National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 60726:2003

ICS 29.180

National Standards
Authority of Ireland
Dublin 9
Ireland

Tel (01) 807 3800
Tel (01) 807 3838

DRY-TYPE POWER TRANSFORMERS

(IEC 60726:1982 + A1: 1986, MODIFIED)

This Irish Standard was published under the authority of the National Standards Authority of Ireland and comes into effect on February 28, 2003

Price Code O

Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD **EN 60726**

NORME EUROPÉENNE

EUROPÄISCHE NORM January 2003

ICS 29.180

Supersedes HD 464 S1:1988 + A2:1991 + A3:1992 + A4:1995 + A5:2002

English version

Dry-type power transformers
(IEC 60726:1982 + A1:1986, modified)

Transformateurs de puissance
de type sec
(CEI 60726:1982 + A1:1986, modifiée)

Trockentransformatoren
(IEC 60726:1982 + A1:1986, modifiziert)

This European Standard was approved by CENELEC on 2002-11-01. 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 three official versions (English, French, 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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 60726:2003 E

Foreword

The text of the International Standard IEC 60726:1982 and its amendment 1:1986, prepared by IEC TC 14, Power transformers, together with the common modifications prepared by the Technical Committee CENELEC TC 14, Power transformers, was approved by CENELEC as HD 464 S1 on 1988-06-28.

This Harmonization Document, together with its amendments A1 to A5, was submitted to a formal vote for conversion into a European Standard and was approved by CENELEC as EN 60726 on 2002-11-01and was approved by CENELEC as EN 60726 on 2002-11-01.

This European Standard supersedes HD 464 S1:1988 + A2:1991 + A3:1992 + A4:1995 + A5:2002.

As soon as IEC 60076-11 is endorsed by CENELEC this document will be withdrawn.

The common modifications indicated in this document correspond to those included in HD 464 S1:1988 with additional minor modifications.

The reference of clauses, subclauses, notes, figures and annexes which are in addition to those in IEC 60726 is prefixed with the letter Z.

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) 2003-11-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) -

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, Annexes A, B, ZA, ZB, ZC and ZE are normative and Annex ZD is informative.
Annexes ZA, ZB, ZC, ZD and ZE have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60726:1982 and its amendment 1:1986 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

1 Scope

Replace in line 18 of the French text “résistant au feu” by “antidéflagrants”.

Add as second indent in the list of exclusions (second paragraph) the following:

- transformers having no windings with rated voltage U_r higher than 1 000 V;

Modify the third paragraph (Where IEC ... or in part) into a note.

2 Service conditions

2.1 Add after the fourth line of item b):

NOTE Both outdoor and indoor dry-type transformers are suitable for transport and storage at ambient temperatures down to –25 °C.

The last-but-one word of the French text (approximativement) shall be **replaced** by the word "pratiquement"

3 Definitions

Replace in the French definitions of 3.1.1 and 3.1.2 the word "enrobés" by "encapsulés". Same for following text.

4 Tappings

Replace "tap-changing" at the end of the clause by "links or tap-selectors".

8 Rating plates

Add after point t) the following new points:

za) Degree or degrees of protection IP in accordance with IEC 60529 when an enclosure is provided.

zb) Statements of environmental, climatic and fire behaviour classes (see Annex B) to which the complete transformer complies, as follows: EX - CX - FX according to Table B.Z1.

10 Temperature-rise limits

Table IV - Temperature-rise limits

Amend the values in the table after the line 155 (F) - 100 as follows:

1	2	3
. . . .	. . . . 180 (H) 200 220	. . . . 125 135 150
. . . .	. . . .	. . . .

10.2 Add *the following note:*

NOTE When a transformer has windings of different insulation system temperatures, the reference temperature relating to the winding having the higher insulation system temperature shall be used.

For some applications, a lower maximum temperature rise may be chosen from values given in column 3 of Table IV.

Reference temperatures for load loss and short-circuit impedance should be in accordance with the newly assigned temperature rises (e.g. it should be possible to specify an unit belonging to class F having a maximum temperature rise of 80 K instead of 100 K).

19 Lightning impulse test (type test)

Add at the end of the note a new sentence as follows:

Taking into account the above statement, slight deviations in current wave-form are not reasons for rejection.

20 Partial discharge measurement (special test)

Replace this clause by:

20 Partial discharge measurement

20.1 General

Partial discharge measurements shall be performed on all dry-type transformers. Measurement shall be made in accordance with IEC 60270 and IEC 60076-3, Annex A.

The partial discharge measurement shall be performed on transformer windings having $U_m \geq 3{,}6$ kV.

20.2 Basic measuring circuit (typical only)

A basic measuring circuit for the partial discharge test is shown in Figure 1, Figure 2, Figure Z1 and Figure Z2.

In the figures a partial discharge-free capacitor, C (having a capacitance value large in comparison with the calibration generator capacitance, C_0) in series with a detection impedance, Z_m, is connected to each of the high-voltage terminals.