SLOVENSKI STANDARD
SIST EN 50075:1997

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Flat non-wirable two pole plugs, 2,5 A 250 V, with cord, for the connetcion of class II-equipment for household and similar purposes

Flat non-rewirable two-pole plugs, 2,5 A 250 V, with cord, for the connection of class II-equipment for household and similar purposes

Flache, nichtwiederanschließbare, zweipolige Stecker, 2,5 A 250 V, mit Leitung, für die Verbindung von Klasse-II-Geräten für Haushalt und ähnliche Zwecke

Fiche de prise de courant 2,5 A 250 V plate bipolaire non démontable, avec câble, pour la connexion des appareils de la classe II pour usages domestiques et analogues

Ta slovenski standard je istoveten z: EN 50075:1990

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ENGLISH VERSION

FLAT NON-WIRABLE TWO-POLE PLUGS, 2,5 A 250 V, WITH CORD, FOR THE CONNECTION OF CLASS II-EQUIPMENT FOR HOUSEHOLD AND SIMILAR PURPOSES

Fiche de prise de courant 2,5 A 250 V plate bipolaire non démontable, avec câble, pour la connexion des appareils de la classe II pour usages domestiques et analogues

Flache, nichtwiederanschließbare, zweipolige Stecker, 2,5 A 250 V, mit Leitung, für die Verbindung von Klasse II-Geräten für Haushalt und ähnliche Zwecke

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Up-to-date list 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.

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CENELEC

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

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INTRODUCTION

This document has been prepared by CENELEC TC23X "Europlugs and socket-outlets", when at its meeting on 18th and 19th November 1986 decided to prepare an EN for the flat, non-rewirable plug 2,5A 250V for the connection of Class II equipment, to Standard Sheet XVI (Alternative II) of CEE Publication 7 (second edition, 1963, and Modifications 1, 2, 3 and 4) or Standard C 5 (Alternative II) of IEC 83.

This plug, also known as the "Europlug", has already been standardized in most European countries (except United Kingdom); the relevant national standards are either endorsements of CEE Publication 7 or based on this specification.

The Europlug has existed now for more than 25 years and is made by a large number of manufacturers. Many of these Europlugs have been tested for compliance with the requirements of CEE Publication 7 or the corresponding national standard by the testing laboratories of various European countries and have been approved.

As this EN shall be applicable to the existing, approved Europlugs (and also to new designs), this document is based mainly on the requirements of CEE Publication 7, but small alterations included in IEC Publications 884-1 have also been taken into account. If this EN had been based completely on IEC 884-1, there would be a risk that the existing plugs would not meet the requirements of this standard.

In this document, requirements are indicated by a vertical line in the margin, test specifications are not marked and explanatory matter (notes) has been typed indented.

The text of prEN 50075 (1st edition - 1989) was approved by all CENELEC members **with the exception of** Norway and Sweden on 11 September 1989 as a European Standard.

The following dates are applicable:

- latest date of announcement of the EN at national level	(doa)	: 1990-05-01
- date of latest publication of a new harmonized standard	(dop)	: 1991-03-01
- date of withdrawal of conflicting national standards	(dow)	: 1993-03-01

For products which have complied with the relevant national standard before 1993-03-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1998-03-01.

Contents

1 SCOPE

This standard applies to flat non-rewirable two-pole plugs without earthing contact with a rated voltage of 250V a.c. and a rated current of 2,5A. They are supplied with a cord, for the connection of equipment of Class II, for household and similar purposes, and having no special protection against ingress of water are intended for indoor use.

Plugs complying with this standard are suitable for use at ambient temperatures not normally exceeding 25°C, but occasionally reaching 35°C.

Plug portions of adaptors or equipment, such as razors or lamps with rechargeable batteries, plug-in transformers, etc., shall comply with the requirements of this standard as far as they reasonably apply.

2 DEFINITIONS

Where in this standard the term "plug" is used, plugs according to this standard are meant, unless otherwise specified.

Where in this standard the terms voltage and current are used, they imply r.m.s. values, unless otherwise specified.

The following definitions apply for the purpose of this standard:

2.1 A plug is a device having pins designed to engage with the contacts of a socket-outlet and also incorporating means for the electrical connection and mechanical retention of a cord.

2.2 A non-rewirable plug is a plug so constructed that it forms a complete unit with the cord after connection and assembly by the manufacturer (see also 9.1).

The manufacturer referred to in this definition is either the manufacturer of:
- the plug or the cord set,
- the cord,
- the appliance or equipment.

2.3 A moulded-on plug is a non-rewirable plug the manufacture of which is completed by insulating material moulded around the pre-assembled component parts and the terminations.

3 GENERAL REQUIREMENTS

Plugs shall be so designed and constructed that in normal use, the performance is reliable and without danger to the user or surroundings.

In general, compliance is checked by carrying out all the relevant tests specified.

4 GENERAL NOTES ON TESTS

4.1 Tests according to this standard are type tests.

4.2 For testing, plugs shall be provided with a cord appropriate to its intended purpose, the cord being at least 1m long.

4.3 Unless otherwise specified, the tests are carried out in the order of the clauses, at an ambient temperature of (20±5)°C.

4.4 A set of three plugs is subjected to all the relevant tests, with the exception of those of 12.2, 12.3, 13.4 and 14.2.
A second set of three plugs is subjected to tests of 12.2, 13.4 and 14.2.
A third set of three plugs is required for the test of 12.3.

A total of nine plugs is thus required.

4.5 Plugs are deemed not to comply with this standard if there are more failures than that of one plug in one of the tests. If one plug fails in a test, that test and those preceding, which may have influenced the result of that test, are repeated on another set of plugs of the number specified in 4.4, all of which shall then comply with the repeated tests.

In general, it will only be necessary to repeat the tests which caused the failure.
The applicant may submit, together with the number of plugs specified in 4.4, the additional sets of plugs which may be needed should one plug fail. The testing station will then, without further request, test the additional plugs and will only reject if a further failure occurs. If the additional sets of plugs are not submitted at the same time as the first sets a failure of one plug will entail a rejection.

5 RATING

Plugs according to this standard shall be rated 2,5A 250V a.c.

6 MARKING

6.1 Plugs shall be marked with:
- the rated current in amperes,
- the rated voltage in volts,
- the symbol for nature of supply: ~ ,
- either the name, trade mark or identification mark of the manufacturer or of the responsible vendor,
- the type reference, which may be a catalogue number.

6.2 When symbols are used, they shall be as follows:
- amperes ..... A.
- volts ..... V.

The marking for rated current, rated voltage and nature of supply shall be made in one of the following ways:

2,5A 250V~ or 2,5/250 ~ or $\frac{2,5A}{250V}$ ~ or $\frac{2,5}{250}$ ~

Lines formed by the construction of the tool are not considered as part of the marking.

6.3 Plugs shall not be marked with the symbol for Class II construction.

6.4 Marking shall be durable and easily legible.

Compliance with the requirements of 6.1 to 6.4 is checked by inspection and by the following test.

The marking is rubbed by hand for 15s with a piece of cloth soaked with water and again for 15s with a piece of cloth soaked with petroleum spirit.

Marking made by moulding, pressing or engraving is not subjected to this test.

The petroleum spirit used should consist of a solvent hexane with a content of aromatics of maximum 0.1 volume percentage, a kauri-butanol value of 29, an initial boiling point of approximately 65°C, a dry-point of approximately 69°C and a density of approximately 0,68g/cm^3.

7 DIMENSIONS

Plugs shall comply with Standard Sheet 1.

Compliance is checked by measurement and by means of the gauges shown in Figures 1 and 2.

The use of the gauges shown in Figure 1 for checking the diameter of the pins, is optional.

8 PROTECTION AGAINST ELECTRIC SHOCK

8.1 Live parts of plugs, with the exception of the bare metal parts of the pins, shall not be accessible.

Compliance is checked by the following test.

The standard test finger shown in Figure 3 is applied in every possible position, except on the bare metal parts of the pins.

An electrical indicator with a voltage between 40V and 50V is used to show contact with the relevant part.

For plugs made of material that is likely to influence the requirement, the test is repeated at an ambient temperature of (35±2)°C, the plugs being also at this temperature.
During this additional test, the plugs are subjected for (60^{+5}_{0})s to a force of (75^{+3}_{0})N, applied through the tip of a straight unjointed test finger of the same dimensions as the standard test finger shown in Figure 3. The straight unjointed test finger is applied to all places where yielding of the insulating material could impair the safety of the plug

During this test, the plug shall not deform to such an extent that those dimensions shown in the standard sheet which ensure safety are unduly altered and no live part shall be accessible.

8.2 It shall not be possible to make connection between a pin of a plug and a live socket contact of a socket-outlet while the other pin is accessible.

Compliance is checked by means of the gauge shown in Figure 4. For plugs with enclosures or bodies of thermoplastic material, the test is made at an ambient temperature of (35±2)°C, the plug and the gauge both being at this temperature.

8.3 External parts of plugs, with the exception of the pins, shall be of insulating material.

Compliance is checked by inspection.

Lacquer or enamel is not deemed to be an insulating material for the purpose of this sub-clause.

9 CONSTRUCTION

9.1 Plugs according to this standard shall be non-rewirable, i.e. they shall be such that:
- the cord cannot be separated from the plug without making this permanently useless, and
- the plug cannot be opened by hand or by using a general purpose tool, e.g. a screwdriver.

A plug is considered to be permanently useless when, for re-assembling the plug, parts or materials other than the original are to be used.

Compliance is checked by inspection.

9.2 Switches, fuses or lampholders shall not be incorporated in plugs.

Compliance is checked by inspection.

9.3 Pins of plugs shall be solid and shall have adequate mechanical strength.

Compliance is checked by inspection and by the tests of Clause 13.

9.4 Pins of plugs shall be locked against rotation and adequately fixed into the body of the plug.

Compliance is checked by inspection, by manual test and by the tests of 13.1 and 13.4.

9.5 Plugs shall be provided with soldered, welded, crimped or equally effective permanent connections; screwed or snap-on connections shall not be used.
Connections made by crimping a presoldered flexible conductor are not permitted, unless the soldered area is outside the crimping area.

Compliance is checked by inspection.

9.6 Plugs shall be shaped in such a way and made of such a material that they can easily be withdrawn by hand from a socket-outlet.
In addition, the gripping surfaces shall be so designed that the plug can be withdrawn without having to pull the cord.

Compliance is checked by inspecting whether the plug has either:
- a usable length for gripping of at least 55mm in axial direction, or
- such indent(s) that a ball with a diameter of (12±0,1)mm can penetrate radially into the body at least 2mm from two opposite directions or at least 4mm from one direction.

In case of non-compliance with the above requirements, a gripping test shall be performed.

The gripping test is under consideration.

10 RESISTANCE TO HUMIDITY

Plugs shall be proof against humidity which may occur in normal use.

Compliance is checked by the humidity treatment described below, followed immediately by the measurement of the insulation resistance and by the electric strength test specified in Clause 11.

The humidity treatment is carried out in a humidity cabinet containing air with a relative humidity maintained between 91% and 95%. The temperature of the air, where plugs are placed, is maintained within ±1°C of any convenient value t between 20°C and 30°C. Before being placed in the humidity cabinet, the plugs are brought to a temperature between t and t + 4°C.
The plugs are kept in the cabinet for 48h.

In most cases the plugs may be brought to the specified temperature by keeping them at this temperature for at least 4h before the humidity treatment.

A relative humidity between 91% and 95% can be obtained by placing in the humidity cabinet a saturated solution of a sodium sulphate (Na_2SO_4) or potassium nitrate (KNO_3) in water having a sufficiently large contact surface with the air. In order to achieve the specified conditions within the cabinet, it is necessary to ensure contact circulation of the air within and, in general, to use a cabinet which is thermally insulated.

After this treatment the plugs shall show no damage within the meaning of this standard.

11 INSULATION RESISTANCE AND ELECTRIC STRENGTH

The insulation resistance and the electric strength of plugs shall be adequate.

Compliance is checked by the following tests, which are made immediately after the test of clause 10, in the humidity cabinet or in the room in which the plugs are brought to the prescribed temperature.

11.1 The insulation resistance is measured using a d.c. voltage of approximately 500V, the measurement being made (60^{+5}_{0})s after application of the voltage.
The insulation resistance shall be not less than 5MΩ.

The insulation resistance is measured consecutively between:
- the pins connected together and the body;
- each pin in turn and the other, the latter being connected to the body.

The term "body" means a metal foil in contact with the outer surface of the plug, other than the engagement face and the insulating sleeves.

While wrapping the metal foil round the outer surface, it is pressed against holes or grooves without any appreciable force by means of the straight unjointed test finger, having the same dimensions as the standard test finger shown in Figure 3.

11.2 A voltage of substantially sine-wave form, having a frequency of 50Hz, is applied for 1 min between the parts indicated in 11.1.
The test voltage shall be 2000V.
Initially, not more than 1000V is applied, then it is raised rapidly to the full 2000V.
No flashover or breakdown shall occur during the test.
The high-voltage transformer used for the test shall be so designed that, when the output terminals are short-circuited after the output voltage has been adjusted to the appropriate test voltage, the output current is at least 200mA.
The overcurrent relay shall not trip when the output current is less than 100mA.
Care is taken that the r.m.s. value of the test voltage applied is measured within ±3%.

Glow discharges without drop in voltage are neglected.

12 FLEXIBLE CORDS AND THEIR CONNECTION

12.1 Plugs shall be provided with a two-core cord complying with either HD 21.5 or HD 22.4.
Flat tinsel cords and cords having a cross-sectional area of 0,5mm^2 are allowed in lengths up to 2m only.

A plug incorporated in a cord set is tested as specified in this standard and the connector is tested as specified in EN 60 320, each device being tested individually.

Compliance is checked by inspection