

INTERNATIONAL
STANDARD

IEC
60335-2-45

Third edition
2002-10

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

**Part 2-45:
Particular requirements for portable
heating tools and similar appliances**

*Appareils électrodomestiques et analogues –
Sécurité –*

*Partie 2-45:
Règles particulières pour les outils chauffants mobiles
et appareils analogues*



Reference number
IEC 60335-2-45:2002(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.

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

J

For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –**
**Part 2-45: Particular requirements for portable heating tools
and similar appliances**

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.
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This part of International Standard IEC 60335 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This third edition cancels and replaces the second edition published in 1996. It constitutes a technical revision.

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

FDIS	Report on voting
61/2219/FDIS	61/2294/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 portable electric heating tools and similar appliances

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 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.

- 3.1.9: The conditions of normal operation are different for soldering guns and plastic-cutting tools (USA).
- 6.1: Class 0 appliances are allowed if their rated voltage does not exceed 150 V and class 0I appliances are allowed (Japan).
- 6.1: Class 0 soldering irons are allowed if their rated power input does not exceed 18 W (Poland).
- 6.1: Class I dehorning tools are allowed. Class 0 appliances are allowed if their rated voltage does not exceed 150 V and they are for indoor use only (USA).
- 11.7: The test for firelighters is different (USA).
- 11.8: The modification does not apply (USA).
- 21.101: The drop test is different (USA).
- 24.1.3: Switches are tested for 6 000 cycles of operation (Canada and USA).
- 25.7: Lighter cords are allowed (USA).
- 25.7: The modification does not apply (Japan).
- 25.8: Shorter supply cords are allowed for class II dehorning tools (USA).

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.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-45: Particular requirements for portable heating tools and similar appliances

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of **portable electric heating tools** and similar appliances, their **rated voltage** being not more than 250 V.

Appliances not intended for normal household use, but which nevertheless may be a source of danger to the public, such as appliances intended to be used by laymen in shops, in light industry and on farms, are within the scope of this standard.

Appliances that may also be used when mounted on a support are within the scope of this standard.

NOTE 101 Examples of appliances that are within the scope of this standard are

- **branding tools;**
- **burning-in pens;**
- **conduit-soldering tools;**
- **dehorning tools;**
- **desoldering irons;**
- **firelighters;**
- glue guns;
- heat guns;
- **household film-welding appliances;**
- paint strippers;
- plastic-cutting tools;
- **soldering guns;**
- **soldering irons;**
- stripping pliers;
- **thermoplastic conduit-welding tools.**

As far as is practicable, this standard deals with the common hazards presented by appliances which are encountered by all persons in and around the home. However, in general, it does not in general take into account

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

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 and similar authorities.

NOTE 103 This standard does not apply to

- hand-held motor-operated electric tools (IEC 60745);

- transportable motor-operated electric tools (IEC 61029);
- appliances intended 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);
- tools using high-frequency heating;
- arc-welding equipment.

2 Normative references

This clause of Part 1 is applicable.

3 Definitions

This clause of Part 1 is applicable except as follows.

3.1.9 *Replacement:*

normal operation

operation of appliances under the following conditions

Appliances having a stand are operated on the stand, unless otherwise specified.

Other appliances are operated in accordance with the instructions, unless otherwise specified.

Soldering guns and plastic-cutting tools incorporating a **biased-off switch** are operated in cycles in accordance with the instructions but they are switched on for at least 12 s with rest periods not exceeding 48 s. For **soldering guns**, the on-period is such that the temperature at the tip reaches at least 300 °C at the end of the first on-period.

Household film-welding appliances are operated in cycles in accordance with the instructions but they are switched on at least for the time necessary to weld together two sheets of plastic film with rest periods not exceeding 2 min. The plastic film is high pressure (low density) polyethylene, each sheet having a thickness of 50 µm.

Heat guns are operated with the airflow horizontal.

Firelighters are operated to ignite charcoal placed in a tray having a diameter of 600 mm and a side 50 mm high. The pile of charcoal is 500 mm in diameter and 100 mm high at its centre.

Contact firelighters are positioned with the heating element horizontal and inserted in the centre of the charcoal.

Hot-air firelighters are positioned with the airflow horizontal, or directed downwards up to 45° if allowed by the construction, whichever is more unfavourable.

3.1 3.101

biased-off switch

switch that automatically returns to the **off position** when its actuating member is released

3.2 3.102

branding tool

appliance for marking wood, leather and other materials by means of a heated metal stamp

3.3 3.103

burning-in pen

appliance for scribing on wood, leather and other materials by means of a heated tip

3.4 3.104

conduit-soldering tool

appliance used for joining metal piping by means of solder

3.5 3.105

dehorning tool

appliance for burning out horn buds

3.6 3.106

desoldering iron

appliance for melting and removing solder

3.7 3.107

firelighter

appliance for igniting solid fuel such as charcoal or wood

3.8 3.108

contact firelighter

firelighter incorporating a heating element that is in direct contact with the fuel

3.9 3.109

hot-air firelighter

firelighter that incorporates a fan and a heating element and blows hot air at the fuel

3.10 3.110

heat gun

appliance that produces a jet of hot air

NOTE **Heat guns** may be used for fusing materials or for softening paint or plastics.

3.11 3.111

household film-welding appliance

appliance for household use only, used for welding or cutting thin thermoplastic sheets by means of electrically heated parts between which the material is clamped

3.12 3.112

paint stripper

appliance for softening paint using hot air

NOTE **Paint strippers** may incorporate a scraper.

3.13 3.113

soldering gun

appliance incorporating a transformer, the soldering tip being part of the secondary circuit

3.14 3.114

soldering iron

appliance having a heated tip for soldering

3.15 3.115

thermoplastic conduit-welding tool

appliance for welding conduit by partly melting the thermoplastic material of a separate fitting

NOTE The fitting has an integral heating wire and is used only once.

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.

5.2 Addition:

NOTE 101 An additional sample of a **contact firelighter** is required for the test of 21.102.

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 Modification:

Dehorning tools shall be **class II** or **class III**.

Other appliances shall be **class I**, **class II** or **class III**.

6.2 Addition:

Class II dehorning tools and transformers for **class III dehorning tools** shall be at least IPX4.

Conduit-soldering tools and **thermoplastic conduit-welding tools** shall be at least IPX4.

Hand-held paint strippers for outdoor use shall be at least IPX4, unless the instructions state they are not to be stored or left outdoors, in which case they may be IPX0.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 Addition:

Contact firelighters shall be marked with the limit of insertion into the fuel.

Contact firelighters that are not at least IPX4 shall be marked with the substance of the following:

Do not expose to rain or moisture.

Thermoplastic conduit-welding tools shall be marked with the types of fittings with which they are to be used and with the corresponding settings. Each fitting shall be marked with the type of appliance with which it is to be used and with its own type reference.

7.12 *Addition:*

The instructions for appliances having a separate stand and not incorporating a **biased-off switch** shall include the substance of the following:

WARNING: This tool must be placed on its stand when not in use.

The instructions for **class III dehorning tools** shall include the substance of the following:

WARNING: Only use the transformer provided.

The instructions for **heat guns** and **hand-held paint strippers** shall include the substance of the following.

A fire may result if the appliance is not used with care, therefore

- be careful when using the appliance in places where there are combustible materials;
- do not apply to the same place for a long time;
- do not use in presence of an explosive atmosphere;
- be aware that heat may be conducted to combustible materials that are out of sight;
- place the appliance on its stand after use and allow it to cool down before storage;
- do not leave the appliance unattended when it is switched on.

The instructions for **firelighters** shall include the substance of the following:

- ensure that the firelighter is properly positioned;
- unplug the firelighter before removal from the fire;
- allow the firelighter to cool before storage;
- do not allow the hot parts of the firelighter to touch the cord or other flammable materials.

The instructions for **thermoplastic conduit-welding tools** shall state that a welding operation must not be repeated on a fitting since this can result in live parts becoming accessible.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.4 *Addition:*

Parts of **thermoplastic conduit-welding tools** operating at **safety extra-low voltage** exceeding 12 V are also considered to be **live parts**.

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.

11.2 Modification:

Appliances are tested away from the walls of the test corner.

11.4 Modification:

Soldering guns and other appliances operated through a transformer are supplied at 1,06 times **rated voltage**.

11.7 Addition:

Contact firelighters are operated for 30 min. **Hot-air firelighters** are operated for 10 min.

Other appliances are operated until steady conditions are established.

11.8 Modification:

The temperature rise limit specified in Table 3 for pure mica and tightly sintered ceramic material is increased to 600 K.

12 Void

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable except as follows.

13.1 Addition:

*Appliances supplied by a transformer are tested as **motor-operated appliances**.*

14 Transient overvoltages

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable except as follows.

15.101 Household film-welding appliances having a suction device shall be constructed so that suction of liquid does not impair electrical insulation.

NOTE This requirement does not apply to parts operating at **safety extra-low voltage**.

Compliance is checked by the following test.

A plastic bag is filled with 40 ml of water containing approximately 1 % NaCl. The bag is positioned so that the surface of the water is at the same level as the suction opening of the appliance. The bag is then welded with the suction device in operation.

*The appliance shall then withstand the electric strength test of 16.3 and inspection shall show that there is no trace of water on the insulation that could result in a reduction of **clearances** and **creepage distances** below the values specified in Clause 29.*

16 Leakage current and electric strength

This clause of Part 1 is applicable except as follows.

16.1 Addition:

*Appliances supplied by a transformer are tested as **motor-operated appliances**.*

17 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable except as follows.

Modification:

*The test is not carried out on **soldering guns** and other appliances in which the heating element is part of the secondary circuit of a transformer.*

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 Addition:

*For **heat guns** and **hot-air firelighters**, compliance is also checked by the test of 19.101.*

19.2 Replacement:

*Appliances are operated under the conditions specified in Clause 11 but supplied at 0,94 times **rated voltage**. However, appliances in which the heating element is part of the secondary circuit of a transformer are operated continuously for 30 min unless they incorporate a **biased-off switch**, in which case they are operated for 5 min. **Firelighters** are operated for 2 h without adding fuel.*

***Paint strippers** incorporating integral scrapers are held horizontally in a clamp over the entire length of the handle. A force of 70 N is exerted on the scraper edge in the direction corresponding to normal use.*

19.3 Replacement:

*The test of 19.2 is repeated but with the appliance supplied at 1,06 times **rated voltage**.*

19.4 Addition:

***Thermoplastic conduit-welding tools** are operated with the fastest possible sequence of welding operations.*

19.101 Heat guns and hot-air firelighters are operated as specified in Clause 11 until steady conditions are established. The voltage at the terminals of the motor is then reduced until the running speed of the motor is just sufficient to prevent the **thermal cut-out** from operating, the power input to the heating element being maintained at 1,15 times **rated power input**.

The voltage is decreased at

- 1 V per minute, for motors having a **working voltage** not exceeding 30 V;
- 5 V per minute, for motors having a **working voltage** exceeding 30 V.

The appliances are then operated until steady conditions are established.

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.1 Addition:

Hand-held appliances are subjected to the test while placed on their stands.

20.101 Contact firelighters shall have adequate stability.

Compliance is checked by the following test.

The **firelighter** is placed on a horizontal surface positioned 1 m above the floor. The maximum insertion mark specified in 7.1 is aligned with the edge of the surface. The **supply cord** is allowed to hang freely, the remaining length allowed to lie on the floor.

The appliance shall not tilt.

21 Mechanical strength

This clause of Part 1 is applicable except as follows.

21.1 Addition:

For **hand-held appliances**, compliance is also checked by the tests of 21.101.

For **contact firelighters**, compliance is also checked by the test of 21.102.

21.101 The supply cord of hand-held appliances is cut to a length of 100 mm, measured from the point where the cord, or cord guard, enters the appliance.

The appliance is dropped from a height of 1 m on to a hardwood base having a thickness of 50 mm.

This test is carried out five times, the appliance positioned so that its major axis is horizontal and so that a different part of the appliance is exposed to the impact each time.

The appliance is then dropped five times with its major axis vertical and with tips of **soldering irons**, or corresponding parts of other appliances, pointing downwards.

The appliance shall not be damaged to such an extent that compliance with this standard is impaired, in particular **live parts** shall not become accessible.

21.102 The handle of a new **contact firelighter** is held firmly between two lightly padded surfaces with the heating element in a horizontal plane. The **firelighter** is supplied at **rated voltage**. After 3 min a mass of 4,5 kg is suspended at the end of the heating element for 1 min. The mass is removed and the element is allowed to cool. If the element has been bent, it is straightened to its original position.

After the test, the **live parts** shall not be accessible and the **firelighter** shall withstand the electric strength test of 16.3.

22 Construction

This clause of Part 1 is applicable except as follows.

22.101 Hand-held appliances intended to be used away from a workshop shall incorporate a stand.

NOTE 1 Examples of appliances intended to be used away from a workshop are

- branding tools;
- conduit-soldering tools;
- dehorning tools;
- heat guns;
- paint strippers.

Hand-held appliances intended to be used on a table or similar surface shall incorporate a stand or be provided with a separate stand.

NOTE 2 Examples of appliances intended to be used on a table or similar surface are

- burning-in pens;
- desoldering irons;
- firelighters;
- soldering irons.

These requirements do not apply to appliances complying with test of Clause 11 without a stand.

Compliance is checked by inspection and by the test of Clause 11.

22.102 Desoldering irons shall incorporate a device for collecting the solder.

Compliance is checked by inspection.

22.103 Soldering guns shall incorporate a **biased-off switch**.

Compliance is checked by inspection.

22.104 If a drain hole is provided in **household film-welding appliances**, it shall be at least 5 mm in diameter or 20 mm² in area with a width at least 3 mm.

Compliance is checked by inspection and by measurement.

22.105 Thermoplastic conduit-welding tools shall incorporate a timer that provides **all-pole disconnection** of the welding circuit and has to be reset before a further operation.

Repetition of the welding operation on the same fitting shall be prevented.

Compliance is checked by inspection.

NOTE Repetition of the welding operation is considered to be prevented if the appliance has first to be disconnected from the supply mains or from the fitting.

22.106 Thermoplastic conduit-welding tools shall be constructed so that the connecting terminals are supplied with **extra-low voltage** not exceeding 24 V when the appliance is operated without fittings.

Compliance is checked by measurement.

22.107 Fittings for **thermoplastic conduit-welding tools** shall be constructed so that at least **basic insulation** is provided on surfaces that are only accessible before the fitting is placed on the conduit.

Compliance is checked by inspection.

22.108 Class III dehorning tools shall be supplied with a transformer.

Compliance is checked by inspection.

23 Internal wiring

This clause of Part 1 is applicable.

24 Components

This clause of Part 1 is applicable except as follows.

24.1.3 Addition:

Switches incorporated in the hand-held part of appliances not intended exclusively for household use are subjected to 50 000 cycles of operation.

25 Supply connection and external flexible cords

This clause of Part 1 is applicable except as follows.

25.5 Addition:

Type Z attachment is allowed for

- **class III appliances;**
- other appliances, unless they have a polyvinyl chloride sheathed cord and the temperature rise of **accessible metal parts** exceeds 75 K.

25.7 Addition:

Light polyvinyl chloride sheathed cords may be used for **class III appliances** and other **hand-held appliances**, regardless of the mass of the appliance.

Polyvinyl chloride sheathed cords may be used for **hand-held appliances** having a **rated power input** not exceeding 100 W and a mass not exceeding 100 g, and for appliances provided with a **biased-off switch**, regardless of the temperature rise of external metal parts.

NOTE 101 The mass is determined without the **supply cord**.

Polyvinyl sheathed cords are not allowed for **thermoplastic conduit-welding tools** and **firelighters**.

The **supply cord** of **class II dehorning tools** shall be polychloroprene sheathed and be not lighter than heavy polychloroprene sheathed cord (code designation 60245 IEC 66).

25.8 Addition:

The length of the **supply cord** shall be at least

- 1,5 m, for **firelighters**;
- 6 m, for **class II dehorning tools**.

25.15 Modification:

*Instead of the first line in Table 12, the following applies for **hand-held appliances**.*

<i>Mass of the appliance kg</i>	<i>Pull force N</i>	<i>Torque Nm</i>
<i>≤ 0,3</i>	<i>15</i>	<i>0,05</i>
<i>> 0,3 and ≤ 1,0</i>	<i>30</i>	<i>0,1</i>

25.23 Addition:

The length of the **interconnection cord** of **class III dehorning tools** shall be at least 4 m.

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable except as follows.

27.2 Addition:

NOTE 101 **Class II soldering irons** and **class II soldering guns** used for soldering electronic equipment may have an equipotential bonding terminal for which the dimensional requirements are not applicable.

28 Screws and connections

This clause of Part 1 is applicable.

29 Clearances, creepage distances and solid insulation

This clause of Part 1 is applicable except as follows.

29.3 *Modification:*

Mica in thin sheet form may be used

- for **supplementary insulation**, if there are at least six layers, provided that any three layers together withstand the electric strength test of 16.3 for **supplementary insulation**;
- for **reinforced insulation**, if there are at least ten layers, provided that any five layers together withstand the electric strength test of 16.3 for **reinforced insulation**.

30 Resistance to heat and fire

This clause of Part 1 is applicable except as follows.

30.2 *Addition:*

For contact firelighters, 30.2.3 is applicable. For other appliances, 30.2.2 is applicable.

31 Resistance to rusting

This clause of Part 1 is applicable.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.

Annexes

The annexes of Part 1 are applicable except as follows.

Annex A (informative)

Routine tests

A.2 Electric strength test

Addition:

*An electric strength test is carried out between the input and output circuits of appliances incorporating a **safety isolating transformer**, the test voltage being*

- 2 000 V, for heating tools having a **rated voltage** not exceeding 150 V;
- 2 500 V, for other heating tools.

Bibliography

The bibliography of Part 1 is applicable.



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Fax to: **IEC/CSC** at +41 22 919 03 00

Thank you for your contribution to the standards-making process.

A Prioritaire

Nicht frankieren
Ne pas affranchir



Non affrancare
No stamp required

RÉPONSE PAYÉE

SUISSE

Customer Service Centre (CSC)

International Electrotechnical Commission

3, rue de Varembé

1211 GENEVA 20

Switzerland



Q1 Please report on **ONE STANDARD** and **ONE STANDARD ONLY**. Enter the exact number of the standard: (e.g. 60601-1-1)

.....

Q2 Please tell us in what capacity(ies) you bought the standard (tick all that apply). I am the/a:

- purchasing agent
- librarian
- researcher
- design engineer
- safety engineer
- testing engineer
- marketing specialist
- other.....

Q3 I work for/in/as a: (tick all that apply)

- manufacturing
- consultant
- government
- test/certification facility
- public utility
- education
- military
- other.....

Q4 This standard will be used for: (tick all that apply)

- general reference
- product research
- product design/development
- specifications
- tenders
- quality assessment
- certification
- technical documentation
- thesis
- manufacturing
- other.....

Q5 This standard meets my needs: (tick one)

- not at all
- nearly
- fairly well
- exactly

Q6 If you ticked NOT AT ALL in Question 5 the reason is: (tick all that apply)

- standard is out of date
- standard is incomplete
- standard is too academic
- standard is too superficial
- title is misleading
- I made the wrong choice
- other

Q7 Please assess the standard in the following categories, using the numbers:

- (1) unacceptable,
- (2) below average,
- (3) average,
- (4) above average,
- (5) exceptional,
- (6) not applicable

- timeliness.....
- quality of writing.....
- technical contents.....
- logic of arrangement of contents
- tables, charts, graphs, figures.....
- other

Q8 I read/use the: (tick one)

- French text only
- English text only
- both English and French texts

Q9 Please share any comment on any aspect of the IEC that you would like us to know:

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ISBN 2-8318-6697-9



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ICS 13.120; 25.140.20

Typeset and printed by the IEC Central Office
GENEVA, SWITZERLAND