

# INTERNATIONAL STANDARD

**IEC**  
**60335-2-37**

Fifth edition  
2002-10

---

---

## **Household and similar electrical appliances – Safety –**

### **Part 2-37: Particular requirements for commercial electric deep fat fryers**

*Appareils électrodomestiques et analogues –  
Sécurité –*

*Partie 2-37:  
Règles particulières pour les friteuses électriques  
à usage collectif*



Reference number  
IEC 60335-2-37:2002(E)

## Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

## Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

## Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site** ([www.iec.ch](http://www.iec.ch))

- **Catalogue of IEC publications**

The on-line catalogue on the IEC web site ([http://www.iec.ch/searchpub/cur\\_fut.htm](http://www.iec.ch/searchpub/cur_fut.htm)) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.

- **IEC Just Published**

This summary of recently issued publications ([http://www.iec.ch/online\\_news/justpub/jp\\_entry.htm](http://www.iec.ch/online_news/justpub/jp_entry.htm)) is also available by email. Please contact the Customer Service Centre (see below) for further information.

- **Customer Service Centre**

If you have any questions regarding this publication or need further assistance, please contact the Customer Service Centre: -4ee1-a299-6d95dc6c3c3a/iec-60335-2-37-2002

Email: [custserv@iec.ch](mailto:custserv@iec.ch)  
Tel: +41 22 919 02 11  
Fax: +41 22 919 03 00

# INTERNATIONAL STANDARD

# IEC 60335-2-37

Fifth edition  
2002-10

---

---

## Household and similar electrical appliances – Safety –

### Part 2-37: Particular requirements for commercial electric deep fat fryers

*Appareils électrodomestiques et analogues –  
Sécurité –*

*Partie 2-37:  
Règles particulières pour les friteuses électriques  
à usage collectif*

© IEC 2002 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland  
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

PRICE CODE

T

*For price, see current catalogue*

## CONTENTS

FOREWORD .....	3
INTRODUCTION .....	5
1 Scope .....	6
2 Normative references .....	6
3 Definitions .....	6
4 General requirement .....	7
5 General conditions for the tests .....	7
6 Classification .....	8
7 Marking and instructions .....	8
8 Protection against access to live parts .....	10
9 Starting of motor-operated appliances .....	10
10 Power input and current .....	10
11 Heating .....	10
12 Void .....	11
13 Leakage current and electric strength at operating temperature .....	11
14 Transient overvoltages .....	12
15 Moisture resistance .....	12
16 Leakage current and electric strength .....	14
17 Overload protection of transformers and associated circuits .....	14
18 Endurance .....	14
19 Abnormal operation .....	14
20 Stability and mechanical hazards .....	15
21 Mechanical strength .....	15
22 Construction .....	15
23 Internal wiring .....	19
24 Components .....	19
25 Supply connection and external flexible cords .....	19
26 Terminals for external conductors .....	20
27 Provision for earthing .....	20
28 Screws and connections .....	20
29 Clearances, creepage distances and solid insulation .....	20
30 Resistance to heat and fire .....	20
31 Resistance to rusting .....	21
32 Radiation, toxicity and similar hazards .....	21
Annexes .....	23
Annex N (normative) Proof tracking test .....	23
Bibliography .....	23
Figure 101 – Splash apparatus .....	22

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –  
SAFETY –**
**Part 2-37: Particular requirements  
for commercial electric deep fat fryers**

## FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

This part of International Standard IEC 60335 has been prepared by IEC subcommittee 61E: Safety of electrical commercial catering equipment, of IEC technical committee 61: Safety of household and similar electrical appliances.

This fifth edition cancels and replaces the fourth edition published in 2000. It constitutes a technical revision.

The text of this part of IEC 60335 standard is based on the following documents:

FDIS	Report on voting
61E/399/FDIS	61E/411/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 part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fourth edition (2001) of that standard.

NOTE 1 When "Part 1" is mentioned in this standard, it refers to IEC 60335-1.

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for commercial electric deep fat fryers.

When a particular subclause of part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text in part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

NOTE 3 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 3. When a definition of Part 1 concerns an adjective, the adjective and the associated noun are also in bold .

The committee has decided that the contents of this publication will remain unchanged until 2004. At this date, the publication will be

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

The following differences exist in the countries indicated below.

- 6.1: Class 01 appliances are allowed (Japan).
- 6.2: For appliances intended to be installed in a kitchen, an appropriate degree of protection against harmful ingress of water is required according to their height of installation (France).
- 13.2: Leakage current limits are different (Japan).
- 16.2: Leakage current limits are different (Japan).
- Clause 21: For appliances intended to be installed in a kitchen, different values of impact energy are applicable according to the height of the impact point (France).

A bilingual version of this publication may be issued at a later date.

## INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another part 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features that impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

<https://standards.iteh.ai/>

<https://standards.iteh.ai/catalog/standards/iec/168f8d75-d971-4ee1-a299-6d95dc6c3c3a/iec-60335-2-37-2002>

# HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

## Part 2-37: Particular requirements for commercial electric deep fat fryers

### 1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electrically operated commercial **deep fat fryers** including pressurized types not intended for household use, their **rated voltage** being not more than 250 V for single-phase appliances connected between one phase and neutral and 480 V for other appliances.

NOTE 101 These appliances are used for example in restaurants, canteens, hospitals and commercial enterprises such as bakeries, butcheries, etc.

The electrical part of appliances making use of other forms of energy is also within the scope of this standard.

As far as is practicable, this standard deals with the common hazards presented by these types of appliances.

NOTE 102 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;
- in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities;
- in many countries, additional requirements are specified for pressure appliances.

NOTE 103 This standard does not apply to

- appliances designed exclusively for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- continuous process appliances for the mass production of food.

### 2 Normative references

This clause of Part 1 is applicable.

### 3 Definitions

This clause of Part 1 is applicable except as follows.

#### 3.1.4 Addition:

NOTE 101 The **rated power input** is the sum of the power inputs of all the individual elements in the appliance that can be on at one time; where there are several such combinations possible, that giving the highest power input is used in determining the **rated power input**



### 3.1.9 Replacement:

#### normal operation

operation of the appliance under the following conditions

The appliance is filled with oil to the minimum **indicated level**.

The thermal control is set at the maximum setting. Lids, if provided, are left in the open position or removed unless the manufacturer's instructions indicate that the appliance is designed for operation with the lid closed.

Motors incorporated in the appliance are operated in the intended manner under the most severe conditions that can be expected in normal use taking into account the manufacturer's instructions.

### 3.101

#### deep fat fryer

an appliance provided with one or more containers in which the food to be cooked is immersed in the frying medium. The container(s) may be fixed, removable, lifting, tilting, etc. The pressure within the container can exceed atmospheric pressure

### 3.102

#### indicated level

a mark on the appliance to indicate either the minimum or the maximum liquid level for correct operation

### 3.103

#### installation wall

a special fixed construction containing supply facilities for appliances installed in conjunction with it

### 3.104

#### rated pressure

the maximum working pressure assigned by the manufacturer to the pressurized part of the appliance

## 4 General requirement

This clause of Part 1 is applicable.

## 5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

### 5.5 Addition:

*The tests are carried out with the container in the position of normal use for frying.*

### 5.10 Addition:

*Appliances intended for installation in a bank of other appliances and appliances intended to be fixed to an **installation wall** are enclosed to obtain protection against electric shock and harmful ingress of water equivalent to that obtained when installed in accordance with the instructions provided with the appliance.*

NOTE 101 Appropriate enclosures or additional appliances may be needed for test purposes.

**5.101** Appliances are tested as **heating appliances**, even if they incorporate a motor.

**5.102** Appliances, when assembled in combination with or incorporating other appliances, are tested in accordance with the requirements of this standard. The other appliances are operated simultaneously in accordance with the requirements of the relevant standards.

**5.103** Appliances are initially filled with unused vegetable oil. The series of relevant tests are carried out with this oil, unused oil being added as necessary to maintain a constant level.

## 6 Classification

This clause of Part 1 is applicable except as follows.

### 6.1 Replacement:

Appliances shall be **class I** with respect to protection against electric shock.

*Compliance is checked by inspection and by the relevant tests.*

## 7 Marking and instructions

This clause of Part 1 is applicable except as follows.

### 7.1 Addition:

In addition, appliances shall be marked with

- the water pressure or range of pressures, in kilopascals (kPa), for appliances intended to be connected to a water supply, unless this is indicated in the instruction sheet;
- the **rated pressure**, in kilopascals (kPa), on pressurized parts of the appliance.

### 7.6 Addition:



[symbol 5021 of IEC 60417-1]

equipotentiality

### 7.10 Addition:

Devices controlling the tilting process of appliances with tilting parts shall be clearly marked to show the direction of movement.

### 7.12 Addition:

The instructions shall include a warning that danger of fire exists if the oil level is below the minimum **indicated level**.

The instructions shall include the maximum batch load in kilograms.

The instructions shall include a warning regarding the danger of using old oil, emphasizing that this will have a reduced flash-point and be more prone to surge boiling.

The instructions shall also include the substance of the following warning:

**WARNING:** Do not open drain cocks or other emptying devices until the pressure has been reduced to approximately atmospheric pressure.

Attention shall also be drawn to the effect on surge boiling of over-wet food and too large a charge.

If symbol 5021 of IEC 60417-1 is marked on the appliance its meaning shall be explained.

#### **7.12.1 Replacement:**

The appliance shall be accompanied by instructions detailing any special precautions necessary for installation. For appliances intended for installation in a bank of other appliances and appliances intended to be fixed to an **installation wall**, details of how to ensure appropriate protection against electric shock and harmful ingress of water shall be supplied. If the controls of more than one appliance are combined in a separate enclosure, detailed installation instructions shall be supplied. Instructions for **user maintenance**, for example cleaning, shall also be given. They shall include a statement that the appliance is not to be cleaned with a water jet.

Appliances that are provided with an appliance inlet, and are intended to be immersed in water for cleaning shall be accompanied by an instruction stating that the connector shall be removed before the appliance is cleaned and that the appliance inlet shall be dried before the appliance is used again.

The instructions of appliances other than **stationary appliances** and appliances with **detachable electrical parts**, that are not intended to be partially or completely immersed in water for cleaning, shall state that the appliance or part must not be immersed.

For appliances that are permanently connected to fixed wiring and for which leakage currents may exceed 10 mA, particularly if disconnected or not used for long periods, or during initial installation, the instructions shall give recommendations regarding the rating of **protective devices**, such as earth leakage relays, to be installed.

*Compliance is checked by inspection.*

#### **7.12.4 Addition:**

The instructions for **built-in appliances** having a separate control panel for several appliances shall state that the control panel is only to be connected to the specified appliances in order to avoid a possible hazard.

#### **7.15 Addition:**

When it is not practical to place the marking of **fixed appliances** so that it is visible after the appliance has been installed, the relevant information shall also be included in the instructions for use or on an additional label that can be fixed near the appliance after installation.

NOTE 101 An example of such a **fixed appliance** is a **built-in appliance**.

**7.101** Equipotential bonding terminals shall be marked with symbol 5021 of IEC 60417-1.

These indications shall not be placed on screws, removable washers or other parts that can be removed when conductors are being connected.

*Compliance is checked by inspection.*