
Električna oprema neelektričnih aparatov za gospodinjske in podobne namene - Varnostne zahteve

Electrical equipment of non-electric appliances for household and similar purposes - Safety requirements

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English version

Electrical equipment of non-electric appliances for household and similar purposes - Safety requirements

Équipement électrique des appareils non électriques pour usages domestiques et analogues - Règles de sécurité

Elektrische Ausrüstung von nicht-elektrischen Geräten für den Hausgebrauch und ähnliche Zwecke
Sicherheitsanforderungen

This European Standard was approved by CENELEC on 1997-03-11. 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.

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CENELEC

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

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Foreword

This European Standard was prepared by CENELEC BTTF 60-3, Electrical equipment of non-electric cooking/heating appliances.

The first draft was submitted to the Unique Acceptance Procedure (UAP) in October 1993 but it did not receive sufficient support. The comments were discussed during the Paris meeting of CENELEC Technical Committee TC 61 in November 1994, when it was decided to submit a new draft to the formal vote. This draft was circulated in May 1995 but it was also rejected.

A third draft was submitted to the formal vote in November 1996 and was ratified by CENELEC as EN 50165 on 1997-03-11.

The following dates are applicable:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1998-03-01
- date on which national standards conflicting with the EN have to be withdrawn (dow) 1998-03-01

For products which have complied with the relevant national standard before 1998-03-01, as shown by the manufacturer or by a certification body, these previous standards may continue to apply for production until 2003-03-01.

This standard has to be used in conjunction with EN 60335-1, Safety of household and similar electrical appliances, Part 1: General requirements, which is referred to as part 1. It was established on the basis of the 1994 edition of that standard. Amendments and revisions of part 1 have also to be taken into account and the dates when such changes become applicable will be stated in the relevant amendment or revision of part 1.

This standard, which is regarded as a part 2 of EN 60335, supplements or modifies the corresponding clauses of part 1. When a particular subclause of part 1 is not mentioned in this standard, that subclause applies as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text of part 1 is to be adapted accordingly.

Subclauses, tables and figures which are additional to those in part 1 are numbered starting with 101. Annexes which are addition to those in part 1 are lettered AA, BB, etc.

This standard is intended to be used in addition to the standards for non-electric appliances and to any part 2 of EN 60335, if applicable.

There are no special national conditions causing a deviation from this standard other than those listed in annex ZA of EN 60335-1.

There are no national deviations from this European Standard other than those listed in annex ZB of EN 60335-1.

NOTE - The following print types are used:

- requirements: in roman type;
- test specifications: in italic type;
- notes: in small roman type.

Words in **bold** in the text are defined in clause 2. When a definition of part 1 concerns an adjective, the adjective and the associated noun are also in bold.

1 Scope

This clause of part 1 is replaced by:

This standard deals with the safety of electrical equipment of **non-electric appliances** for household and similar purposes, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances.

NOTE 1 - Examples of such appliances are:

- cooking appliances;
- heating boilers;
- instantaneous water heaters;
- storage water heaters;
- room heaters;
- warm air heaters;
- absorption refrigerators;
- commercial catering equipment;
- laundry and cleaning appliances.

This standard also applies to electrical equipment which is located separately from the appliance.

This standard is to be applied in conjunction with the relevant standards for appliances and for control devices. Examples are listed in annexes AA and BB.

NOTE 2 - Attention is drawn to the fact that for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary.

2 Definitions

This clause of part 1 is applicable except as follows:

2.101 **non-electric appliance**: Appliance using gaseous, liquid or solid fuel for the generation of heat.

2.102 **circuit with safety related functions**: Electrical circuit designed to avoid the occurrence of dangerous operating conditions by actively performing a protective action or passively ensuring a safe situation.

NOTE - Preventing and stopping the energy supply are examples.

2.103 **spark ignition circuit**: Electrical circuit designed to ignite gaseous or liquid fuel by means of sparks.

2.104 **pulse spark ignition**: Ignition by sparks with a pulse having a duration not more than 0,1 s, the interval between pulses being at least 0,25 s.

2.105 **continuous spark ignition**: Ignition by sparks with a pulse having a duration at least 0,1 s or a duration less than 0,1 s with the interval between pulses less than 0,25 s.

2.106 **pulse repetition ignition**: Ignition by sparks with a pulse having a duration not more than 0,1 ms, the interval between pulses being at least 0,04 s.

2.107 **start position**: Condition such that the appliance may receive the start signal and can proceed with the start-up sequence.

2.108 **running position**: Condition such that the main burner flame is established and supervised.

2.109 **shut-down**: De-energization of the main fuel flow means as the result of the detection of an internal fault in the control system or the action of a limiting device.

2.110 **lock-out**: **Shut-down** requiring a manual operation for restarting the appliance.

2.111 **safe state**: Condition such that, under electromagnetic phenomena, the appliance

- is not affected by the phenomenon, or
- passively assumes a status in which the output terminals ensure a safe situation, the appliance automatically restarting and reaching the **running position** as soon as the phenomenon disappears, or
- actively reaches **shut-down** or **lock-out**.

3 General requirement

This clause of part 1 is applicable.

4 General conditions for the tests

This clause of part 1 is applicable except as follows:

4.3 Addition:

*Unless otherwise specified, the tests of this standard are carried out after those of the **non-electric appliance** standard. If a test has been carried out in accordance with the **non-electric appliance** standard, it is not repeated.*

*After the tests, the appliance shall continue to function in accordance with the **non-electric appliance** standard.*

The sequence of tests of 19.101 is not specified.

4.4 Addition:

The tests are carried out with both electric and non-electric parts of the appliance operating together, when allowed by the construction, in accordance with the appliance standards.

4.7 Addition:

If the instructions for installation specify that the appliance can operate in higher ambient temperatures, these have to be taken into account.

4.101 If the test conditions of the **non-electric appliance** standard are different from those specified in this standard, they apply instead.

5 Void

6 Classification

This clause of part 1 is applicable.

7 Marking and instructions

This clause of part 1 is applicable.

8 Protection against access to live parts

This clause of part 1 is applicable except as follows:

8.1 Addition:

*For the **accessible parts of spark ignition circuits**, 8.101 applies instead.*

8.1.1 Addition:

*If the instructions state that parts of the appliance have to be adjusted under operating conditions by skilled persons, after removal of **non-detachable parts**, the test finger in the straight position is applied in an attempt to touch **live parts**.*

8.101 The **accessible parts of spark ignition circuits** or manually operated ignition means shall not be accessible to the test finger of figure 1 if the following limits are exceeded:

- maximum discharge of **pulse spark ignition** 100 μ As per pulse

- for **continuous spark ignition**
 - maximum current 0,7 mA (peak)
 - maximum no load voltage \leq 10 kV (peak), or
 - maximum no load voltage $>$ 10 kV with a maximum discharge \leq 45 μ As per pulse

- for **pulse repetition ignition**
 - maximum discharge 45 μ As per pulse
 - maximum pulse repetition frequency 25 Hz

NOTES

1 Detailed information may be found in IEC 479¹.

2 This requirement is not applicable to piezoelectric igniters.

*Compliance is checked on each spark gap by the following test, the appliance being supplied at **rated voltage**.*

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1) IEC 479 - Effects of current on human beings and livestock.

The pulse duration is measured across the spark gap from the beginning of the pulse until it is 10 % of the peak value (see figure 101). The no-load voltage (peak) is measured across the spark gap, which is prevented from sparking. The resistance of the measuring instrument is at least 100 MΩ.

A 2 kΩ resistor is connected across the spark gap and the voltage measured. The pulse discharge and current are calculated from the voltage waveform.

An example of the test set-up is given in figure 102.

9 Starting of motor- operated appliances

This clause of part 1 is not applicable.

10 Power input and current

This clause of part 1 is applicable.

11 Heating

This clause of part 1 is applicable except as follows:

11.5 Addition:

*Appliances with only a non-electric heating source are supplied as specified for **motor-operated appliances**.*

11.8 Addition:

For appliances having electric and non-electric heating sources, the temperature rise limits of common parts are the lowest specified in the applicable standards.

NOTE - Components in the control panel of a cooking range are examples of common parts.

12 Void

13 Leakage current and dielectric strength at operating temperature

This clause of part 1 is applicable except as follows.

13.2 Addition:

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*If the disconnection of **protective impedance** or radio interference filters is not possible, the limit specified for leakage current is 5 mA.*

14 Void

15 Moisture resistance

This clause of part 1 is applicable except as follows:

15.2 Addition:

For cooking ranges, hobs and similar appliances using non-electrical energy, compliance is checked by the following tests.

*Cooking ranges and hobs are positioned so that the hob surface is horizontal, **detachable burner heads** not being removed. A vessel having a diameter of 220 mm is completely filled with water containing approximately 1 % NaCl and positioned centrally over the burner. A further quantity of 0,5 l of the solution is poured steadily into the vessel over a period of 15 s.*

This test is made for each burner separately, after removing any residual solution from the appliance.

If controls are mounted below the hob surface, 0,5 l of the saline solution is poured steadily over the top of the hob near the controls over a period of 15 s. If they are mounted in the hob surface, the saline solution is poured over the controls.

For burners incorporating a temperature sensor, switch or ignition device, 0,02 l of the saline solution is poured over the burner so that it flows over this device.

***Detachable burner heads** are then removed and 0,3 l of the saline solution is evenly poured over the surface of the hob and associated horizontal ventilation slots over a period of 10 s.*

For ovens or grills, 0,5 l of the saline solution is poured over the floor of the oven or grilling compartment.

For appliances provided with a drip tray or similar receptacle, the receptacle is filled with the saline solution. A further quantity of the solution equal to 0,01 l per 100 cm² of the area of the top surface of the receptacle, is poured onto the receptacle through openings in the hob surface. However, the total quantity of solution shall not exceed 3 l.

For hobs provided with a lid, 0,5 l of the saline solution is poured uniformly over the closed lid. When the solution has run off, the surface is dried and a further 0,125 l of the solution is poured steadily from a height of approximately 50 mm onto the centre of the lid over a period of 15 s. The lid is then opened as in normal use.

16 Leakage current and electric strength

This clause of part 1 is applicable except as follows:

16.1 Addition:

*[SIST EN 50165:1998](https://standards.iteh.ai/catalog/standards/sist/983d4d24-a9c0-456615ac0c84/sist-en-50165-1998)
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Polarity detection devices may be disconnected.

16.2 Modification:

Instead of the leakage current limits specified, the limit is 5 mA.

16.3 Addition:

Spark ignition circuits are subjected for 1 min to a voltage of 1,5 times the peak value of the no-load voltage. The no-load voltage is measured at the spark gap end of the ignition cable with the spark electrode removed.

During the test no breakdown to other circuits or **accessible surfaces** shall occur. Breakdown to earthed parts is allowed if it does not result in a failure of **circuits with safety related functions**.

17 Overload protection of transformers and associated circuits

This clause of part 1 is applicable.

18 Endurance

This clause of part 1 is not applicable.

19 Abnormal operation

This clause of part 1 is applicable except as follows:

19.1 Modification:

Instead of simulating one abnormal condition each time, the tests are carried out by simulating one fault condition and then introducing another. However, the malfunction of components such as contactors, relays and solenoid valves is not considered

- if components are still operable after 250 000 switching cycles under the conditions occurring in the appliance and after 3 000 000 switching cycles under no load conditions;
- if controls and devices comply with the relevant standard listed in annex BB;
- for a short circuit between the terminals of
 - vitreous enamelled wire wound resistors and helical film resistors of high stability,
 - isolated circuits of optocouplers complying with EN 120012,
 - switch contacts of contactors, relays and auxiliary switches protected against the effects of short circuits by overload protection means which is used at only 60 % of its rated value,
 - contacts having a short circuit current which is less than their rated current.

19.11.2 Addition:

NOTE - When simulating a fault condition on an **electronic circuit** in addition to the fault condition of clause 19, a third fault condition is not applied.

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