



IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict

27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand held appliances		N
	They may be used in other appliances if:		
	- at least two tracks are used with independent soldering points and the appliance complies with requirements of 27.5 for each circuit		N
	- the material of the printed circuit board complies with IEC 60249-2-4 or IEC 60249-2-5		N
<b>28</b>	<b>SCREWS AND CONNECTIONS</b>		
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		P
	Screws not of soft metal liable to creep, such as zinc or aluminium		P
	Diameter of screws of insulating material min. 3 mm		N
	Screws of insulating material not used for any electrical connection or connections providing earthing continuity		N
	Screws used for electrical connections or connections providing earthing continuity screw into metal		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N
	Type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		N
	For screws and nuts; test as specified	(see appended table)	P
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated		P
	This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0.5A		N
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N

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IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1mm if the microenvironment is pollution degree 1		N
	Lacquered conductors of windings assumed to be bare conductors, but the clearances specified in table 16 are reduced by 0.5mm for rated impulse voltages of at least 1500V		N
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16		P
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, but using the next higher step for rated impulse voltage		N
29.1.4	For functional insulation, the values of table 16 are applicable, unless		P
	the appliance complies with clause 19 with the functional insulation short-circuited		N
	Clearances at crossover points of lacquered conductors not measured		N
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N
	Lacquered conductors of windings assumed to be bare conductors, but the clearances specified in table 16 are reduced by 0.5mm for rated impulse voltages of at least 1500V		N
29.1.5	Appliances having higher working voltage than rated voltage, the voltage used for determining clearances from table 16 is the sum of the rated impulse voltage and the difference between the peak value of the working voltage and the peak value of the rated voltage		N
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation based on the working voltage used as the rated voltage in table 15		N

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Clause	Requirement - Test	Result - Remark	Verdict

29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree		P
	Pollution degree 2 applies, unless		P
	precautions taken to protect the insulation; pollution degree 1		N
	insulation subjected to conductive pollution; pollution degree 3		N
	Compliance is checked by inspection and measurements as specified		P
29.2.1	Creepage distances of basic insulation not less than specified in table 17		P
	For pollution degree 1, creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14		N
29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17		P
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17		N
29.2.4	Creepage distances of functional insulation not less than specified in table 18		P
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N
29.3	Solid insulation having a minimum thickness of 1mm for supplementary insulation,		N
	and 2 mm for reinforced insulation		N
	This requirement does not apply if the supplementary insulation, other than mica or similar scaly material, consists of at least two layers, each of the layers withstands the electric strength test of 16.3		N
	There are no dimensional requirements for the insulation of flexible sheet heating elements or additional electrical insulation. (EN 60 335-2-96)		P



IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict

	For class II heating units, there shall be two layers of insulation on the flexible sheet heating element and each of these layers shall withstand the electric strength test of 16.3 for reinforced insulation. However, if the layers are inseparable, the combination shall withstand the electric strength test of 16.3 for reinforced insulation. (EN 60 335-2-96)	Each of the two layers withstand 3000V	P
	This requirement does not apply if the reinforced insulation, other than mica or similar scaly material, consists of at least three layers, any two layers together withstand the electric strength test of 16.3		N
	This requirement also does not apply to inaccessible insulation and does not exceed the maximum permissible temperature values, or		N
	if the insulation, after conditioning as specified, withstands the electric strength test of 16.3		N
<b>30</b>	<b>RESISTANCE TO HEAT AND FIRE</b>		
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		P
	thermoplastic material providing supplementary or reinforced insulation,		P
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P
	External parts: at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C).....:		P
	Parts supporting live parts: at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125°C, whichever is the higher; temperature (°C).....:	( see appended table)	P
	Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C).....:		N
	Test is not applicable for flexible sheet heating element (EN 60 335-2-96)		P
30.2	Relevant parts of non-metallic material adequately resistant to ignition and spread of fire		N

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IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict
	Not applicable for heating units in floors of concrete or similar material (EN 60 335-2-96)		P
30.2.1	Glow-wire test of IEC 60695-2-11 at 550 °C, unless		P
	the material is classified at least HB40 according to IEC 60695-11-10		N
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category FH3 material		N
	Burning test for flexible sheet heating element other components temperature is increased to 650 °C (EN 60 335-2-96)		N
	Delete this modification (EN 60 335-2-96 A1)		P
30.2.2	Appliances operated while attended, parts of insulating material supporting current-carrying connections and parts within a distance of 3mm subjected to the glow-wire test of IEC 60695-2-11 at a temperature of:		
	-750°C, for connections carrying a current exceeding 0,5A during normal operation		N
	-650°C, for other connections		N
	Test not applicable to conditions as specified		N
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	Test not applicable to conditions as specified		P
30.2.3.1	Parts of insulating material supporting connections carrying a current exceeding 0.2A during normal operation, and		P
	parts of insulating material within a distance of 3mm,		P
	having a glow-wire flammability index of at least 850°C according to IEC 60695-2-12	( see appended table)	P
30.2.3.2	Parts of insulating material supporting current-carrying connections, and		P
	parts of insulating material within a distance of 3mm,		N
	subjected to glow-wire test of IEC 60695-2-11		P
	Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 as specified		N
	Glow-wire test of IEC 60695-2-11, the temperature being:		
	-750°C, for connections carrying a current exceeding 0,2A during normal operation		P

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Clause	Requirement - Test	Result - Remark	Verdict

	-650°C, for other connections		N
	Parts that during the test produce a flame persisting longer than 2 s, tested as specified		N
	If a flame persists longer than 2 s during the test, parts above the connection, as specified, subjected to the needle-flame test of annex E, unless		N
	the material is classified as V-0 or V-1 according to IEC 60695-11-10		N
30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E		N
	Test not applicable to conditions as specified		N
<b>31</b>	<b>RESISTANCE TO RUSTING</b>		
	Relevant ferrous parts adequately protected against rusting		P
<b>32</b>	<b>RADIATION, TOXICITY AND SIMILAR HAZARDS</b>		
	Appliance does not emit harmful radiation		P
	Appliance does not present a toxic or similar hazard		P
<b>A</b>	<b>ANNEX A (INFORMATIVE) ROUTINE TESTS</b>		
	Description of routine tests to be carried out by the manufacturer		P
<b>B</b>	<b>ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES</b>		
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		N
	This annex does not apply to battery chargers		N
3.1.9	Appliance operated under the following conditions:		
	-the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		N
	-the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N

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Clause	Requirement - Test	Result - Remark	Verdict

	If the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		N
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N
5.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N
7.12	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information		N
	Details about how to remove batteries containing materials hazardous to the environment given		N
7.15	Markings placed on the part of the appliance connected to the supply mains		N
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N
	If the appliance can be operated without batteries, double or reinforced insulation required		N
11.7	The battery is charged for the period described		N
19.1	Appliances subjected to tests of 19.101, 19.102 and 19.103		N
19.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N
19.102	Short-circuiting of the terminals of the battery, being fully charged, for appliances having batteries that can be removed without the aid of a tool		N
19.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N
21.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IEC 68-2-32		N
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-32, the number of falls being:		

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Clause	Requirement - Test	Result - Remark	Verdict

	- 100, the mass of part does not exceed 250 g		N
	- 50, the mass of part exceeds 250 g		N
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N
25.13	An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage		N
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N
	For other parts, 30.2.2 applies		N
<b>C</b>	<b>ANNEX C (NORMATIVE) AGEING TEST ON MOTORS</b>		
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		N
<b>D</b>	<b>ANNEX D (NORMATIVE) ALTERNATIVE REQUIREMENTS FOR PROTECTED MOTORS</b>		
	Applicable to protected motors for unattended use, test of 19.7 carried out on a separate sample according to the specification		N
<b>E</b>	<b>ANNEX E (NORMATIVE) NEEDLE-FLAME TEST</b>		
	Needle-flame test carried out in accordance with IEC 60695-2-2, with the following modifications:		N
5	Severities		
	The duration of application of the test flame is 30 s ± 1 s		N
8	Test procedure		
8.2	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1		N
8.4	The first paragraph does not apply		N
	If possible, the flame is applied at least 10 mm from a corner		N
8.5	The test is carried out on one specimen		N

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Clause	Requirement - Test	Result - Remark	Verdict

	If the specimen does not withstand the test, the test may be repeated on two further specimens, both withstanding the test		N
10	Evaluation of test results		
	The duration of burning not exceeding 30 s		N
	However, for printed circuit boards, the duration of burning not exceeding 15 s		N
<b>F</b>	<b>ANNEX F (NORMATIVE) CAPACITORS</b>		
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		N
1.5	Terminology		
1.5.3	Class X capacitors tested according to subclass X2		N
1.5.4	This subclause is applicable		N
1.6	Marking		
	Items a) and b) are applicable		N
3.4	Approval testing		
3.4.3.2	Table II is applicable as described		N
4.1	Visual examination and check of dimensions		
	This subclause is applicable		N
4.2	Electrical tests		
4.2.1	This subclause is applicable		N
4.2.5	This subclause is applicable		N
4.2.5.2	Only table IX is applicable		N
	Values for test A apply		N
	However, for capacitors in heating appliances the values for test B or C apply		N
4.12	Damp heat, steady state		
	This subclause is applicable		N
	Only insulation resistance and voltage proof are checked		N
4.13	Impulse voltage		

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Clause	Requirement - Test	Result - Remark	Verdict
	This subclause is applicable		N
4.14	Endurance		
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable		N
4.14.7	Only insulation resistance and voltage proof are checked		N
	Visual examination, no visible damage		N
4.17	Passive flammability test		
	This subclause is applicable		N
4.18	Active flammability test		
	This subclause is applicable		N
<b>G</b>	<b>ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS</b>		
	The following modifications to this standard are applicable for safety isolating transformers:		N
7	Marking and instructions		
7.1	Transformers for specific use marked with:		
	-name, trademark or identification mark of the manufacturer or responsible vendor		N
	-model or type reference		N
17	Overload protection of transformers and associated circuits		
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N
22	Construction		
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N
29	Clearances, creepage distances and solid insulation		
29.1 and 29.2	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		N
<b>H</b>	<b>ANNEX H (NORMATIVE) SWITCHES</b>		
	Switches comply with the following clauses of IEC 61058-1, as modified:		
	-The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N
	-Before being tested, switches are operated 20 times without load		N

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8	Marking and documentation		
	Switches are not required to be marked		N
	However, switches that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N
13	Mechanism		
	The tests may be carried out on a separate sample		N
15	Insulation resistance and dielectric strength		
15.1	Not applicable		N
15.2	Not applicable		N
15.3	Applicable for full disconnection and micro-disconnection		N
17	Endurance		
	Compliance is checked on three separate appliances or switches		N
	For 17.2.4.4, the number of cycles is 10 000, unless otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335		N
	Switches for operation under no load and which can be operated only by a tool and switches operated by hand that are interlocked so that they cannot be operated under load, are not subjected to the tests		N
	Subclause 17.2.5.2 is not applicable		N
	Temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1		N
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		
	This clause is applicable to clearances and creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in table 24		N
I	<b>ANNEX I (NORMATIVE) MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE</b>		
	The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance:		N
8	Protection against access to live parts		N

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Clause	Requirement - Test	Result - Remark	Verdict
8.1	Metal parts of the motor are considered to be bare live parts		N
11	Heating		
11.3	Temperature rise of the body of the motor is determined instead of the temperature rise of the windings		N
11.8	Temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		N
16	Leakage current and electric strength		
16.3	Insulation between live parts of the motor and its other metal parts not subjected to the test		N
19	Abnormal operation		
19.1	The tests of 19.7 to 19.9 not carried out		N
19.101	Appliance operated at rated voltage with each of the following fault conditions:		
	- short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		N
	- short circuit of each diode of the rectifier		N
	- open circuit of the supply to the motor		N
	- open circuit of any parallel resistor, the motor being in operation		N
	Only one fault simulated at a time, the tests carried out consecutively		N
22	Construction		
22.101	For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		N
	Compliance checked by the tests specified for double and reinforced insulation		N
J	<b>ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS</b>		
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N
6.6	Climatic sequence		
	When production samples are used, three samples of the printed circuit board are tested		N

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6.6.1	Cold		
	The test is carried out at -25°C		N
6.6.3	Rapid change of temperature		
	Severity 1 is specified		N
6.8.6	Partial discharge extinction voltage		
	Type A coatings not subjected to a partial discharge test		N
6.9	Additional tests		
	This subclause is not applicable		N
<b>K</b>	<b>ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES</b>		
	The information on overvoltage categories is extracted from IEC 60664-1		P
	Overvoltage category is a numeral defining a transient overvoltage condition		P
	Equipment of overvoltage category IV is for use at the origin of the installation		N
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		P
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		N
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		N
<b>L</b>	<b>ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES</b>		
	Sequences for the determination of clearances and creepage distances		P
<b>M</b>	<b>ANNEX M (NORMATIVE) POLLUTION DEGREE</b>		

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	The information on pollution degrees is extracted from IEC 60664-1		P
	Pollution		P
	The microenvironment determines the effect of pollution on the insulation, taking into account the microenvironment		P
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		P
	Minimum clearances specified where pollution may be present in the microenvironment		P
	Degrees of pollution in the microenvironment		
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		N
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		P
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		N
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N
N	<b>ANNEX N (NORMATIVE) PROOF TRACKING TEST</b>		
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		P
5	Test apparatus		
5.1	Electrodes		
	The note does not apply		P
5.4	Test solutions		
	Test solution A is used		P
6	Procedure		
6.3	Proof tracking test		

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	Class II appliances: Section 107-2-D1, ed.3 1998, Standard Sheet C1b, C5, C6, DKA 2-1a and DKA 2-1b		N
	Stationary single-phase appliances, having a rated current not exceeding 13 A, and provided with a supply cord and a plug, the plug is in accordance with the requirements above		N
	Multi-phase appliances and single-phase appliances having a rated current exceeding 13 A, and provided with a supply cord and a plug, the plug is in accordance with the requirements below:		N
	Class I appliances: Section 107-2-D1, Standard Sheet DK 6-1a / EN 60309-2, Standard Sheet 2-II, 2-IV		N
	Class II appliances: Section 107-2-D1, Standard Sheet DK 6-1a / EN 60309-2, Standard Sheet 2-II, 2-IV, the earthing contact not being connected		N
	The current for the plug not exceeding the values specified; standard sheet (no.); current (A) .....		N
	IRELAND: Only plugs according to Standard Sheets B2 and C5 allowed (see also Annex ZB)		N
	ITALY: Only plugs listed in CENELEC Report ROBT-005:2001 allowed		N
	SPAIN: For appliances for household use, only the following plugs are allowed:		N
	according to UNE 20315: ESC 10-1b, C2b, C4, C6 or ESB 25-5b		N
	according to UNE-EN 50075		N
	SWITZERLAND: supply cords of portable household and similar electrical appliances having a rated current not exceeding 10 A, provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:		N
	SEV 6532-2.1991, plug type 15, 3P+N+PE, 250/400 V, 10 A		N
	SEV 6533-2.1991, plug type 11, L+N, 250 V, 10 A		N
	SEV 6534-2.1991 plug type 12, L+N+PE, 250 V, 10 A		N
	UNITED KINGDOM: Only plugs according to Standard Sheets B2 and C5 allowed (see also Annex ZB)		N

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IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict

25.8	IRELAND, UNITED KINGDOM: replacement of figures (rated current/cross-sectional area) in the table		P
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<b>ZB</b>	<b>ANNEX ZB (INFORMATIVE) A-DEVIATIONS</b>		
4	SWITZERLAND: Information about batteries with carbon-zinc and alkali-manganese		N
7.1	ITALY: The voltage is 220 V/380 V		Not checked
25.6	IRELAND: These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and allow only plugs complying with I.S. 401:1997, or equivalent, to be fitted to domestic appliances.		N
	UNITED KINGDOM: These regulations apply to all plugs for domestic use at a voltage of not less than 200 V and allow only plugs to BS 1363 to be fitted to domestic appliances. It also allows plugs to BS 4573 and standard sheet C5 to be fitted to shavers and toothbrushes.		N

<b>ZC</b>	<b>ANNEX ZC (NORMATIVE) NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS</b>		
	This Standard incorporates provisions from the publications listed		P
<b>ZD</b>	<b>ANNEX ZD (INFORMATIVE) IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS</b>		
	A list of code designations for different types of flexible cords		N



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Clause	Requirement - Test	Result - Remark	Verdict
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10	TABLE: Power input deviation			
input deviation dP of/at:	P rated (W)	P' (W)	dP (%)	required dP
4m <sup>2</sup> floor	640	597	-6,7%	+5 / -10%

10	TABLE: Current deviation			
input deviation dP of/at:	I rated (A)	I' (A)	dP (%)	required dP

11.8	TABLE: temperature rise measurements				
t1 (°C) .....	22				
t2 (°C) .....	22				
test voltage (V) .....	253				
temperature rise dT of part/at:	dT (K)		required dT (K)		
5 cm outside the piece of thermal insulation	19		22		
Cable surfaces	53		65		
	winding temperature rise measurements:				
	insulation class .....				
temperature rise dT of winding:	R <sub>1</sub> (Ω)	R <sub>2</sub> (Ω)	dT (K)	required dT (K)	Insulation class

13.2	TABLE: leakage current measurements at operating temperature		
heating appliances: at 1,15 times rated input (W) :	184 W/m <sup>2</sup>		





IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict

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<b>17.</b>	<b>TABLE: overload protection, temperature rise measurements</b>		
17.1	at 1,06 or 0,94 times rated voltage (V) .....		
	temperature rise dT of part/at:	dT (K)	required dT (K)

<b>19</b>	<b>TABLE: abnormal operation, temperature rise measurements</b>		
	room temperature t1 (°C) .....	22	
	room temperature t2 (°C) .....	22	
	test voltage (V) .....	253	
	temperature rise dT of part/at:	dT (K)	required dT (K)
	Wood on the test framework	<<118	150
	winding temperature rise measurements:		
	temperature rise dT of winding:	R <sub>1</sub> (Ω)	R <sub>2</sub> (Ω)
		T <sub>1</sub> (°C)	required T <sub>1</sub> (°C)
			insulation class



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Clause	Requirement - Test	Result - Remark	Verdict

24.1 TABLE: components					
object/part No.	manufac-turer/trademark	Type/model	technical data	standard	mark(s) of conformity <sup>1)</sup>
Heating cable	Belden CDT	Qnet	230V T90	EN 60335	
Thermostat	Tyco Thermals Control Nordic	T2 Duo Temp	230VAC 50Hz 16A Max 35°C	EN 60730	S-mark
Alt. Thermostat	Tyco Thermals Control Nordic	T2 Floor Temp	230VAC 50Hz 16A Max 30°C	EN 60730	S-mark
Alt. Thermostat	Tyco Thermals Control Nordic	T2 Digi Temp	230VAC 50Hz 16A Max 35°C	EN 60730	BBJ-mark
Alt. Thermostat	Tyco Thermals Control Nordic	TA	230VAC 50/60Hz 13A Max 35°C	EN 60730	S-mark
Alt. Thermostat	Tyco Thermals Control Nordic	TC	230VAC 50/60Hz 13A Max 35°C	EN 60730	S-mark

28.1 TABLE: Threaded part torque test			
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)



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Clause	Requirement - Test	Result - Remark	Verdict

29.1	<b>TABLE: Clearances</b>					
	Overvoltage category ...:	III			—	
		Type of insulation:				
Rated impulse voltage (V)	Min. Cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0,5					
500	0,5					
800	0,5					
1 500	1,0					
2 500	2,0					
4 000	3,5	X	X	X		P
6 000	6,0					
8 000	8,5					
10 000	11,5					



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Clause	Requirement - Test	Result - Remark	Verdict

29.2 TABLE: Creepage distances, basic, supplementary and reinforced insulation											
Working voltage (V)	Creepage distance (mm)										Verdict
	Pollution degree										
	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	
>50	0,2	0,6	0,9	1,2	1,5	1,7	1,9		—	—	
>50	0,2	0,6	0,9	1,2	1,5	1,7	1,9	—		—	
>50	0,4	1,2	1,8	2,4	3,0	3,4	3,8	—	—		
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4		—	—	
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4	—		—	
>50 and ≤125	0,6	1,6	2,2	3,0	3,8	4,2	4,8	—	—		
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	X	—	—	P
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	—	X	—	P
>125 and ≤250	1,2	2,6	3,6	5,0	6,4	7,2	8,0	—	—		
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	
>250 and ≤400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	
>400 and ≤500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	
>500 and ≤800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	
>800 and ≤1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	
>1000 and ≤1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—	

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Clause	Requirement - Test								Result - Remark		Verdict

>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—	—	—	
>1250 and ≤1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—	—	
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—	—	—	
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—	—	—	
>1600 and ≤2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—	—	
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	—	—	—	
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	—	—	—	
>2000 and ≤2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	—	—	—	
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—	—	—	
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—	—	—	
>2500 and ≤3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	—	—	—	
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—	—	—	
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—	—	—	
>3200 and ≤4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	—	—	—	
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—	—	—	
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—	—	—	
>4000 and ≤5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	—	—	—	
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—	—	—	
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—	—	—	
>5000 and ≤6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	—	—	—	
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—	—	—	
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—	—	—	
>6300 and ≤8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	—	—	—	
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—	—	—	
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—	—	—	
>8000 and ≤10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	—	—	—	
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—	—	—	
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—	—	—	
>10000 and ≤12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	—	—	—	

<sup>\*)</sup>, B=Basic, S=Supplementary and R=Reinforced



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Clause	Requirement - Test	Result - Remark	Verdict

29.2		TABLE: Creepage distances, functional insulation							
Working voltage (V.)	Creepage distance (mm)							Verdict / Remark	
	Pollution degree								
	1	2			3				
		Material group			Material group				
		I	II	IIIa/IIIb	I	II	IIIa/IIIb		
>50	0,2	0,6	0,8	1,1	1,4	1,6	1,8		
>50 and ≤125	0,3	0,7	1,0	1,4	1,8	2,0	2,2		
>125 and ≤250	0,4	1,0	1,4	2,0	2,5	2,8	3,2	P	
>250 and ≤400	0,8	1,6	2,2	3,2	4,0	4,5	5,0		
>400 and ≤500	1,0	2,0	2,8	4,0	5,0	5,6	6,3		
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0		
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0		
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0		
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0		
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0		
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0		
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0		
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0		



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Clause	Requirement - Test	Result - Remark	Verdict

30	TABLE:				P		
COMPONENT		Ball-pressure [°C]		Glow wire [°C]		Tracking [V]	
Thermostat		125	P	850	P	250	P



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Clause	Requirement - Test	Result - Remark	Verdict

**Amendment A1:2004 to standard IEC/EN 60335-1**

7	MARKING AND INSTRUCTIONS		
7.12.6	Instructions for heating appliances incorporating a non-self-resetting thermal cut-out that is reset by disconnection the supply mains contains the warning (IEC 60335-1, A1)		N/A
7.12.7	The instructions for fixed appliances shall state how the appliance is to be fixed to its support (IEC 60335-1, A1)		N/A
7.12.8	The instructions for appliances connected to the water mains shall state: - max.inlet water pressure - min. inlet water pressure (if necessary for correct operation (IEC 60335-1, A1)		N/A
	The instructions shall give sufficient information about detachable hose-sets and old hose-sets shall not be reused (IEC 60335-1, A1)		N/A

13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		
13.3	Electric strength tests according to table 4 (IEC 60335-1, A1)	(see appended table)	P

14	TRANSIENT OVERVOLTAGES		
14.1	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6 (IEC 60335-1, A1)	(see appended table)	N/A

15	MOISTURE RESISTANCE		
15.1.1	Water valves containing live parts are subjected to the tests for IPX7 appliances (IEC 60335-1, A1)		N/A
15.1.2	For IPX4 appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support that prevents water spraying onto the top surface (IEC 60335-1, A1)		N/A

16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		
16.3	Electric strength tests according to table 7 (IEC 60335-1, A1)	(see appended table)	P



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Clause	Requirement - Test	Result - Remark	Verdict

19	<b>ABNORMAL OPERATION</b>		
19.11	Protective electronic circuits are subjected to the tests of 19.11.3 and 19.11.4 (IEC 60335-1, A1)		N/A
19.11.4	Protective electronic circuits are subjected to the tests of clause 19.11.4.1 to 19.11.4.7 (IEC 60335-1, A1)		N/A
	Appliances with a switch with an off position obtaining by electronic disconnection or that can be placed in a stand-by mode, are subjected to the tests of clause 19.11/4.1 to 19.11.4.7 (IEC 60335-1, A1)		P
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4 (IEC 60335-1, A1)		N/A
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3 (IEC 60335-1, A1)		N/A
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 (IEC 60335-1, A1)		N/A
19.11.4.4	The power supply terminals of the appliance are subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 (IEC 60335-1, A1)		N/A
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3 (IEC 60335-1, A1)		N/A
19.11.4.6	The appliance is subjected to voltage dips and interruptions in accordance with IEC 61000-4-11 (IEC 60335-1, A1)		N/A
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2 (IEC 60335-1, A1)		N/A
19.13	The appliance shall not undergo a dangerous malfunction and there shall be no failure of protective electronic circuits if the appliance is still operable (IEC 60335-1, A1)		N/A
	Appliances with an electronic switch in the off position or in the stand-by mode shall not become operable (IEC 60335-1, A1)	See Amendment A2	P

21	<b>MECHANICAL STRENGTH</b>		
21.2	Accessible parts of solide insulation shall have sufficient strength to prevent penetration by sharp implements. The parts are scratched with a hardened stell pin. After the test there shall be no		N/A



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	damage and the insulation shall withstand the tests of clause 16.3 (IEC 60335-1, A1)		
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<b>22</b>	<b>CONSTRUCTION</b>		
22.10	It shall not be possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device (IEC 60335-1, A1)		N/A
22.46	Software used in protective electronic circuits shall be software class B or software class C (IEC 60335-1, A1)		N/A
22.47	Appliances intended to be connected to the water mains shall withstand the water pressure expected in normal use (IEC 60335-1, A1)		N/A
22.48	Appliances intended to be connected to the water mains shall be constructed to prevent backsiphonage of non-potable water into the water mains (IEC 60335-1, A1)		N/A

<b>23</b>	<b>INTERNAL WIRING</b>		
23.10	The insulation and sheath of internal wiring, in external hoses for the connection of appliances to the water mains, shall be at least equivalent to that of light polyvinyl chloride sheathed flexible cords, code designation 60227 IEC 52 (IEC 60335-1, A1)		N/A

<b>24</b>	<b>COMPONENTS</b>		
24.1.4	Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being:		
	- voltage maintain non-self-resetting thermal cut-outs (IEC 60335-1, A1)	1 000	N/A
	- other non-self-resetting thermal cut-outs (IEC 60335-1, A1)	30	N/A
24.1.5	Interconnection couplers complying with IEC 60320-2-2 (IEC 60335-1, A1)		N/A
24.7	Hose-sets for the connection of appliances to the water mains shall comply with IEC 61770 and supplied with the appliances (IEC 60335-1, A1)		N/A

<b>25</b>	<b>SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS</b>		
25.7	Supply cord not lighter than: (IEC 60335-1, A1)		
	- ordinary polychloroprene sheathd flexible cord (60245 IEC 57)		N/A



IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict

<b>26</b>	<b>TERMINALS FOR EXTERNAL CONDUCTORS</b>		
26.1	Only the earthing terminal may be accessible if a tool is required to make the connections and means to provide to clamp the wire independently from its connection (IEC 60335-1, A1)		N/A

<b>27</b>	<b>PROVISION FOR EARTHING</b>		
27.3	If a detachable part having an earth connection is plugged into another part of the appliance, the earth connection shall be made before the current-carrying connections are established and the current carrying connections shall be separated before the earth connection when removing the part (IEC 60335-1, A1)		N/A

<b>29</b>	<b>CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION</b>		
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15 (IEC 60335-1, A1)	( see appended table)	N/A
29.3.1	The thickness of the insulation shall be at least - 1 mm for supplementary insulation - 2 mm for reinforced insulation (IEC 60335-1, A1)		N/A
29.3.2	Each layer of material shall withstand the tests of clause 16.3. Supplementary insulation shall consist of at least 2 layer and reinforced insulation at least 3 layers (IEC 60335-1, A1)		N/A
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2 for 48 hours at a temperature of 50 K in excess of the maximum temperature rise during clause 19 and withstand the tests of clause 16.3 (IEC 60335-1, A1)		N/A

<b>D</b>	<b>ANNEX D (NORMATIVE) ALTERNATIVE REQUIREMENTS FOR PROTECTED MOTORS</b>		
	Applicable to motors that incorporate thermal motor protectors (IEC 60335-1, A1)		N/A

<b>N</b>	<b>ANNEX N (NORMATIVE) PROOF TRACKING TEST</b>		
	The proof tracking test is carried out in accordance with IEC 60112 with the modifications		N/A





IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict
	(IEC 60335-1, A1)		

P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES		
5.7	Ambient temperature during tests of clause 11 and 13 is 40 +/- 3 °C (IEC 60335-1, A1)		N/A
7.1	The appliance shall be marked with the letters WDaE (IEC 60335-1, A1)		N/A
7.12	The instructions shall state that the appliance is to be supplied trough a residual current device (RCD) not exceeding 30 mA (IEC 60335-1, A1)		N/A
15.3	The value of t is 37 °C (IEC 60335-1, A1)		N/A
19.13	The leakage current test of clause 16.2 is applied (IEC 60335-1, A1)		N/A

R	ANNEX R (INFORMATIVE) SOFTWARE EVALUATION ACCORDING TO IEC 607301		
H.2	Only definitions H.2.16 to H.2.20 are applicable (IEC 60335-1, A1)		N/A
H.11.12	All the subclauses of H.11.12 as modified are applicable (IEC 60335-1, A1)		N/A
H.11.12.7.1	For appliances using software class C having a single channel with self-test monitoring structure, the manufacturer shall provide measures (IEC 60335-1, A1)		N/A
H.11.12.8	Software fault/error detection shall occur before compliance with clause 19.13 is impaired (IEC 60335-1, A1)		N/A
H.11.12.13	Software and safety related hardware under its control shall initialize and terminate before compliance with clause 19.13 is impaired (IEC 60335-1, A1)		N/A



IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict

<b>29.1</b>		<b>TABLE: Clearances</b>				
		Overvoltage category:	III			—
		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0,5					
500	0,5					
800	0,5					
1 500	0,5					
2 500	1,5					
4 000	3,0	x	x	x		P
6 000	5,5					
8 000	8,0					
10 000	11,0					



IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict

**Amendment A12:2006 to standard EN 60335-1**

<p>29.3</p>	<p><b>Replace</b> the third dashed item by:</p> <ul style="list-style-type: none"> <li>- An assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3 and, for accessible reinforced insulation consisting of a single layer, measurement in accordance with 29.3.Z1.</li> </ul> <p><b>Add:</b></p>	<p>N/A</p>
<p>29.3.Z1</p>	<p>If accessible <b>reinforced insulation</b> consists of a single layer, the thickness of this layer shall comply with Table Z1.</p>	



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IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict
<b>Amendment A2:2006 to standard IEC/EN 60335-1</b>			
5	GENERAL CONDITIONS FOR THE TESTS		
	Tests performed according to cl. 5, e.g. nature of supply, sequence of testing, etc.		P
7	MARKING AND INSTRUCTIONS		
7.5	the power input is related to the arithmetic mean value of the rated voltage range		N/A
7.6	Correct symbols used		N/A
7.12	The instructions state that:		
	- the appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction	When the floor heating system is located in the floor it will not be accessible for children or persons with reduced physical capabilities	N/A
	- children being supervised not to play with the appliance	When the floor heating system is located in the floor it will not be accessible for children	N/A
8	PROTECTION AGAINST ACCESS TO LIVE PARTS		
8.1.4	Accessible part not considered live if:		
	- for peak values over 15kV, the energy in the discharge not exceeding 350 mJ		N/A
8.2	Compliance is checked by inspection and by applying test probe B of IEC 61032 in accordance with the conditions specified in 8.1.1		N/A
10	POWER INPUT AND CURRENT		
10.1	Test for an appliance with one or more rated voltage ranges		N/A
10.2	Test for an appliance with one or more rated voltage ranges		N/A
11	HEATING		
11.8	Temperature rises not exceeding values in table 3	(see appended tables)	P
14	TRANSIENT OVERVOLTAGES		
	The impulse test voltage has a no-load waveshape corresponding to the 1,2/50 $\mu$ s standard impulse specified in IEC 61180-1. It is supplied from a generator having a conventional impedance not exceeding 42 $\Omega$ . The impulse test voltage is applied three times for each polarity with intervals of at least 1 s.		N/A

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IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		
16.3	Electric strength tests according to table 7	(see appended table)	P
	No breakdown during the tests		P
19	ABNORMAL OPERATION		
19.1	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		P
19.11	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.3 and 19.11.4		N/A
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8		N/A
19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in cl. 11, but supplied at rated voltage, the duration of the tests as specified:		
	g) failure of an electronic power switching device		N/A
19.11.4	a device that can be placed in the stand-by mode,		N/A
19.11.4.6	The appliance is subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11		N/A
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60s the power supply is reduces to a level such that the appliance ceases to respond or a programmable component cease to operate.		N/A
	The appliance continues to operate normally or requires a manual operation to restart		N/A
19.13	Compliance with cl. 8 not impaired		P
	If the appliance can still be operated it complies with 20.2		P
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstanding the electric strength test of 16.3. the test voltage being twice the working voltage		P
	The appliance does not undergo a dangerous malfunction, and		P
	no failure of protective electronic circuits, if the appliance is still operable		N/A
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		

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IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict
	- do not become operational, or		P
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4	No dangerous malfunction if the floor heating become operational	P
19.14	Appliances operated under the conditions of Clause 11. Contactors or relays contacts operating under the conditions of clause 11 short-circuited		P
22	CONSTRUCTION		
22.2	Single-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected class 01 and class I appliances, connected to the phase conductor		N/A
22.5	No risk of electric shock when touching the pins of the plug, for appliances having a capacitor with rated capacitance exceeding 0,1µF, the appliance being disconnected from the supply at the instant of voltage peak		N/A
22.21	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N/A
22.32	Insulating material in which heating conductors are embedded is considered to be basic insulation and not reinforced insulation		N/A
22.35	Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of a failure of basic insulation		P
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of a failure of basic insulation, are either adequately covered by insulation material or their accessible parts are separated from their shafts or fixings by supplementary insulation		N/A
22.40	Unless the appliance can operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch. The actuating member of the switch being easily visible and accessible.		N/A
22.44	Appliances shall not have an enclosure that is shaped or decorated like a toy		P
22.49	For remote operation, the duration of operation shall be set before the appliance can be started, unless		N/A
	the appliance switches off automatically or can operate continuously without hazard		N/A

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IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation		N/A
22.51	A control on the appliance being manually adjusted to the setting for remote operation before the appliance can be operated in this mode		N/A
	There is a visual indication showing that the appliance is adjusted for remote operation		N/A
	Manual setting and visual indication not necessary on appliances that can operate as follows, without giving rise to a hazard:		
	- operate continuously,		N/A
	- operate automatically, or		N/A
	- be operated remotely		N/A
22.52	Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold		N/A
24	COMPONENTS		
24.1	Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.9		P
	Lampholders and starterholders not being tested and found to comply with the relevant IEC standard, tested as a part of the appliance and additionally according to the gauging and interchangeability requirements of the relevant IEC standard		N/A
24.1.7	If the remote operation of the appliance is via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151		N/A
24.1.8	The relevant standard for thermal links is IEC 60691. Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of Clause 19		N/A
24.1.9	Relays, other than motor starting relays, tested as part of the appliance		N/A
	They are also tested in accordance with Clause 17 of IEC 60730-1, the number of operations in 24.1.4 selected according to the relay function in the appliance .....		N/A
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		
25.7	Supply cords being one of the following types:		



IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict
	- rubber sheathed (at least 60245 IEC 53)		N/A
	- polychloroprene sheathed (at least 60245 IEC 57)		N/A
	- cross-linked polyvinyl chloride sheathed (at least 60245 IEC 87)		N/A
	Polyvinyl chloride sheathed: Not used if they are likely to touch metal parts having a temperature rise exceeding 75K during the test of Clause 11.		
	- light polyvinyl chloride sheathed cord (at least 60227 IEC 52), appliances not exceeding 3 kg		N/A
	- ordinary polyvinyl chloride sheathed cord (at least 60227 IEC 53), other appliances		N/A
	Heat resistant polyvinyl chloride sheathed: Not used for type X attachment other than specially prepared cords.		
	- Heat-resistant light polyvinyl chloride sheathed cord (at least 60227 IEC 56), appliances not exceeding 3 kg		N/A
	- heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), other appliances		N/A
26	TERMINALS FOR EXTERNAL CONDUCTORS		
26.3	Compliance checked by inspection and by the test of subclause 9.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm):		P
27	PROVISION FOR EARTHING		
27.6	The printed conductors of printed circuit boards shall not be used to provide earthing continuity in hand-held appliances.		P
	They may be used to provide earthing continuity in other appliances if at least two tracks are used with independent soldering points and the appliance complies with 27.5 for each circuit		N/A
28	SCREWS AND CONNECTIONS		
28.1	For screws and nuts; test as specified	(see appended table)	P
28.3	Thread-cutting (self-tapping) screws and thread rolling screws only used for electrical connections if they generate a full form standard machine screw thread		N/A
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer		N/A

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IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict
30.2.2	Appliances operated while attended, parts of non-metallic material supporting current-carrying connections, and parts of non-metallic material within a distance of 3mm of such connections, are subjected to the glow-wire test of IEC 60695-2-11.		N/A
	The glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least:		
	-750°C, for connections carrying a current exceeding 0,5A during normal operation		N/A
	-650°C, for other connections		N/A
	Test as specified for an interposed shielding material		N/A
	When the glow-wire test of IEC 60695-2-11 is carried out, the temperatures are:		
	-750°C, for connections carrying a current exceeding 0,5A during normal operation		N/A
	-650°C, for other connections		N/A
	Test not applicable to conditions as specified		N/A
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	Tests not applicable to conditions as specified		P
30.2.3.1	Parts of insulating material supporting connections carrying a current exceeding 0.2A during normal operation, and		P
	parts of non-metallic material within a distance of 3mm,		P
	subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850°C		P
	Glow-wire test not carried out on parts of material classified as having a glow-wire flammability index of at least 850°C according to IEC 60695-2-12		P
	Glow-wire test not carried out on small parts that comply with the needle-flame test of Annex E or on small parts of material classified as V-0 or V-1 according to IEC 60695-11-10		P
	Test as specified for an interposed shielding material		P
30.2.3.2	Parts of non-metallic material supporting current-carrying connections, and		P
	parts of non-metallic material within a distance of 3mm,		P
	subjected to glow-wire test of IEC 60695-2-11		P

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IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict
	Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 of at least:		N/A
	-775°C, for connections carrying a current exceeding 0,2A during normal operation		N/A
	-675°C, for other connections		N/A
	When the glow-wire test of IEC 60695-2-11 is carried out, the temperatures are:		
	-750°C, for connections carrying a current exceeding 0,2A during normal operation		P
	-650°C, for other connections		P
	Parts that during the test produce a flame persisting longer than 2 s, tested as specified		P
	If a flame persists longer than 2 s during the test, parts above the connection, as specified, subjected to the needle-flame test of annex E, unless		N/A
	the material is classified as V-0 or V-1 according to IEC 60695-11-10		P
30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E		P
	Test not applicable to conditions as specified		P
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		
	Appliance shall not emit harmful radiation, present a toxic or similar hazard due to their operation in normal use		N/A
	Relevant tests specified in part 2, if necessary		N/A
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		N/A
7	Severities		
	The duration of application of the test flame is 30 s ± 1 s		N/A
9	Test procedure		
9.1	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1		N/A
9.2	The first paragraph does not apply		N/A
	If possible, the flame is applied at least 10 mm from a corner		N/A

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IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict
9.3	The test is carried out on one specimen		N/A
	If the specimen does not withstand the test, the test may be repeated on two additional specimens, both withstanding the test		N/A
11	Evaluation of test results		
	The duration of burning not exceeding 30 s		N/A
	However, for printed circuit boards, the duration of burning not exceeding 15 s		N/A
J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N/A
5.7	Conditioning of the test specimens		
	When production samples are used, three samples of the printed circuit board are tested		N/A
5.7.1	Cold		
	The test is carried out at -25°C		N/A
5.7.3	Rapid change of temperature		
	Severity 1 is specified		N/A
5.9	Additional tests		
	This subclause is not applicable		N/A
O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		
	Description of tests for determination of resistance to heat and fire		P

IEC/EN 60 335-2-96			
Clause	Requirement - Test	Result - Remark	Verdict

Group/GENELEC Common Differences to IEC 60335-1:2001 (4. Edition)			
Annex ZC	ANNEX ZC (NORMATIVE) NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		
	A list of referenced documents in this standard		P