INTERNATIONAL STANDARD

IEC

60335-2-79

Edition 2.1
2005-01


Household and similar electrical appliances – Safety –
Part 2-79:
Particular requirements for high pressure cleaners and steam cleaners

© IEC 2005 — 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@ieee.ch Web: www.iec.ch

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE CL
For price, see current catalogue

Withdrawn
CONTENTS

FOREWORD.........................................................................................................................3

INTRODUCTION................................................................................................................... 5

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

Annexes ........................................................................................................................ .....31

Bibliography ................................................................................................................... ....31

Figure 101 – Warning symbol...............................................................................................28
Figure 102 – Impact test apparatus .....................................................................................29
Figure 103 – Reactions on handle .......................................................................................30
FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). 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. 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 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 IEC National Committees.

3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.

5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.

6) All users should ensure that they have the latest edition of this publication.

7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.

8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. 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 sub-committee 61J: Electrical motor-operated cleaning appliances for industrial use, of IEC technical committee 61: Safety of household and similar electrical appliances.


The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 2.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.
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 electric high pressure cleaners and steam cleaners.

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 the base publication and its amendments will remain unchanged until the maintenance result date indicated on the IEC web site under “http://webstore.iec.ch” in the data related to the specific publication. 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.

– Clause 1: Different pressure limitations apply (USA).
– 6.1: Ground fault current interrupters are required for appliances rated 250 V or less, single phase (USA).
– 7.12: No requirements for sound and vibration markings exist (USA).
– 11.101: The losses of burners are subject to regulations (Germany). Smoke spot requirements are different (USA).
– 20.103: The fuel tank capacity is limited (USA).
– 21.101, 21.101.2 and 21.102: Different burner tests are required (USA).
– 25.7: Different power supply cord lengths are required (Canada, USA).
– Clause 32: The connection with the water mains is subject to regulations (Canada).

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 2-79: Particular requirements for high pressure cleaners and steam cleaners

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of high pressure cleaners for household, industrial and commercial use having a pressure not less than 2.5 MPa and not more than 25 MPa and with an input to the drive for the high pressure pump not exceeding 10 kW, their rated voltage being not more than 250 V for single-phase appliances and 480 V for other appliances.

It also applies to industrial and commercial steam cleaners having a water container with a capacity not exceeding 1000 l, a rated pressure not exceeding 3.2 MPa and a product of capacity and rated pressure not exceeding 300.

It is also applicable to appliances making use of other forms of energy for the motor, but it is necessary that their influence is taken into consideration.

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

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

NOTE 101 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.

NOTE 102 This standard does not apply to:
- appliances that are incorporated in process equipment;
- appliances intended to be used in locations where special conditions prevail, such as the presence of corrosive or explosive atmosphere (vapour or gas);
- audio, video and similar electronic apparatus (IEC 60065);
- appliances for medical purposes (IEC 60601);
- hand-held motor-operated electric tools (IEC 60745);
- personal computers and similar equipment (IEC 60950);
- transportable motor-operated electric tools (IEC 61029);
- steam cleaners for household use only (IEC 60335-2-54).
2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60364-1, *Electrical installations of buildings – Part 1: Fundamental principles, assessment of general characteristics, definitions*

IEC 60704-1, *Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 1: General requirements*

IEC 61558-2-3, *Safety of power transformers, power supply units and similar – Part 2-3: Particular requirements for ignition transformers for gas and oil burners*

ISO 5349 (all parts), *Mechanical vibration – Measurement and evaluation of human exposure to hand-transmitted vibration*