: *Reference of dimensions (under consideration)*

Part 3: *Guide on the format of data appearing in manufacturers' catalogues of transformer and inductor cores* (under consideration)

Part 3 will cancel and replace the existing IEC 60401 published in 1993.

The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

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

TERMS AND NOMENCLATURE FOR CORES MADE OF MAGNETICALLY SOFT FERRITES –

Part 1: Terms used for physical irregularities

1 Scope

This part of IEC 60401 provides a nomenclature of the most frequent surface, bulk, and shape irregularities relevant to cores made of ferrites (magnetic oxides). Most irregularities are graphically exemplified as visual aids. A general recommendation is also given for a consistent scheme for specifying the exact location of the irregularity, combining a general name for the location with more detailed qualifiers of the specified location. This standard can also be useful as a terminology reference when preparing technical documentation, irregularity inspection specifications, etc.

2 General overview

Physical irregularities mean here the surface irregularities, bulk irregularities and shape irregularities. The irregularity here stands for inconsistency of the state or quality of the part's surface, bulk or shape with its intended regularity. These irregularities are considered here in the macroscopic scale, i.e. within the range of linear dimensions of irregularities from one micrometre to tens of millimetres.

There is a great variety of surface, bulk and shape irregularities degrading the quality of parts made of ferrites. Different types of these irregularities may often occur together and overlap one another.

Each type of irregularity is, in general, produced by one or more of the following: an incorrectly or inaccurately performed manufacturing step, or improper handling, grinding, packing or transportation.

The extent of the quality degradation is dependent on the type, scale, and combination of irregularities being present as well as on their locations on the part. There are locations particularly sensitive to the degrading effect of the specific types of irregularities.

The irregularities may in extreme cases give a detrimental or critical effect to magnetic, electric and mechanical performances of the part. Operations performed on the part, such as marking, winding, assembling and mounting, can also be adversely affected by the irregularities.

An ongoing tendency to upgrade the overall quality of the parts results in more stringent restrictions being imposed on the quantity of irregularities in these parts.

This brings about a need for a set of definitions, or nomenclature, which would be a primary basis for approaches to irregularities and their location issues.

Therefore, this nomenclature is intended to be used as a uniform reference when formulating more detailed descriptions of irregularities at specified locations, requirements and procedures related to the inspection and assessment of irregularities. This nomenclature can also be useful with regard to methods and tools used for detection, recognition and classification of irregularities.

3 General terms

3.1
surface irregularity
unintentional state or appearance of the surfaces, edges and corners of the part

NOTE Some surface irregularities, if excessive, can so deform contours and surfaces of the part, that they may also be classified as shape irregularities.

3.2
shape irregularity
unintentional deformation of the contour lines or surfaces delimiting the shape of the part

NOTE In some cases, shape irregularities smaller than quoted tolerances may still disqualify the part.

3.3
bulk irregularity
unintentional inhomogeneity inside the part

3.4
tolerance (dimensional)
allowable difference between nominal and permissible limit dimensions of contour lines defining the part's shape

3.5
location (of the irregularity)
position on or within the part where the irregularity is present

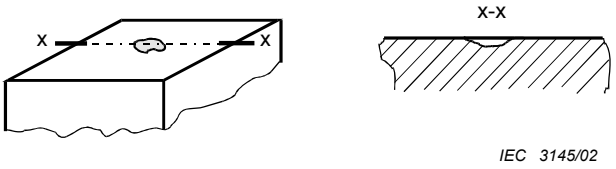
4 Surface irregularities

4.1
chip
Lack of surface material generally caused by mechanical impact during handling or grinding

NOTE In almost all cases, they are located on the edges of surfaces.

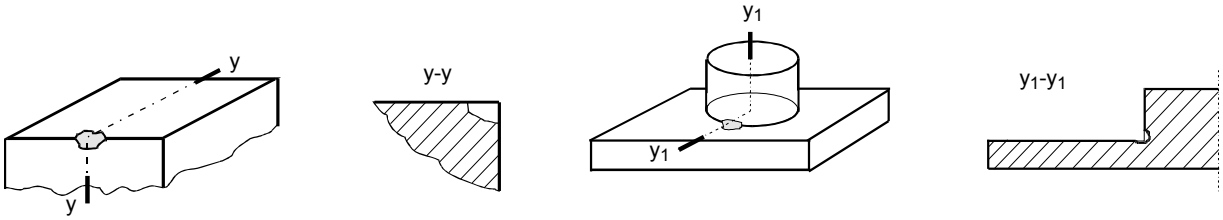
According to specific locations, the chips are sub-classified:

4.1.1
surface chip
chip located only on the core surface



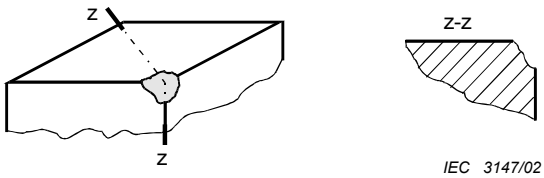
IEC 3145/02

4.1.2
edge chip
chip located only on the core edge



IEC 3146/02

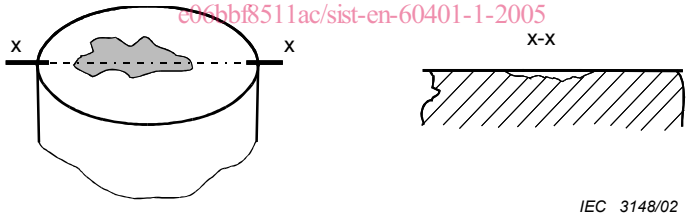
4.1.3
corner chip
chip located only in a corner



IEC 3147/02

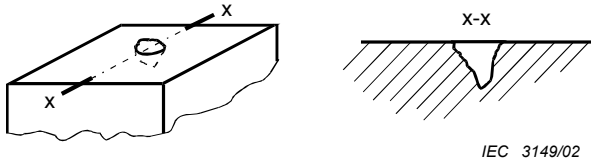
4.1.4
pull-out
consequence of the removal of the surface layer of the core due to die "sticking", which occurs on surfaces perpendicular to the direction of pressing action

NOTE A pull-out with depth greater than 1 mm should be considered as a chip.



IEC 3148/02

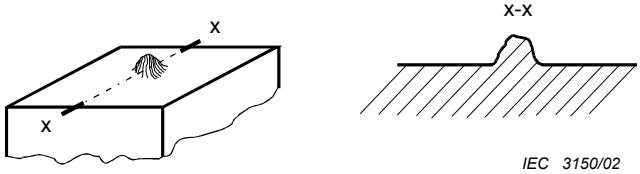
4.1.5
crater
blind hole with depth comparable to or greater than its diameter



IEC 3149/02

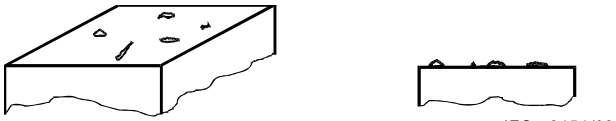
4.2 Protruding (convex) irregularities

4.2.1
hump
elevation of rounded contour on the relevant surface



IEC 3150/02

4.2.2
attached particles
any particle on the surface which cannot be removed by compressed-air, cleaning, washing or wiping

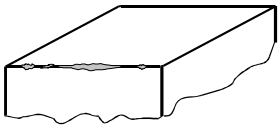


IEC 3151/02

4.2.3
inclusions
millimetre or sub-millimetre-sized foreign bodies located in the surface of the part (refer to 5.2)

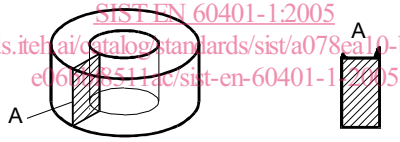
4.3 Edge irregularities

4.3.1
ragged edge
edge affected by a series of small chips



IEC 3152/02

4.3.2
flash
sharp feather-edge wall extending beyond the intended contour surface of the core



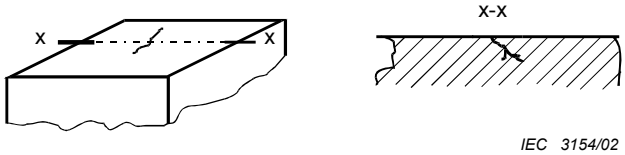
IEC 3153/02

4.4 Crack irregularities

4.4.1
crack
surface irregularity which has a width much smaller than its length, and penetrates into the core

Specific types of ‘cracks’ can be sub-classified:

4.4.2
single-surface narrow crack
crack located on a single surface, not going beyond its edges, and with width not exceeding a specified limit (e.g. 0,1 mm) anywhere along the crack path on the surface



IEC 3154/02