Test Report

Report No.	:	GOM190723129T
Applicant	:	Zhejiang Wowtech M&E Products Co., Ltd.
Address	:	No.1 Gaoqiu Road, Dongqianhu Innovative Industrial Park, Yinzhou District, Ningbo 315124, China
Manufacturer	:	Zhejiang Wowtech M&E Products Co., Ltd.
Address	:	No.1 Gaoqiu Road, Dongqianhu Innovative Industrial Park, Yinzhou District, Ningbo 315124, China
Product	:	Ozone Air Purifier
Model	:	OLK-A-03, OLK-A-04, OLK-A-05
Test Model	:	OLK-A-03
Standard(s)/Regulation(s)	:	EN 60335-1:2012+A11:2014, EN 60335-2-65: 2003+A11:2012
Date of Test	:	01/07/2019 - 23/07/2019
Date of Issue	:	23/07/2019
Complied By	:	
Reviewed By	:	
Prepared By	:	Shanghai GOM Testing & Technical Co., Ltd.
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Particulars: test item vs. test requirements	
Electrical safety class..... :	Class II
IP number..... :	IPXX
Voltage selector	No
PTC/MCH heating element	No
Switch	Yes
Thermostat	No
Thermal cut-out	No
Electronic circuit	Yes
Timer	No
Motor	No
Low voltage motor	No
Accessories	No
- nozzle	No
- diffusor	No
- etc	No
Portable appliance	No
Appliance for fixing to a wall	Yes
Swivel connection	No
Supply cord	Yes
Attachment type	No
Test case verdicts	
Test case does not apply to the test object	N (.A.)
Test item does meet the requirement	P(ass)
Test item does not meet the requirement	F(ail)
Testing	
Date of receipt of test item	01/07/2019
Date(s) of performance of test	01/07/2019 - 23/07/2019

General remarks

This test report shall not be reproduced except in full without the written approval of the testing laboratory. The test results presented in this report relate only to the item tested.

"(see remark #)" refers to a remark appended to the report.
"(see appended table)" refers to a table appended to the report.

Remark:

1. The Max ambient temperature is +25 ℃.

2. All models are similar except the power and appearance. All tests were conducted in the model W50.
3. The test report includes attachment of product photos.

Copy of marking plate

Ozone Air Purifier
Model: OLK-A-03
AC 110-240V, 50/60Hz, 6W

CE

Manufacturer: Zhejiang Wowtech M&E Products Co., Ltd.
Add: No.1 Gaoqiu Road, Dongqianhu Innovative Industrial Park, Yinzhou District, Ningbo 315124, China

Label testing

Rubbing for 15 s with a pEN e of cloth soaked with water. And a further 15 s with a pEN e of cloth soaked with petroleum.

Clause	Requirement - Test	Result - Remark	Verdict
5	GENERAL CONDITIONS FOR THE TESTS		_
	Tests performed according to cl. 5, e.g. nature of supply, sequence of testing, etc.		P
	Unless otherwise specified, the tests are carried out in accordance with this clause.		P
6	CLASSIFICATION		—
6.1	Appliances shall be class 0, class 0I, class I, class II, class III.	Class II	P
6.2	Protection against harmful ingress of water (IP degree in accordance with EN 60529)	IPXX	N
7	MARKING AND INSTRUCTIONS		—
7.1	Rated voltage or voltage range (V)	AC 110-240V	P
	Single-phase appliances: 230 V covered		P
	Multi-phase appliances: 400 V covered		N
	Nature of supply	~	P
	Rated frequency (Hz)	50/60Hz	P
	Rated power input (W)	6W	P
	Rated current (A)		P
	Manufacturer’s or responsible vendor’s name, trademark or identification mark	Zhejiang Wowtech M&E Products Co., Ltd.	P
	Model or type reference	OLK-A-03	P
	Symbol 5172 of EN 60417, for Class II appliances:		N
	IP number, other than IPX0		N
	Symbol EN 60417-5036, for the enclosure of electrically-operated water valves in external hosesets for connection of an appliance to the water mains	Not such appliance	N
7.2	Warning for stationary appliances for multiple supply	Single supply	N
	Warning placed in vicinity of terminal cover		N
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen		N
	Different rated values marked with the values separated by an oblique stroke		N
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible	No such parts	N
7.5	Appliances with more than one rated voltage or		N

Clause	Requirement - Test	Result - Remark	Verdict
	one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless		
	the power input is related to the arithmetic mean value of the rated voltage range		N
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N
7.6	Correct symbols used	See marking label	P
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply	No multiple supply	N
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		—
	- marking of terminals exclusively for the neutral conductor (N)		N
	- marking of protective earthing terminals (symbol 5019 of EN 60417)		N
	- marking not placed on removable parts		N
7.9	Marking or placing of switches which may cause a hazard		N
7.10	Indications of switches and regulating devices by use of figures, letters or other visual means		P
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		P
7.11	Indication for direction of adjustment of controls		P
7.12	Instructions for safe use provided		P
	If the “Do not cover” symbol is marked on the appliance, its meaning shall be explained.		N
7.12 Addition:	The instructions shall include details for cleaning and other user maintenance of the appliance. They shall state that prior to cleaning or other maintenance, the appliance must be disconnected from the supply mains		P
7.12.1	Sufficient details for installation supplied		P
	If it is necessary to take precautions during installation of the appliance, appropriate details shall be given. If an appliance is intended to be permanently connected to the water mains and not connected by a hose-set, this shall be		P

Clause	Requirement - Test	Result - Remark	Verdict
	stated.		
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules		N
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions stating that the fixed wiring must be protected		N
7.12.4	Instructions for built-in appliances:	(Not such appliance)	—
	- dimensions of space		N
	- dimensions and position of supporting means		N
	- distances between parts and surrounding structure		N
	- dimensions of ventilation openings and arrangement		N
	- connection to supply mains and interconnection of separate components		N
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless		N
	a switch complying with 24.3		N
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N
	Replacement cord instructions, type Y attachment		N
	Replacement cord instructions, type Z attachment		N
7.12.6	Caution in the instructions for heating appliances with a non-self-resetting thermal cut-out		N
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed		N
7.12.8	The instructions connected to the water mains shall state:		N
	- max. inlet water pressure (Pa)		N
	- min. inlet water pressure, if necessary (Pa)		N
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		N

Clause	Requirement - Test	Result - Remark	Verdict
7.13	Instructions and other texts in an official language	English	P
7.14	Marking clearly legible and durable	The label is clearly legible after the rubbing test	P
7.15	Marking on a main part	Marking label attached to outside enclosure	P
	Marking clearly discernible from the outside, if necessary after removal of a cover		P
	For portable appliances, cover can be removed or opened without a tool		N
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		N
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		P
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading		P
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		N
8	PROTECTION AGAINST ACCESS TO LIVE PARTS		—
8.1	Adequate protection against accidental contact with live parts		P
8.1.1	Requirement applies for all positions, detachable parts removed		P
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap	No such lamp	N
	Use of test probe B of EN 61032: no contact with live parts		P
8.1.2	Use of test probe 13 of EN 61032 through openings in class 0 appliances and class II appliances/ constructions: no contact with live parts		P
	Test probe 13 also applied through openings in earthed metal enclosures having a		N

Clause	Requirement - Test	Result - Remark	Verdict
	non-conductive coating: no contact with live parts		
8.1.4	Accessible part not considered live if:		--
	- safety extra-low a.c. voltage: peak value not exceeding 42.4 V		N
	- safety extra-low d.c. voltage: not exceeding 42.4 V		N
	- or separated from live parts by protective impedance		N
	If protective impedance: d.c. current not exceeding 2 mA, and		N
	a.c. peak value not exceeding 0.7 mA		P
	- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0.1 uF		N
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 uC		N
	- for peak values over 15kV, the energy in the discharge not exceeding 350 mJ		N
8.1.4	Addition:		P
	The discharge from parts that are only accessible after the removal of a cover for cleaning or other user maintenance is measured 2 s after the cover has been removed.		P
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		—
	- built-in appliances		N
	- fixed appliances		N
	- appliances delivered in separate units		N
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only		P
	Only possible to touch parts separated from live parts by double or reinforced insulation		P
9	Starting of motor-operated appliances		—
	Requirements and tests are specified in part 2 when necessary		N
10	POWER INPUT AND CURRENT		—
10.1	Power input at normal operating temperature, rated voltage and normal operation not	(see appended table)	P

Clause	Requirement - Test	Result - Remark	Verdict
	deviating from rated power input by more than shown in table 1		
	Test for an appliance with one or more rated voltage ranges		N
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2		N
	Test for an appliance with one or more rated voltage ranges		N
11	HEATING		—
11.1	No excessive temperatures in normal use		P
11.2	Heaters normally placed on the floor are placed in a test corner as follows:		N
11.3	Temperature rises, other than of windings, determined by thermocouples	Determined by thermocouples and resistance method	P
	Temperature rises of windings determined by resistance method, unless		N
	the windings makes it difficult to make the necessary connections		N
11.4	Heating appliances operated under normal operation at 1.15 Times rated power input		N
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage		N
11.6	Combined appliances are operated as motor-operated		N
11.7	Appliances are operated until steady conditions are established.		P
11.8	Temperature rises not exceeding values in table 3	(see appended tables)	P
	Sealing compound does not flow out		P
	Protective devices do not operate, except		P
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4	No protective electronic circuits	N
12	Void		—
13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		—
13.1	Leakage current not excessive and electric strength adequate		P

Clause	Requirement - Test	Result - Remark	Verdict
	Heating appliances operated at 1.15 times rated power input		N
	Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage		N
	Protective impedance and radio interference filters disconnected before carrying out the tests	No such component	N
13.2	Leakage current measured by means of the circuit described in figure 4 of EN 60990		P
	Leakage current measurements	(see appended table)	P
13.3	The appliance is disconnected from the supply		P
	Electric strength tests according to table 4	(see appended table)	P
	No breakdown during the tests		P
14	TRANSIENT OVERVOLTAGES		—
	Appliances withstand the transient overvoltages to which they may be subjected		N
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6		N
	No flashover during the test, unless of functional insulation		N
	In case of flashover of functional insulation, the appliance complies with clause 19 with the clearance short circuited		N
15	MOISTURE RESISTANCE		—
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance		P
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		N
	No trace of water on insulation which can result in a reduction of clearances and creepage distances below values specified in clause 29		N
15.1.1	Appliances, other than IPX0, subjected to tests as specified in EN 60529		N
	Water valves in external hoses for connection of an appliance to the water mains tested as specified for IPX7 appliances		N
15.1.2	Hand-held appliance turned continuously		N

Clause	Requirement - Test	Result - Remark	Verdict
	through the most unfavourable positions during the test		
	Built-in appliances installed according to the instructions		N
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		N
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		N
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube		N
	However, for appliances normally used on the floor or table, the movement is limited to two times 90°for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube		N
	Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support, the pivot axis of the oscillating tube located at the level of the underside of the support		N
	For IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min		N
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N
	Appliances with type X attachment fitted with a flexible cord as described		N
	Detachable parts tested as specified		N
15.2	spillage of liquid does not affect their electrical insulation		N
	Appliances with type X attachment fitted with a flexible cord as described		N
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N
	Detachable parts are removed.		N
	Over filling test with additional amount of water,		N

Clause	Requirement - Test	Result - Remark	Verdict
	over a period of 1 min(l):		
	The appliance withstands the electric strength test of 16.3		N
	No trace of water on insulation that can result in a reduction of clearances and creepage distances below the values specified in clause 29.		N
15.3	Appliances proof against humid conditions		N
	Humidity test for 48 h in a humidity cabinet	93 %, 25℃, 48Hours	P
	The appliance withstands the tests of clause 16		P
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		—
16.1	Leakage current not excessive and electric strength adequate		P
	Protective impedance disconnected from live parts before carrying out the tests	No such component	N
16.2	Single-phase appliances: test voltage 1.06 times rated voltage:	240Vx1.06	P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by √3:		P
	Leakage current measurements	(see appended table)	P
16.3	Electric strength tests according to table 7	(see appended table)	P
	No breakdown during the tests		P
16.101	High-voltage transformers shall have adequate internal insulation.		N
	Compliance is checked by the following test.		N
	Twice the working voltage is induced in the secondary winding of the transformer by applying a sinusoidal voltage having a frequency higher than rated frequency to the primary terminals.		N
	The duration of the testis – 60 s, for frequencies upto twice the rated frequency, or – 120 ×rated frequency/ test frequencys, with a minimum of15 s, for higher frequencies.		N
	A maximum of one-third ofthe testvoltage is applied and isthen rapidly increased without creating transients. At the end of the test, the voltage is decreased in a similar manner to approximately one-third of its full value before		N

Clause	Requirement - Test	Result - Remark	Verdict
	switching off.		
	There shall be no breakdown between windings or between adjacent turns of the same winding.		N
17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		—
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use		N
	Appliance supplied with 1.06 or 0.94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied….:		N
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		N
	Temperature of the winding not exceeding the value specified in table 8,		N
	however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of EN 61558-1		N
19	ABNORMAL OPERATION		—
19.1	The risk of fire or mechanical damage under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe		P
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11	No such component	N
	Instead of the tests specified, appliances are subjected to the tests of 19.5, 19.6, 19.11, 19.12 and 19.101 to 19.115, as applicable.		N
19.2	Test of appliance with heating elements with restricted heat dissipation; test voltage (V): power input of 0.85 Times rated power input		N
19.3	Test of 19.2 repeated; test voltage (V): power input of 1.24 Times rated power input		N
19.4	Test conditions as in cl. 11, any control limiting the temperature during tests of cl. 11 short-circuited	No such device	N
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded	No such constructions	N

Clause	Requirement - Test	Result - Remark	Verdict
	heating elements. No short-circuiting, but one end of the element connected to the elements sheath		
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		N
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N
	The working voltage of the PTC heating element is increased by 5% and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1.5 times working voltage or until the PTC heating element ruptures		N
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque or locking moving parts of other appliances		N
	Locked rotor, motor capacitors open-circuited or short-circuited, if required	No such capacitor	N
	Locked rotor, capacitors open-circuited one at a time		N
	Test repeated with capacitors short-circuited one at a time, if required		N
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed		N
	Other appliances supplied with rated voltage for a period as specified		N
	Winding temperatures not exceeding values specified in table 8	(see appended table)	P
19.8	Three-phase motors operated at rated voltage with one phase disconnected	No such motors	N
19.9	Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously	No such component	N
	Winding temperatures not exceeding values as		N

Clause	Requirement - Test	Result - Remark	Verdict
	specified		
19.10	Series motor operated at 1.3 times rated voltage for 1 min	No such motors	N
	During the test, parts not being ejected from the appliance		N
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1		N
	Appliances incorporatings a protective electronic circuit are subjected to the test of 19.11.3 and 19.11.4		N
	Appliances having a switch with an off position obtained by electronic disconnection, or a switch that can place the appliance in a stand –by mode, are subjected to the test of 19.11.4		N
19.11.1	Before applying the fault conditions a) to f) in 19.11.2, it is checked if circuits or parts of circuit meet both of the following conditions:		—
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		N
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the appliance does not rely on the correct functioning of the electronic circuit		N
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:		—
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in 29		N
	b) open circuit at the terminals of any component		N
	c) short circuit of capacitors, unless they comply with EN 60384-14		N
	d) short circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the two circuits of an optocoupler		N

Clause	Requirement - Test	Result - Remark	Verdict
	e) failure of triacs in the diode mode		N
	f) failure of an integrated circuit		N
	g) failure of an electronic power switching device	No such component	N
19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to f) of 19.11.2		N
	During and after each test the following is checked:		—
	- the temperature rise of the windings do not exceed the values specified in table 8		N
	- the appliance complies with the conditions specified in 19.13		N
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		N
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided all three of the following conditions are met:		—
	- the material of the printed circuit board withstands the burning test of annex E	UL approve	N
	- any loosened conductor does not reduce the clearances or creepage distances between live parts and accessible metal parts below the values specified in cl. 29		N
	- the appliance withstands the tests of 19.11.2 with open-circuited conductor bridged		N
19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or		P
	a device that can be placed in the stand-by mode,		N
	subjected to the tests of 19.11.4.1 to 19.11.4.7.		N
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, except that		N
	Appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena.		N
19.11.4	The appliance is subjected to electrostatic		N

Clause	Requirement - Test	Result - Remark	Verdict
.1	discharges in accordance with EN 61000-4-2, test level 4		
19.11.4 .2	The appliance is subjected to radiated fields in accordance with EN 61000-4-3, test level 3		N
19.11.4 .3	The appliance is subjected to fast transient bursts in accordance with EN 61000-4-4, test level 3 or 4 as specified		N
19.11.4 .4	The power supply terminals of the appliance subjected to voltage surges in accordance with EN 61000-4-5, test level 3 or 4 as specified		N
	Earthed heating elements in class I appliances disconnected		N
19.11.4 .5	The appliance is subjected to injected currents in accordance with EN 61000-4-6, test level 3		N
19.11.4 .6	The appliance is subjected to the Class 3 voltage dips and interruptions in accordance with EN 61000- 4-11.		N
19.11.4 .7	The appliance is subjected to mains signals in accordance with EN 61000-4-13, test level class 2		N
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
	The appliance continues to operate normally or requires a manual operation to restart		N
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with EN 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A)		N
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Temperature rises not exceeding the values shown in table 9	(see appended table)	P
	Enclosures not deformed to such an extent that compliance with cl. 8 is impaired		P
	If the appliance can still be operated it complies with 20.2		P

Clause	Requirement - Test	Result - Remark	Verdict
	Insulation, other than of class III appliance, withstand the electric strength test of 16.3, the test voltage specified in table 4:		P
	- basic insulation		P
	- supplementary insulation		N
	- reinforced insulation		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		P
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		-
	- 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		P
	During the test of 19.106, the temperature of the motor windings shall not exceed the values specified in Table 8.		P
19.14	Appliances are operated under the conditions of Clause 11. Any contactor or relay contact that operates under the conditions of Clause 11 is short-circuited.		N
20	STABILITY AND MECHANICAL HAZARDS		—
20.1	Appliances, other than fixed appliances and hand- held appliances, intended to be used on a surface such as the floor or a table, shall have adequate stability.		P
	The appliance, not connected to the supply mains, is placed in any normal position of use on a plane inclined at an angle of 10° to the horizontal, the supply cord resting on the inclined plane in the most unfavourable position. However, if part of an appliance comes into contact with the horizontal supporting surface when the appliance is tilted through an angle of 10°, the appliance is placed on a horizontal support and tilted in the most unfavourable direction through an angle of 10°.		N
20.2	Moving parts adequately arranged or enclosed		P

Clause	Requirement - Test	Result - Remark	Verdict
	as to provide protection against personal injury		
	Protective enclosures, guards and similar parts are non-detachable		P
	Adequate mechanical strength and fixing of protective enclosures		P
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, by unexpected reclosure		N
	Not possible to touch dangerous moving parts with test probe		P
21	MECHANICAL STRENGTH		—
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
	Checked by applying blows to the appliance in accordance with test Ehb of EN 60068-2-75, spring hammer test, impact energy 0.5 J		P
	If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3		P
	If necessary, repetition of groups of three blows on a new sample		N
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements.		P
	The insulation is tested as specified, unless		N
	the thickness of supplementary insulation is at least 1 mm and reinforced insulation is at least 2 mm		N
22	CONSTRUCTION		—
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of EN 60529 are fulfilled		N
22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		—
	- a supply cord fitted with a plug		N
	- a switch complying with 24.3		P
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided		N
	- an appliance inlet		N

Clause	Requirement - Test	Result - Remark	Verdict
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase permanently connected class I appliances, connected in the phase conductor		N
22.3	Appliance provided with pins: no undue strain on socket-outlets		P
	Applied torque not exceeding 0.25 Nm		P
	Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		P
	Each pin subjected to a tork of 0.4Nm; the pins are not rotating unless rotating does not impair compliance with the standard		P
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		N
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		P
22.6	Electrical insulation not affected by condensing water or leaking liquid		P
	Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		P
22.7	Appliances containing liquid shall be constructed so that they withstand the pressure likely to occur during use.		N
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use		N
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		P
	Adequate insulating properties of oil or grease to which insulation is exposed		N
22.10	Not possible to reset voltage-maintained non-selfresetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance		N

Clause	Requirement - Test	Result - Remark	Verdict
	Non-self resetting thermal motor protectors have a trip-free action, unless		N
	they are voltage maintained		N
	Location or protection of reset buttons of non-self- resetting controls is so that accidental resetting is unlikely		N
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts		P
	Obvious locked position of snap-in devices used for fixing such parts		P
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		P
	Tests as described		P
22.12	Handles, knobs etc. fixed in a reliable manner		P
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		P
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		P
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		P
22.13	Unlikely that handles, when gripped as in normal use, make the operators hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P
	No exposed pointed ends of self tapping screws etc., liable to be touched by the user in normal use or during user maintenance		P
22.15	Storage hooks and the like for flexible cords smooth and well rounded	No such hook	N
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands, no undue wear of contacts		N
	Cord reel tested with 6000 operations, as specified		N

Clause	Requirement - Test	Result - Remark	Verdict
	Electric strength test of 16.3, voltage of 1000 V applied		N
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner	No such spacer	N
	Appliances containing liquid shall be constructed so that they withstand the pressure likely to occur during use.		N
22.18	Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use		P
22.19	Driving belts not used as electrical insulation	No such parts	N
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non-combustible		P
	Compliance is checked by inspection and, if necessary, by appropriate test		P
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated	No such material use for insulation	N
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		N
22.24	Bare heating elements shall be supported to prevent excessive displacement occurring during normal use. The rupture of a heating element shall not give rise to a hazard. (EN 60335-2-30)	No bare heating elements	N
22.25	Sagging heating conductors cannot come into contact with accessible metal parts		P
22.26	The insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation		P
22.27	Parts connected by protective impedance separated by double or reinforced insulation	No such protective impedance	N
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water:		N

Clause	Requirement - Test	Result - Remark	Verdict
	separated from live parts by double or reinforced insulation		
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation		P
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		P
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		P
22.31	Clearances and creepage distances over supplementary and reinforced insulation not reduced below values specified for supplementary insulation		P
	Creepage distances and clearances over supplementary or reinforced insulation not reduced to less than 50% of values specified in 29 if wires, screws etc. becomes loose		P
22.32	Supplementary and reinforced insulation designed or protected against deposition of dirt or dust		P
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2		N
	Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation		N
	Oxygen bomb test at 70℃ for 96 h and 16 h at room temperature		N
	Insulating material in which heating conductors are embedded is considered to be basic insulation and not reinforced insulatio		N
22.33	Conductive liquids that are or may become accessible in normal use are not in direct contact with live parts	No conductive liquids	N
	Electrodes not used for heating liquids		N
	For class II constructions, conductive liquids that are or may become accessible in normal use, not in direct contact with basic or reinforced		N

Clause	Requirement - Test	Result - Remark	Verdict
	insulation		
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation		N
22.34	Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed		P
22.35	Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of an insulation fault	Plastic knob	P
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of an insulation fault, they are either adequately covered by insulation material, or their accessible parts are separated from their shafts or fixings by supplementary insulation		N
	This requirement does not apply to handles, levers and knobs on stationary appliances other than those of electrical components, provided they are either reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N
22.36	Handles continuously held in the hand in normal use are so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless they are separated from live parts by double or reinforced insulation		N
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42		P
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		N
22.38	Capacitors not connected between the contacts of a thermal cut-out		N
22.39	Lamp holders used only for the connection of lamps	No lamp holder used	N
	The insulating parts of lampholders used for the connection of replaceable heat lamps in ceiling mounted heat lamp appliances shall be ceramic.		N

Clause	Requirement - Test	Result - Remark	Verdict
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible		N
	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
22.41	No components, other than lamps, containing mercury		N
22.42	Protective impedance consisting of at least two separate components	No protective impedance	N
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open- circuited		N
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur	No such parts	N
22.44	Appliances shall not have an enclosure that is shaped or decorated like a toy	No such enclosure	P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.4 due to deformation as a result of an external force applied to the enclosure		P
22.46	Software used in protective electronic circuits shall be software class B or C		N
	Compliance is checked by evaluating the software in accordance with Annex R.		N
	Note2: If the software program is modified, the evaluation and relevant tests are results of the test involving protective electronic circuits.		N
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use		N
	Compliance is checked by connecting the appliance to a water supply having a static		N

Clause	Requirement - Test	Result - Remark	Verdict
	pressure equal to twice the maximum inlet water pressure or 1.2MPa, whichever is higher, for a period of 5 min		
	No leakage from any part, including any inlet water hose		N
22.48	Appliances connected to the water mains constructed to prevent back siphonage of nonpotable water		N
	Compliance is checked by the relevant tests of EN 61770		N
22.49	For remote operation, the duration of operation shall be set before the appliance can be started, unless		N
	the appliance switches off automatically or can operate continuously without hazard		N
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation		N
22.51	Controls incorporated in the appliance take priority over controls actuated by remote operation		N
	There is a visual indication showing that the appliance is adjusted for remote operation		N
	Manual setting and visual indication not necessary on appliances that can operate as follows, without giving rise to a hazard:		N
	- operate continuously,		N
	- operate automatically, or		N
	- be operated remotely		N
22.52	Socket-outlets on appliances accessible to the user shall be in accordance with the socket-outlet system used in the country in which the appliance is sold.		N
	Compliance is checked by inspection.		N
22.101	Appliances shall not have openings on the underside that would allow small items to penetrate and touch live parts		P
	Compliance is checked by inspection and by measuring the distance between the supporting		P

Clause	Requirement - Test	Result - Remark	Verdict
	surface and live parts through openings. This distance shall be at least 6 mm. However, if the appliance is fitted with legs, this distance is increased to 10mm if the appliance is intended to stand on a table and to 20 mm if it is intended to stand on the floor.		
22.102	Interlock switches that prevent access to live parts during user maintenance shall be connected in the input circuit and located to prevent unintentional operation.		N
	Compliance is checked by inspection and by applying test probe B of IEC 61032.		N
23	INTERNAL WIRING		P
23.1	Wireways smooth and free from sharp edges		P
	Wires protected against contact with burrs, cooling fins etc.		P
	Wire holes in metal well rounded or provided with bushings		N
	Wiring effectively prevented from coming into contact with moving parts		P
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners		N
	Beads inside flexible metal conduits contained within an insulating sleeve		N
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N
	Flexible metallic tubes not causing damage to insulation of conductors		N
	Open-coil springs not used		N
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N
	No damage after 10 000 flexings for conductors flexed during normal use or 100 flexings for conductors flexed during user maintenance		N
	Electric strength test, 1000 V between live parts and accessible metal parts		N

Clause	Requirement - Test	Result - Remark	Verdict
23.4	Bare internal wiring sufficiently rigid and fixed	No bare internal wiring	N
23.5	The insulation of internal wiring withstanding the electrical stress likely to occur in normal use		P
	No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by positive means		N
23.7	The colour combination green/yellow used only for earthing conductors		N
23.8	Aluminium wires not used for internal wiring		N
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless		N
	clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		N
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, shall be at least equivalent to that of light polyvinyl chloride sheathed flexible cord (code designation 60227 EN 52).		N
24	COMPONENTS		—
24.1	Components comply with safety requirements in relevant EN standards		P
	List of components	(see appended table)	P
	Components not tested and found to comply with relevant EN standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.9		P
	Components not tested and found to comply with relevant EN standard, components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		P
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio	No such component	N

Clause	Requirement - Test	Result - Remark	Verdict
	interference suppression or for voltage dividing, complying with EN 60384-14, or		
	tested according to annex F		N
24.1.2	Safety isolating transformers complying with EN 61558-2-6, or		N
	tested according to annex G		N
24.1.3	Switches complying with EN 61058-1, the number of cycles of operation being at least 10 000, or		N
	tested according to annex H		N
	If the switch operates a relay or contactor, the complete switching system is subjected to the test		N
	For switches operating during the test of 19.112, the number of cycles of operation is 300.		N
24.1.3	Addition:		N
	Interlock switches are operated1 000 times.		N
24.1.4	Automatic controls complying with EN 60730-1 with relevant part 2. The number of cycles of operation being:		——
	- thermostats:……..100 000		N
	- temperature limiters:……..10 000		N
	- self-resetting thermal cut-outs:…….300		N
	- voltage maintained non-self-resetting thermal cut-outs:…….1000		N
	- other non-self-resetting thermal cut outs:...30		N
	- timers:…….....3 000		N
	- energy regulators:……10 000		N
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D		N
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection declared for subclause 6.5.2 of EN 60730-2-8 is IPX7		N

Clause	Requirement - Test	Result - Remark	Verdict
24.1.5	Appliance couplers complying with EN 60320-1		N
	However, appliances classified higher than IPX0, the appliance couplers complying with EN 60320-2-3		N
	Interconnection couplers complying with EN 60320-2-2		N
24.1.6	Small lamp holders similar to E10 lampholders complying with EN 60238, the requirements for E10 lampholders being applicable	No such component	N
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 EN 62151	Not such appliance	N
24.1.8	The relevant standard for thermal links is EN 60691. Thermal links not complying with EN 60691 are considered to be an intentionally weak part for the purposes of Clause 19		N
24.1.9	Relays, other than motor starting relays, tested as part of the appliance		N
	They are also tested in accordance with Clause 17 of EN 60730-1, the number of operations in 24.1.4 selected according to the relay function in the appliance		N
24.2	No switches or automatic controls in flexible cords;		N
	No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		N
	No thermal cut-outs that can be reset by soldering		N
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and having a contact separation in all poles, providing full disconnection under overvoltage category III conditions		N
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in EN 60083 or EN 60906-1 or with		N

Clause	Requirement - Test	Result - Remark	Verdict
	connectors and appliance inlets complying with the standard sheets of EN 60320-1		
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly		N
	Capacitors in appliances for which 30.2.3 is applicable and that are permanently connected in series with a motor winding, are of class P1 or P2 of EN 60252		N
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1.1 times rated voltage under minimum load		N
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42V.		N
	In addition, the motors are complying with the requirements of Annex I		N
24.7	Hose-sets for the connection of appliances to the water mains shall comply with EN 61770. They shall be supplied with the appliance.		N
24.101	Interlock switches that prevent access to live parts during user maintenance shall		N
	– disconnect all poles, unless these condary circuit is supplied through an isolating transformer;		N
	– have a contact separation that provides full disconnection in accordance with IEC 61058-1.		N
	Compliance is checked by inspection.		N
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		—
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		-
	- supply cord fitted with a plug		N
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance		N
	- pins for insertion into socket-outlets		P

Clause	Requirement - Test	Result - Remark	Verdict
25.2	Appliance not provided with more than one means of connection to the supply mains		N
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		N
25.3	Connection of supply conductors for appliance intended to be permanently connected to fixed wiring possible after the appliance has been fixed to its support		N
	Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.6		N
	Appliance provided with a set of terminals allowing the connection of a flexible cord		N
	Appliance provided with a set of supply leads accommodated in a suitable compartment		N
	Appliance provided with a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate type of cable or conduit		N
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 10		P
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29		P
25.5	Method for assemble supply cord with the appliance:		—
	- type X attachment		N
	- type Y attachment		N
	- type Z attachment, if allowed in part 2		N
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N
25.5	Addition		N
	Type Z attachment is allowed for appliances having a mass not exceeding 3 kg.		N

Clause	Requirement - Test	Result - Remark	Verdict
25.6	Plugs fitted with only one flexible cord		N
25.7	Supply cord being one of the following types:		—
	- rubber sheathed (at least 60245 EN 53)		N
	- polychloroprene sheathed (at least 60245 EN 57)		N
	- cross-linked polyvinyl chloride sheathed (at least 60245 EN 87)		N
	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.		N
	- light polyvinyl chloride sheathed cord (at least 60227 EN 52), appliances not exceeding 3 kg		N
	- ordinary polyvinyl chloride sheathed cord (at least 60227 EN 53), other appliances		N
	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 EN 56), appliances not exceeding 3 kg		N
	- heat-resistant polyvinyl chloride sheathed cord (60227 EN 57), other appliances		N
25.8	Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area (mm^2)		N
25.9	Supply cord not in contact with sharp points or edges		N
25.10	Green/yellow core for earthing purposes in Class I appliance		N
25.11	Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless		N
	clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder		N
25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		N
25.13	Inlet opening so shaped as to prevent damage to the supply cord		N
	Unless the enclosure at the inlet opening is of		N

Clause	Requirement - Test	Result - Remark	Verdict
	insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		
	If unsheathed supply cord, a similar additional bushing or lining is required, unless		N
	the appliance is class 0		N
25.14	Supply cords adequately protected against excessive flexing		N
	Flexing test:		—
	- applied force (N)		N
	- number of flexings		N
	The test does not result in:		—
	- short circuit between the conductors		N
	- breakage of more than 10% of the strands of any conductor		N
	- separation of the conductor from its terminal		N
	- loosening of any cord guard		N
	- damage, within the meaning of the standard, to the cord or the cord guard		N
	- broken strands piercing the insulation and becoming accessible		N
25.15	Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		N
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		N
	Pull and torque test of supply cord, values shown in table 10: pull (N); torque (not on automatic cord reel) (Nm)		N
	Max. 2 mm displacement of the cord, and conductors not moved more than 1 mm in the terminals		N
	Creepage distances and clearances not reduced below values specified in 29.1		N
25.16	Cord anchorages for type X attachments constructed and located so that:		—
	- replacement of the cord is easily possible		N

Clause	Requirement - Test	Result - Remark	Verdict
	- it is clear how the relief from strain and the prevention of twisting are obtained		N
	- they are suitable for different types of cord		N
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from accessible metal parts by supplementary insulation		N
	- the cord is not clamped by a metal screw which bears directly on the cord		N
	- at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord		N
	- screws which have to be operated when replacing the cord do not fix any other component, if applicable		N
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N
	- for Class 0, 0I and I appliances: they are of insulating material or are provided with an insulating lining, unless a failure of the insulation of the cord does not make accessible metal parts live		N
	- for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation		N
25.17	Adequate cord anchorages for type Y and Z attachment		N
25.18	Cord anchorages only accessible with the aid of a tool, or so constructed that the cord can only be fitted with the aid of a tool		N
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N
	Tying the cord into a knot or tying the cord with string not used		N
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		N
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed to permit checking of conductors with respect to		N

Clause	Requirement - Test	Result - Remark	Verdict
	correct positioning and connection before fitting any cover, no risk of damage to the conductors when fitting the cover, no contact with accessible metal parts if a conductor becomes loose, etc.		
	For portable appliances, the uninsulated end of a conductor prevented from any contact with accessible metal parts, unless the end of the cord is such that the conductors are unlikely to slip free		N
25.22	Appliance inlet:		—
	- live parts not accessible during insertion or removal		N
	- connector can be inserted without difficulty		N
	- the appliance is not supported by the connector		N
	- is not for cold conditions if temp. rise of external metal parts exceeds 75 K, unless the supply cord is not likely to touch such metal parts		N
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified		N
	If necessary, electric strength test of 16.3		N
25.24	Interconnection cords not detachable without the aid of a tool		N
25.25	Dimensions of pins compatible with the dimensions of the relevant socket-outlet. Dimensions of pins and engagement face in accordance with the relevant plug in EN 60083		P
26	TERMINALS FOR EXTERNAL CONDUCTORS		—
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		N
	Terminals only accessible after removal of a non-detachable cover		N
	However, earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection		N
26.2	Appliances with type X attachment and appliances for connection to fixed wiring provided with terminals in which connections are		N

Clause	Requirement - Test	Result - Remark	Verdict
	made by means of screws, nuts or similar devices, unless the connections are soldered		
	Screws and nuts serve only to clamp supply conductors, except		N
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone		N
	Soldering alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free at the soldered joint		N
26.3	Terminals for type X attachment and for connection to fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure and without damaging the conductor		N
	Terminals for type X attachment and those for connection to fixed wiring so fixed that when tightening or loosening the clamping means:		—
	- the terminal does not loosen		N
	- internal wiring is not subjected to stress		N
	- clearances and creepage distances are not reduced below the values in 29		N
	Compliance checked by inspection and by the test of subclause 8.6 of EN 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm)		N
26.4	Terminals for type X attachment, except those with a specially prepared cord, and those for connection to fixed wiring, no special preparation of conductors required, and so constructed or placed that conductors prevented from slipping out		N
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other		N

Clause	Requirement - Test	Result - Remark	Verdict
	parts that result in a hazard		
	Stranded conductor test, 8 mm insulation removed		N
	No contact between live parts and accessible metal parts and, for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N
26.6	Terminals for type X attachment and for connection to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm^2)		N
	Terminals only suitable for a specially prepared cord		N
26.7	Terminals for type X attachment accessible after removal of a cover or part of the enclosure		N
26.8	Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other		N
26.9	Terminals of the pillar type constructed and located as specified		N
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless conductors ends fitted with a device suitable for screw terminals		N
	Terminals with screw clamping and screwless Terminals shall not be used for type X attachments in appliances incorporating a swivel connection.		N
	Pull test of 5 N to the connection		N
26.11	For type Y and Z attachment: soldered, welded, crimped and similar connections may be used		N
	For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N
	For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free		N

Clause	Requirement - Test	Result - Remark	Verdict
27	PROVISION FOR EARTHING		—
27.1	Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal or contact of the appliance inlet		N
	Earthing terminals not connected to neutral terminal		N
	Class 0, II and III appliance have no provision for earthing		P
	Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits		N
27.2	Clamping means adequately secured against accidental loosening		N
	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm², and		N
	do not provide earthing continuity between different parts of the appliance		N
	Conductors cannot be loosened without the aid of a tool		N
27.3	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		N
	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		N
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal		N
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		N
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 µm		N
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		N

Clause	Requirement - Test	Result - Remark	Verdict
	In case of aluminium alloys precautions taken to avoid risk of corrosion		N
27.5	Low resistance of connection between earthing terminal and earthed metal parts		N
	This requirement does not apply to connections providing earthing continuity in the protective extra- low voltage circuit, provided that clearances of basic insulation are based on the rated voltage of the appliance		N
	Resistance not exceeding 0.1 Ω at the specified low-resistance test		N
27.6	The printed conductors of printed circuit boards shall not be used to provide earthing continuity in hand held appliances	Not such appliance	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 EN 60249-2-4 or EN 60249-2-5		N
28	SCREWS AND CONNECTIONS		—
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		P
	Screws of insulating material not used for any electrical connection or connections providing earthing continuity		P
	Screws used for electrical connections or connections providing earthing continuity screw into metal		N
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		P
	Type X attachment, screws to be removed for replacement of supply cord or for user		N

Clause	Requirement - Test	Result - Remark	Verdict
	maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		
	For screws and nuts; test as specified		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		N
	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
	Thread-cutting (self-tapping) screws only used for electrical connections if they generate a full form standard machine screw thread		N
	Such screws not used if they are likely to be operated by the user or installer unless the thread is formed by a swaging action		N
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer		N
	Thread-cutting, thread rolling and space threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection:		N
	- in normal use,		N
	- during user maintenance,		N
	- when replacing a supply cord having a type X attachment, or		N
	- during installation		N
	At least two screws being used for each connection providing earthing continuity, unless		N
	the screw forms a thread having a length of at least half the diameter of the screw		N
	Thread-cutting and space-threaded screws may be used in connections providing earthing continuity, provided unnecessary to disturb the		N

Clause	Requirement - Test	Result - Remark	Verdict
	connection and at least two screws are used for each connection		
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		N
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion		N
29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		—
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	For coatings used on printed circuits boards to protect the microenvironment or to provide basic insulation, annex J applies		N
	The microenvironment is pollution degree 1 under Type 1 coating		N
	No clearance or creepage distance requirements under Type 2 coating		N
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, unless	See appened table	P
	for basic insulation and functional insulation they comply with the implulse voltage test of clause 14		P
	However, if the construction is affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1500V and above are increased by 0,5 mm and the impulse voltage test is not applicable		P
	Impulse voltage test not applicable:		N
	- when the microenvironment is pollution degree 3		N
	-for basic insulation of class 0 and class 01 appliances		N
	Appliances are in overvoltage category II		N
	Clearances less than specified in table 16 not	Not such	N

Clause	Requirement - Test	Result - Remark	Verdict
	allowed for basic insulation of class 0 and class 0I appliances,	appliance	
	or if pollution degree 3 is applicable		N
	Compliance is checked by inspection and measurements as specified		P
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 considered to be bare conductors		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	See appened table	P
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		P
	Lacquered conductors of windings considered to be bare conductors	No such component	N
	However, clearances at crossover points are not measured		N
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		P
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		N

Clause	Requirement - Test	Result - Remark	Verdict
	secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		
	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
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		N
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		N
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17		P
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	Supplementary insulation and reinforced insulation have adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		P
	Compliance is checked by		P

Clause	Requirement - Test	Result - Remark	Verdict
	– measurement, in accordance with 29.3.1, or by		P
	– an electric strength test in accordance with 29.3.2, or		N
	-an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3.		N
29.3.1	The thickness of the insulation shall be at least		-
	1 mm for supplementary insulation;		P
	and 2mm for reinforced insulation		P
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N
	Supplementary insulation consisting of at least 2 layers		N
	Reinforced insulation consisting of at least 3 layers		N
29.3.3	The insulation is subjected to the dry heat test Bb of EN 60068-2-2, followed by		N
	the electric strength test of 16.3		N
	If the temperature rise during the tests of Clause 19 does not exceed the value specified in Table 3, the test of EN 60068-2-2 is not carried out		—
30	RESISTANCE TO HEAT AND FIRE		P
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		P
	thermoplastic material providing supplementary or reinforced insulation,		N
	sufficiently resistant to heat		P
	Ball-pressure test according to EN 60695-10-2		P
	External parts: at 40℃ plus the maximum temperature rise determined during the test of clause 11, or at 75 ℃, whichever is the higher; temperature (℃)		N
	Parts supporting live parts: at 40℃ plus the maximum temperature rise determined during the test of clause 11, or at 125℃, whichever is the higher; temperature (℃)		N
	Parts of thermoplastic material providing supplementary or reinforced insulation, 25℃ plus the maximum temperature rise determined		N

Clause	Requirement - Test	Result - Remark	Verdict
	during clause 19, if higher; temperature (℃)		
	For portable fan heaters, the temperature rises determined during the tests of Clause 19 are not taken into account.		N
30.2	Parts of non-metallic material adequately resistant to ignition and spread of fire		P
	This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		P
	Compliance checked by the test of 30.2.1. In addition:		N
	- attended appliances, 30.2.2 applies		P
	- unattended appliances, 30.2.3 applies		N
	Appliances for remote operation, 30.2.3 applies		N
	Base material of printed circuit board, 30.2.4 applies		N
30.2.1	Glow-wire test of EN 60695-2-11 at 650℃, unless		P
	the material is classified at least HB40 according to EN 60695-11-10		N
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category HBF material		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
31	RESISTANCE TO RUSTING		—
	Relevant ferrous parts adequately protected against rusting		N
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
	Relevant tests specified in part 2, if necessary		N
	Addition:		-
	The ozone concentration produced by ionization		P

Clause	Requirement - Test	Result - Remark	Verdict
	shall not be excessive.		
	Compliance is checked by the following test, which is carried out in a room without openings having dimensions of 2,5 m x 3,5 m x 3,0 m, the walls being covered with polyethylene sheet. The appliance is positioned in accordance with the instructions. Appliances used on a table are placed in the centre of the roomapproximately750 mm above the floor.		P
	The room is maintained at approximately 25 °C and 50% relative humidity. The appliance is supplied at rated voltage for 24 h, removable filters being removed if this is more unfavourable		P
	The ozone sampling tube is to be located in the air stream 50 mm from the air outlet of the appliance. The background ozone concentration measured prior to the test is subtracted fromthe maximum concentration measured during the test.		P
	The percentage of ozone in the room shall not exceed 5 x 10^{-6}.		P
A	ANNEX A (INFORMATIVE) ROUTINE TESTS		—
	Description of routine tests to be carried out by the manufacturer		N
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES		—
	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		N

Clause	Requirement - Test	Result - Remark	Verdict
	extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		
	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

Clause	Requirement - Test	Result - Remark	Verdict
21.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of EN 60068-2-32		N
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of EN 60068-2-32, the number of falls being:		—
	- 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
C	ANNEX C (NORMATIVE) AGEING TEST ON MOTORS		—
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		N
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS		—
	Applicable to appliances having motors that incorporate thermal motor protectors		N
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		—
	Needle-flame test carried out in accordance with EN 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

Clause	Requirement - Test	Result - Remark	Verdict
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
	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
F	ANNEX F (NORMATIVE) CAPACITORS		—
	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 EN 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		—
	This subclause is applicable		N
4.14	Endurance		—
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7		N

Clause	Requirement - Test	Result - Remark	Verdict
	applicable		
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
G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		—
	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 EN 61558-1		N
22	Construction		——
	Subclauses 19.1 and 19.1.2 of EN 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 EN 61558-1 apply		N
H	ANNEX H (NORMATIVE) SWITCHES		—
	Switches comply with the following clauses of EN 61058-1, as modified:		—
	-The tests of EN 61058-1 carried out under the conditions occurring in the appliance		N
	-Before being tested, switches are operated 20 times without load		N
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

Clause	Requirement - Test	Result - Remark	Verdict
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		P
	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 EN 60335		P
	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		P
	Subclause 17.2.5.2 is not applicable		P
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in EN 60335-1		P
	Temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of EN 60335-1		P
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	ANNEX I (NORMATIVE) MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		—
	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		—
8.1	Metal parts of the motor are considered to be bare live parts		N

Clause	Requirement - Test	Result - Remark	Verdict
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	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		—
	Testing of protective coatings of printed circuit boards carried out in accordance with EN 60664-3 with the following modifications:		N
5.7	Climatic sequenc		—
	When production samples are used, three samples of the printed circuit board are tested		N
5.7.1	Cold		—
	The test is carried out at -25 C		N
5.7.3	Rapid change of temperature		—

Clause	Requirement - Test	Result - Remark	Verdict
	Severity 1 is specified		N
5.9	Additional tests		—
	This subclause is not applicable		N
K	ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES		—
	The information on overvoltage categories is extracted from EN 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		N
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		P
	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
L	ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		—
	Sequences for the determination of clearances and creepage distances		P
M	ANNEX M (NORMATIVE) POLLUTION DEGREE		—
	The information on pollution degrees is extracted from EN 60664-1		P
	Pollution		—
	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

Clause	Requirement - Test	Result - Remark	Verdict
	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	ANNEX N (NORMATIVE) PROOF TRACKING TEST		—
	The proof tracking test is carried out in accordance with EN 60112 with the following modifications:		N
7	Test apparatus		—
7.3	Test solutions		—
	Test solution A is used		N
10	Determination of proof tracking index (PTI)		—
10.1	Procedure		—
	The proof voltage is 100V, 175V, 400V or 600V		N
	The last paragraph of Clause 3 applies		N
	The test is carried out on five specimens		N
	In case of doubt, additional test with voltage reduced by 25V, the number of drops increased to 100		N
10.2	Report		—
	The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		N
O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		—
	Description of tests for determination of		P

Clause	Requirement - Test	Result - Remark	Verdict
	resistance to heat and fire		
P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCE USED IN THE WAM DAMP EQUABLE CLIMATED		—
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WDaE		N
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WdaE, if liable to be connected to a supply mains that excludes the protective earthing conductor		N
5	General conditions for the tests		N
5.7	The ambient temperature for the tests of Clauses 11 and 13 is 40 +3 °C.		N
7.	Marking and instructions		N
7.1	The appliance shall be marked with the letters WdaE.		N
7.12	The instructions state that the appliance is to be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.		N
	The instructions state the appliance is considered to be suitable for use in countries having a warm damp equable climate. It may also be used in other countries.		N
11	Heating		N
11.8	The values of Table 3 are reduced by 15 K.		N
13	Leakage current and electric strength at operating temperature		N
13.2	The leakage current for class I appliances shall not exceed 0.5 mA.		N
15	Moisture resistance		N
15.3	The value of t is 37 °C		N

Clause	Requirement - Test	Result - Remark	Verdict
16	Leakage current and electric strength		—
16.2	The leakage current for class I appliances shall not exceed 0.5 mA.		N
19	Abnormal operation		N
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3.		N
Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS		—
	Description of tests for appliance incorporationg electronic circuits		—
R	ANNEX R (INFORMATIVE) SOFTWARE EVALUTION		—
	Software evaluated in accordance with the following clauses of Annex H of EN 60730-1, as modified		—
H.2	Definitions		—
	Only definitions H.2.16 to H.2.20 are applicable.		N
H.7	Information		N
	Only footnotes 12) to 18) of Table 7.2, as modified, applicable		N
H.11.12	Controls using software		—
	All of the subclauses of H.11.12 as modified except subclauses H.11.12.6 and H.11.12.6.1 applicable.		N
H.11.12 .7	Delete		N
H.11.12 .7.1	For appliances using software class C having a single channel with self-test and monitoring structure, the manufacturer shall provide the measures necessary to address the fault/errors in safety related segments and data indicated		N
H.11.12 .8	Software fault/error detection shall occur before compliance with 19.13 of EN 60335-1 is impaired.		N
H.11.12 .8.1	Replace text		N
H.11.12	Software and safety related hardware under		N

Clause	Requirement - Test	Result - Remark	Verdict
.13	control initializes and terminates before compliance with 19.13 of EN 60335-1 is impaired.”		
ZA	ANNEX R (INFORMATIVE) SPECIAL NATIONAL CONDITIONS		P
7.12	Denmark: requirements regarding marking tag of power supply cord and connecting of earthing wire		N
19.5	Norway: The test is also applicable to appliances intended to be permanently connected to fixed wiring.		P
22.2	France and Norway: The second paragraph of this subclause, that deals with single-phase, permanently connected class I appliances having heating elements, is not applicable due to the supply system.		P
25.6	Belgium, France, Spain and the United Kingdom: Plugs according to standard sheet C 2b are not allowed		P
	Austria, Finland, Germany, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom: Plugs according to standard sheet C 3b are not allowed		P
	Denmark: Supply cords of single-phase portable appliances having a rated current not exceeding 13 A shall be provided with a plug according to the following:		N
	- Class I appliances: Section 107-2-D1, ed. 3, 1998 Standard Sheet DK 2-1a		N
	For appliances covered by a part 2 of EN 60335, also plugs in accordance with Section107-2-D1, Standard Sheet C 2b, C 3b or C 4. are allowed		P
	Class II appliances: Section 107-2-D1, Standard Sheet C 1b, C 5, C 6, DKA 2-1a and DKA 2-1b		P
	stationary single-phase appliances having a rated current not exceeding 13 A and provided with a plug, the plug is in accordance with the		P

Clause	Requirement - Test	Result - Remark	Verdict
	requirements specified above.		
	multi-phase appliances and single-phase appliances having a rated current exceeding 13 A are provided with a supply cord and a plug, the plug shall comply with the following table:		N
	- Class I appliances: Section 107-2-D1, Standard Sheet DK6-1a/EN60309-2, Standard Sheet 2-II, 2-IV		N
	- Class II appliances: Section 107-2-D1, Standard Sheet DK6-1a*/EN60309-2, Standard Sheet 2-II, 2-IV*		P
	For maximum current for the plugs is as follows:		P
	Ireland: plug is inaccording to standard sheets B2 and C5 (see annex ZB as well)		P
	Italy: Only plugs listed in CENELEC Report R0BT-005:2001 are allowed.		P
	Spain: for household use, only the following plugs are allowed:		P
	- according to UNE 20315: ESC 10-1b, C2b, C4, C6 or ESB 25-5b;		P
	- according to UNE-EN 50075.		P
	Switzerland: Supply cords of portable household and similar electrical appliances having a rated current not exceeding 10 A shall be provided with a plug complying with SEV 1011 or EN 60884-1 and one of the following dimension sheets:		N
	SEV 6532-2.1991 Plug Type 15 3P + N + PE 250/400 V, 10A		N
	SEV 6533-2.1991 Plug Type 11 L + N 250 V, 10A		P
	SEV 6534-2.1991 Plug Type 12 L + N + PE 250 V,10A		N
25.8	Ireland and United Kingdom: replacement of figures (Rated current/cross-sectional area in the table		P

Clause	Requirement - Test	Result - Remark	Verdict
ZB	ANNEX ZB, A-DEVITIONS		P
4	Switzerland: information about batteries		N
7.1	Italy: the voltage is 220/380V		P
	Sapin: the voltage are 127V/220V and 220V/380V		P
25.6	Ireland/United Kingdom: regulations concerning plugs to be fitted to domestic appliance		P
ANNEX EMF			
	The tested product also complies to the requirements of EN 62233: 2008		--
	Limt……..100%	Measured max.:……2.9%	P

10	TABLE: Input deviation measurements				P
Input deviation Dp of/at:	Prated (W)	P (W)	Dp	required Dp	Remark
110V/50Hz	6	5.6	-6.7%	+15% or 60W	Start all the function
110V/60Hz	6	5.8	-3.3%	+15% or 60W	Start all the function
240V/50Hz	6	6.2	3.3%	+15% or 60W	Start all the function
240V/60Hz	6	6.5	8.3%	+15% or 60W	Start all the function

10.2	TABLE: Current deviation				N
Current deviation of/at:	I rated (A)	I measured (A)	dI	Required dI	Remark
/	/	/	/	/	/

11.8	TABLE: temperature rise measurements		P
	room temperature t1 (℃):	24.8℃	--
	room temperature t2 (℃):	24.9 ℃	--
	test condition :	1.06x240V	--

	Dt (K)	required Dt (K)
Surface of knob	3.7	30
Terminal	10.3	80
PCB	18.4	80
Side outside enclosure	5.8	60
Enclosure (inside)	11.2	105
Enclosure(outside, bottom)	6.2	60
Test corner	4.6	65

13.2	TABLE: Leakage current		P
	Heating appliances: 1.15 x rated input	--	
	Motor-operated and combined appliances: 1.06 x rated voltage	254.4V/50Hz	
Leakage current between		I (mA)	Max. allowed I (mA)
Live parts to enclosure		0.09	0.35
Supplementary information:			

13.3	TABLE: Electric strength	P
Test voltage applied between:	Voltage (V)	Breakdown (Yes/No)
Live parts to enclosure	3000	No
Supplementary information:		

14	TABLE: Transient overvoltages				P
Clearance between:	Cl (mm)	Required Cl (mm)	Rated impulse voltage (V)	Impulse test voltage (V)	Flashover (Yes/No)
16.2	TABLE: Leakage current				P
	Single phase appliances: 1.06 x rated voltage		1.06x240V		---
	Three phase appliances 1.06 x rated voltage divided by :		---		---
Leakage current between			I (mA)	Max. allowed I (mA)	
Live parts to enclosure wrapped			0.10	0.25	
Supplementary information:					

16.3	TABLE: Electric strength	P
Test voltage applied between:	Voltage (V)	Breakdown (Yes/No)
Live parts to enclosure	3000	No
Supplementary information:		

17	TABLE: Overload protection, temperature rise	N
Temperature rise of part/at:	dT (K)	Max. dT (K)

19.7	TABLE: Abnormal operation tests				N
	ambient temperature (℃)				—
No.	component No.	fault	test voltage (V)	test time	Result
--	--	--	--	--	--

24.1	TABLE: Components				N
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity

25.15	TABLE: supply cord connection, strain relief test				N
Mass of appliance (Kg)	Pull force (N)	Duration of time (s)	Times of Pull	Result (mm)	Limited distance (mm)
--	--	1s	25	--	--

27	TABLE: ground continue test		N
Location	Resistant measured (Ω)	Comments	
PE terminal to metal enclosure	--	--	
Note: Test with following current: 25A. Pass: < 0.1 Ohm			

28.1	TABLE: Threaded part torque test		P
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
--	2.0	II	0.5

29.1	TABLE: Clearances					P
	Overvoltage category				Class I	—
		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0,5	2.5	N	N	N	Pass
500	0,5	N	N	N	N	N
800	0,5	N	N	N	N	N
1 500	0,5	N	N	N	N	N
2 500	**1,5**	>1.5	N	N	N	Pass
4 000	**3,0**	N	N	N	>3.0	Pass
6 000	5,5	N	N	N	N	N
8 000	8,0	N	N	N	N	N
10 000	11,0	N	N	N	N	N

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation				P
Working voltage (V)	Creepage distance (mm) Pollution degree				
	1	2	3	Type of insulation	

		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	Verdict
>50	0,2	0,6	0,9	1,2	1,5	1,7	1,9	5.0	—	—	Pass
>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		—	—	
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	—		—	
>125 and ≤250	1,2	2,6	3,6	5,0	6,4	7,2	8,0	—	—	10.0	Pass
>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		—	—	
>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	—	—		
*), B=Basic, S=Supplementary and R=Reinforced											

29.2	TABLE: Creepage distances, functional insulation							P
Working voltage (V)	Creepage distance(mm) Pollution degree							
	1	2			3			
		Material group			Material group			
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	Verdict / Remark
>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	Pass
>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	—

30.1	TABLE: Ball pressure			P
Part	Test temperature (°C)	Impression diameter (mm)	Allowed impression diameter (mm)	
Enclosure	75	0.6	2.0	
PCB	125	0.3	2.0	

30.2	TABLE: Glow Wire						P
Part	GWT 550°C	GWT 650°C	GWT 750°C	GWT 850°C	Flames	Needle flame test	Result
Enclosure	X	--	--	--	No	--	P
PCB	--	--	X	X	No	--	P

Attachment Photos of sample



