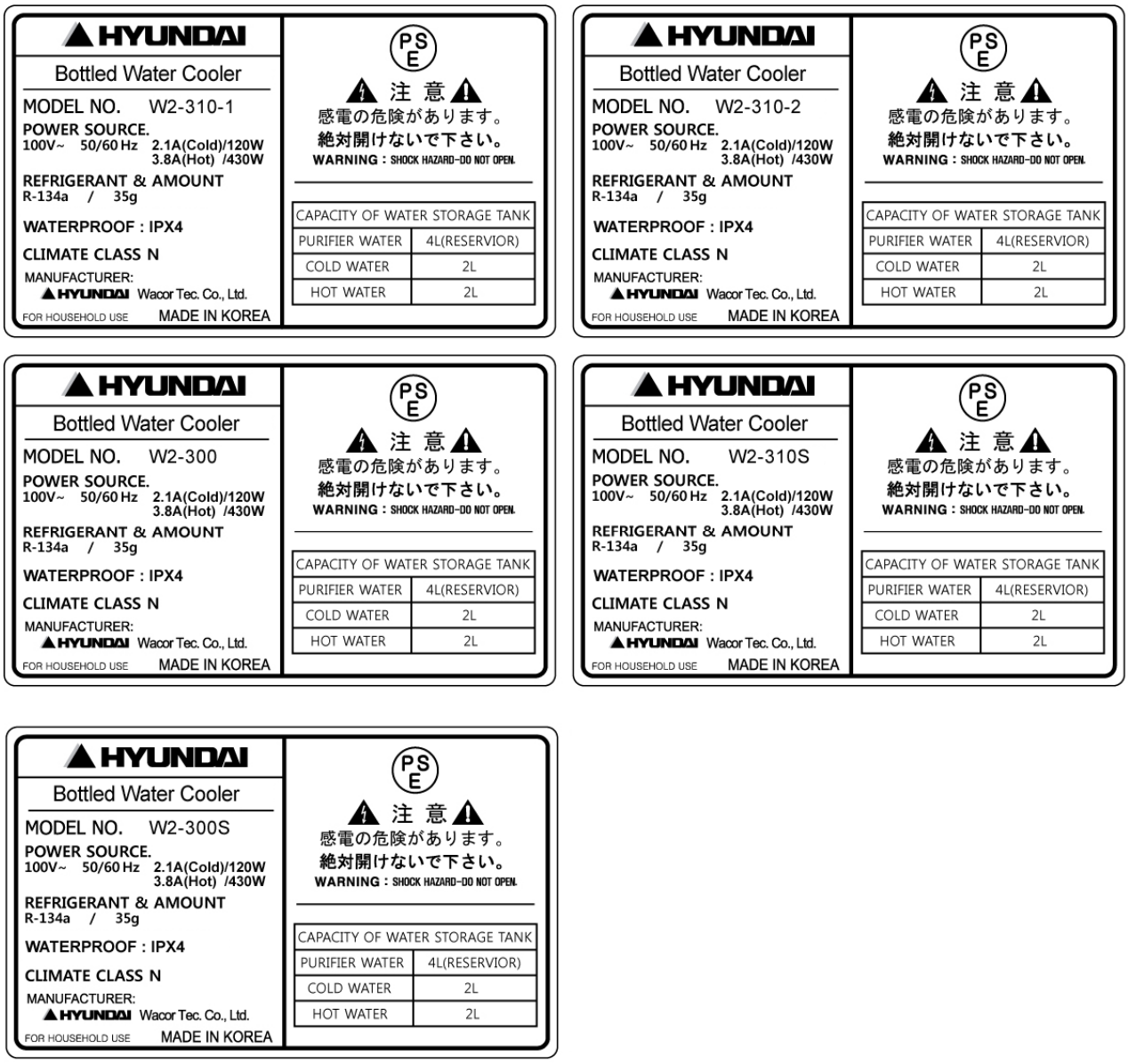
TEST REPORT
IEC 60335-2-21 / EN 60335-2-21
Safety of household and similar electrical appliances
Part 2: Particular requirements for water heaters

Report Reference No. ..... :	ETLS100630.0047
Compiled by (+ signature) ..... :	Sang-Hyung, Lee
Approved by (+ signature) ..... :	Dong-Jun, Oh
Date of issue ..... :	2010-11-15
Testing Laboratory ..... :	ETL Inc.
Address ..... :	#371-51, Gasan-Dong, Geumcheon-Gu, Seoul, 153-803, Korea.
Applicant's name ..... :	HYUNDAI Wacor Tec Co., Ltd.
Address ..... :	684-49, Gongreung-dong, Nowon-Ku, Seoul, Republic of Korea
Test specification:	
Standard ..... :	IEC 60335-2-21:2002 (Fifth Edition)(incl. Corr. 1:2007) + A1:2004 + A2:2008 used in conjunction with IEC 60335-1:2001 (Fourth Edition) (incl. Corr. 1:2002) + A1:2004 + A2:2006 (incl. Corr. 1:2006)
Test procedure ..... :	-
Non-standard test method..... :	N/A
Test Report Form No ..... :	IECEN60335_2_21C
TRF Originator ..... :	LCIE
Master TRF ..... :	Dated 2005-05

Test item description ..... :	Bottled Water Cooler
Trade Mark ..... :	HYUNDAI
Model/Type reference ..... :	W2-310-1, W2-310-2, W2-300, W2-300S, W2-310S
Ratings ..... :	100 V ~; 50/60 Hz; 2.1 A(Cold); 430 W(Hot); Climate Class N; IPX1
Manufacturer..... :	Same as applicant

Copy of marking plate and summary of test results (information/comments):



Summary of testing:

-. All tests were conducted on model W2-310-2 and W2-300S.
-. The items tested were found to be in compliance with the test standards of IEC 60 335-2-21:2002 (Fifth edition) in conj. with IEC 60335-1:2001 (Fourth edition) concerning hot water storage system in the product and test standards of IEC 60335-2-24:2002 (Sixth edition) concerning cold water storage system in the product.
-. The item tested were found to be in conformity with the specified standards and is also compatible with test standards of JIS C 9335-2-24:2005 and JIS C 9335-2-21:2005 used in conjunction with JIS C 9335-1:2003
-. The requirements of standard Amendment A1:2004 + A2:2008 of IEC 60335-2-21:2002 and Amendment A1:2004 + A2:2006 of IEC 60335-1:2001 were not considered.
-. This test report is used for reference for the application for Japan PSE declaration of conformity according to Ordinance 2 procedure of Japan Electrical Appliance and Material Law.
-. Attachment1: National differences for Japan -> 10 pages
-. Attachment2: Comparison table between JIS C 9335-1:2003 and IEC 60335-1:2001 -> 10 pages
-. Attachment3: Comparison table between JIS C 9335-2-21:2005 and IEC 60335-2-21:2002 -> 5 pages
-. Attachment4: Comparison table between JIS C 9335-2-24:2005 and IEC 60335-2-24:2002 -> 7 pages
-. Attachment5: Photos -> 7 pages

Test item particulars:	
Nature of supply ..... :	AC
Class of protection against electrical shock ..... :	Class I
Class ..... :	Class I
IP number ..... :	IPX1
Switch ..... :	Yes
Electronic circuit ..... :	Yes
Oscillating mechanism	No
Accessories	No
Type of supply cord attachment	Y
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A (not applicable)
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing ..... :	
Date of receipt of test item ..... :	2010-07-20
Date (s) of performance of tests ..... :	2010-07-20 until 2010-11-15

General remarks:

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

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

"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a comma (point) is used as the decimal separator.

General product information:

- Model W2-300S is bottled water cooler having a compressor and a sheathed heater and it is tested as the represented model for counter-top or table-top type.
- Model W2-310-2 is a floor standing type bottled water cooler it is tested as the represented model for floor standing type.
- Model difference and external dimension.
  1) Model W2-310-1 and W2-300 are similar with the tested model W2-310-2 except for the small difference of external dimension of enclosure and cosmetic design.
  2) Model W2-310S is similar with the tested model W2-300S except for the small difference of external dimension of enclosure and the cosmetic design.
  3) The same critical components including a compressor and a sheathed heater are provided for the each model.
  4) Bottled water cooler for floor standing type and counter-top or table-top are located in the top of enclosure.

Model No.	Dimension (mm)	Installation and use
W2-310-2	310(W) x 310(D) x 1090(H)	Floor standing type
W2-310-1	310(W) x 310(D) x 970(H)	Floor standing type
W2-300	310(W) x 310(D) x 970(H)	Floor standing type
W2-300S	310(W) x 310(D) x 550(H)	Counter-top or table top type
W2-310S	310(W) x 310(D) x 550(H)	Counter-top or table top type

EN 60335-2-21 / IEC 60335-2-21			
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
6	**CLASSIFICATION**		
6.1	Protection against electric shock: Class 0, 0I, I, II, III	Class I	P
	Water heaters shall be class I, class II or class III. (IEC 60335-2-21:2003)	Class I	P
6.2	Protection against harmful ingress of water. Water heaters for installation outdoors shall be at least IPX4. Other water heaters shall be at least IPX1; (IEC 60335-2-21:2003)	IPX1	P
7	**MARKING AND INSTRUCTIONS**		
7.1	Rated voltage or voltage range (V) ..... :	100 V	P
	Single-phase appliances: 230V covered: (EN 60335-1:2002)		P
	Multi-phase appliance: 400V covered: (EN 60335-1:2002)		N/A
	Nature of supply..... :	"~"	P
	Rated frequency (Hz) ..... :	50/60 Hz	P
	Rated power input (W):..... :	120 W (Cold); 430 W (Hot)	P
	Rated current (A) ..... :	2.1 A (Cold); 3.8 A (Hot)	P
	Manufacturer's or responsible vendor's name, trademark or identification mark..... :	HYUNDAI	P
	Model or type reference..... :	See marking plate	P
	Symbol 5172 of IEC 60417, for Class II appliances		N/A
	IP number, other than IPX0..... :	IPX1	P
	Appliances, other than cistern-type water heaters, shall be marked with the rated pressure in pascals (bars) (IEC 60335-2-21:2003)		N/A
	Rated capacity in litres (IEC 60335-2-21:2003)	See marking plate	P
	Closed water heater shall be marked with a statement that pressure relief device is to be fitted unless incorporated in the appliance: (IEC 60335-2-21:2003)		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	Closed water heater having rated pressure less than 0.6 Mpa and low pressure water heaters that a pressure reducing valve is to be fitted in the installation (IEC 60335-2-21:2003)		N/A
	Open-outlet water heaters marked with a warning about no connection to tap or any fitting not recommended by manufacturer (IEC 60335-2-21:2003)		N/A
7.2	Warning for stationary appliances for multiple supply		N/A
	Warning placed in vicinity of terminal cover		N/A
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen	100 V~	P
	Different rated values marked with the values separated by an oblique stroke		N/A
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible		N/A
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless		N/A
	the power input is related to the mean value of the rated voltage range		N/A
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N/A
7.6	Correct symbols used		P
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply		N/A
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/A
	- marking of protective earthing terminals (symbol 5019 of IEC 60417)		P
	- marking not placed on removable parts		P
7.9	Marking or placing of switches which may cause a hazard		P
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means ..... :		P
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N/A
7.11	Indication for direction of adjustment of controls		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
7.12	Instructions for safe use provided		P
	The instructions for **closed water heaters** shall state the substance of the following: (IEC 60335-2-21:2003)		
	the water may drip from the discharge pipe of the pressure-relief device and that this pipe must be left open to the atmosphere;		N/A
	the pressure-relief device is to be operated regularly to remove lime deposits and to verify that it is not blocked;		N/A
	how the water heater can be drained.		N/A
7.12.1	Sufficient details for installation supplied		N/A
	Appliances, other than **cistern-type water heaters**, shall be marked with the **rated pressure** in Pascals (IEC 60335-2-21:2003)		N/A
	Closed water heaters: (IEC 60335-2-21:2003)		
	-discharge pipe must be left open to the atmosphere		N/A
	-pressure relief is to be operated regularly		N/A
	-how to drain the water heater		N/A
	-type or characteristics of pressure relief device, how to connect unless incorporated in the appliance		N/A
	-discharge pipe connected to the pressure relief device installed downwards and frost-free		N/A
	-appliances with rated pressure<0.6 Mpa: characteristics of pressure reducing valve and installation		N/A
	- appliances incorporating heat exchanger: details on installation of control device and temp. setting.		N/A
	Open-outlet water heaters: (IEC 60335-2-21:2003)		
	- outlet acts as a vent, not connected to any tap or fitting other than specified.		N/A
	Cistern-fed water heater and low pressure water heater: (IEC 60335-2-21:2003)		
	- warning against connecting pressure relief device to the vent pipe.		N/A
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/A
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/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
7.12.4	Instructions for built-in appliances:		
	- dimensions of space		N/A
	- dimensions and position of supporting means		N/A
	- distances between parts and surrounding structure		N/A
	- dimensions of ventilation openings and arrangement		N/A
	- connection to supply mains and interconnection of separate components		N/A
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless		N/A
	a switch complying with 24.3 (IEC 60335-1/A1 : 2004)		N/A
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N/A
	Replacement cord instructions, type Y attachment		P
	Replacement cord instructions, type Z attachment		N/A
7.12.6	Caution in the instructions for heating appliances with a non-self-resetting thermal cut-out (IEC 60335-1/A1 : 2004)		N/A
7.12.6	Caution in the instructions for heating appliances with a non-self-resetting thermal cut-out (IEC 60335-1/A1 : 2004)		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed (IEC 60335-1/A1 : 2004)		N/A
7.12.8	Instructions for appliances connected to the water mains (IEC 60335-1/A1 : 2004):		
	- max. inlet water pressure (Pa):	147.1 (kPa)	N/A
	- min. inlet water pressure, if necessary (Pa):	490.3 (kPa)	P
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		P
7.13	Instructions and other texts in an official language	English, Japanese	P
7.14	Marking clearly legible and durable		P
7.15	Marking on a main part		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/A
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		P
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		N/A
	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		P
7.101	The water inlet and the water outlet shall be identified. This identification shall not be on **detachable parts**. If colours are used, blue shall be used for the inlet and red for the outlet. (IEC 60335-2-21:2003)		P
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
	Use of test probe B of IEC 61032: no contact with live parts		P
8.1.2	Use of test probe 13 of IEC 61032 through openings in class 0 appliances and class II appliances/ constructions: no contact with live parts		P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		P
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032: no contact with live parts of visible glowing heating elements		N/A
8.1.4	Accessible part not considered live if:		
	- safety extra-low a.c. voltage: peak value not exceeding 42.4 V		N/A
	- safety extra-low d.c. voltage: not exceeding 42.4 V		N/A
	- or separated from live parts by protective impedance		N/A
	If protective impedance: d.c. current not exceeding 2 mA, and		N/A
	a.c. peak value not exceeding 0.7 mA		N/A
	- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 μF		N/A
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μC		N/A
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		
	- built-in appliances		N/A
	- fixed appliances		N/A
	- appliances delivered in separate units		N/A
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/A

	POWER INPUT AND CURRENT		
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1	(see appended table)	P
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2	(see appended table)	P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
11	**HEATING**		
11.1	No excessive temperatures in normal use		P
11.2	Placing and mounting of appliance as described		P
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method		P
11.4	Heating appliances operated under normal operation at 1.15 times rated power input ..... :		N/A
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage ..... :		N/A
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage ..... :	94 V and 106 V	P
11.7	The appliance is operated until steady conditions are established or until the **thermostat** interrupts the current for the first time after 16 h, whichever is shorter. (IEC 60335-2-21:2003)		P
11.8	Temperature rises not exceeding values in table 3	(see appended tables)	P
	Protective devices do not operate , except		P
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4 (IEC 60335-1/A1 : 2004)		N/A
	Sealing compound does not flow out		P
13	**LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE**		
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1.15 times rated power input..... :		N/A
	Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage ..... :	106 V	P
	Protective impedance and radio interference filters disconnected before carrying out the tests		N/A
13.2	Leakage current measured by means of the circuit described in figure 4 of IEC 60990		P
	Leakage current measurements	(see appended table)	P
13.3	The appliance is disconnected from the supply (IEC 60335-1/A1 : 2004)		P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	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/A
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6	(see appended table)	N/A
	No flashover during the test, unless of functional insulation		N/A
	In case of flashover of functional insulation, the appliance complies with clause 19 with the clearance short circuited		N/A
15	**MOISTURE RESISTANCE**		
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance	IPX1	P
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		P
	No trace of water on insulation which can result in a reduction of clearances and creepage distances below values specified in clause 29		P
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529 ..... :		P
	Water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains tested as specified for IPX7 appliances (IEC 60335-1/A1 : 2004)		N/A
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N/A
	Built-in appliances installed according to the instructions		N/A
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		P
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		N/A
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N/A
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	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/A
	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 (IEC 60335-1/A1 : 2004)		N/A
	For IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min (IEC 60335-1/A1 : 2004)		N/A
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Detachable parts tested as specified		P
15.2	Spillage of liquid does not affect the electrical insulation		P
	The test is only applicable to **cistern-type water heaters**. (IEC 60335-2-21:2003)		P
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A
	Detachable parts removed		P
	Overfilling test with additional amount of water, over a period of 1 min (l)..... :	0.6 (l)	P
	The appliance withstands the electric strength test of 16.3		P
	No trace of water on insulation that can result in a reduction of clearances and creepage distances below values specified in clause 29		P
15.3	Appliances proof against humid conditions	93 % R.H., 30 °C	P
	Humidity test for 48 h in a humidity cabinet		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		N/A
16.2	Single-phase appliances: test voltage 1.06 times rated voltage..... :	106 V	P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by √3..... :		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	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
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	(see appended table)	N/A
	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/A
	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/A
	Temperature of the winding not exceeding the value specified in table 8,		N/A
	however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N/A
18	**ENDURANCE**		N/A
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
	For closed water heaters, low pressure water heaters and open-outlet water heaters: -compliance checked by 19.2, 19.3 and 19.4 (IEC 60335-2-21:2003)		N/A
	- 19.101 applies for appliances not liable to be emptied in normal use and having all following features: - an outer enclosure of metal (see note 1) - non-combustible thermal insulation (see note 2) - a capacity exceeding 30 l - a rated power input not exceeding 6 kW (see notes 3 and 4) (IEC 60335-2-21:2003)		N/A
19.2	Appliance operated empty with thermal control operating in clause 11 short-circuited (see note) (IEC 60335-2-21:2003)	85 V	P
19.3	See note (IEC 60335-2-21:2003)		P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
19.4	Open-outlet water heaters: -19.2 repeated with container filled with water min. 10mm above heater -1.15 times rated power input (IEC 60335-2-21:2003)	124 V	N/A
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the elements sheath		P
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		P
	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		P
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N/A
	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/A
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/A
	Locked rotor, motor capacitors open-circuited or short-circuited, if required		N/A
	Locked rotor, capacitors open-circuited one at a time		N/A
	Test repeated with capacitors short-circuited one at a time, if required		N/A
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed		N/A
	Other appliances supplied with rated voltage for a period as specified		N/A
	Winding temperatures not exceeding values specified in table 8	(see appended table)	N/A
19.8	Three-phase motors operated at rated voltage with one phase disconnected		N/A
19.10	Series motor operated at 1.3 times rated voltage for 1 min:		N/A
	During the test, parts not being ejected from the appliance		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
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		P
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.3 and 19.11.4 (IEC 60335-1/A1 : 2004)		N/A
	Appliances having a switch with an off position obtained by electronic disconnection, or a switch placing the appliance in a stand-by mode, subjected to the tests of 19.11.4 (IEC 60335-1/A1 : 2004)		N/A
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/A
	- 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/A
19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in cl. 11, but supplied at rated voltage, the duration of the tests as specified:		
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in 29		N/A
	b) open circuit at the terminals of any component		P
	c) short circuit of capacitors, unless they comply with IEC 60384-14		N/A
	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		P
	e) failure of triacs in the diode mode		N/A
	f) failure of an integrated circuit (IEC 60335-1/A1 : 2004)		N/A
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/A
	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/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	- the appliance complies with the conditions specified in 19.13		N/A
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		N/A
	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		N/A
	- 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/A
	- the appliance withstands the tests of 19.11.2 with open-circuited conductor bridged		N/A
19.11.4	Appliances having a switch with an off position obtained by electronic disconnection, or		N/A
	a switch that can be placed in the stand-by mode,		N/A
	subjected to the tests of 19.11.4.1 to 19.11.4.7		N/A
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, except that		N/A
	appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena. (IEC 60335-1/A1 : 2004)		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4 (IEC 60335-1/A1 : 2004)		P
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3 (IEC 60335-1/A1 : 2004)		P
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified (IEC 60335-1/A1 : 2004)		P
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified (IEC 60335-1/A1 : 2004)		P
	Earthed heating elements in class I appliances disconnected (IEC 60335-1/A1 : 2004)		P
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3 (IEC 60335-1/A1 : 2004)		P
19.11.4.6	The appliance is subjected to voltage dips and interruptions in accordance with IEC 61000-4-11 (IEC 60335-1/A1 : 2004)		P
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2 (IEC 60335-1/A1 : 2004)		P
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 IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A):		N/A
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)	N/A
	Enclosures not deformed to such an extent that compliance with cl. 8 is impaired		P
	There shall be no leakage from the container during the test (IEC 60335-2-21:2003/ EN 60335-2-21:99)		P
	If the appliance can still be operated it complies with 20.2		P
	Insulation, other than of class III appliance, withstand the electric strength test of 16.3, the test voltage specified in table 4:		
	- basic insulation ..... :	1 000 Va.c.	P
	- supplementary insulation ..... :		N/A
	- reinforced insulation ..... :	2 500 Va.c.	P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	The appliance does not undergo a dangerous malfunction, and		N/A
	no failure of protective electronic circuits, if the appliance is still operable		N/A
	Appliances tested with an electronic switch in the off position or in the stand-by mode, do not become operational (IEC 60335-1/A1 : 2004)		N/A
19.101	Appliance tested for 24h as specified in clause 11 but with empty container (IEC 60335-2-21:2003)		P
20	**STABILITY AND MECHANICAL HAZARDS**		
20.1	Adequate stability		P
	Tilting test through an angle of 10° (appliance placed on an inclined plane/horizontal plane); appliance does not overturn		P
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		P
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		N/A
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		N/A
	Protective enclosures, guards and similar parts are non-detachable		N/A
	Adequate mechanical strength and fixing of protective enclosures		N/A
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, by unexpected reclosure		N/A
	Not possible to touch dangerous moving parts with test probe		N/A
21	**MECHANICAL STRENGTH**		
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
	No damage after three blows applied to various parts of the enclosure, impact energy 0,5 ± 0,04 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/A
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements (IEC 60335-1/A1 : 2004)		P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	The insulation is tested as specified, unless		N/A
	the thickness of supplementary insulation is at least 1 mm and reinforced insulation is at least 2 mm (IEC 60335-1/A1 : 2004)		P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
22	**CONSTRUCTION**		
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	IPX1	N/A
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		P
	- a switch complying with 24.3		N/A
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided		N/A
	- an appliance inlet		N/A
	Single-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/A
22.3	Appliance provided with pins: no undue strain on socket-outlets		N/A
	Applied torque not exceeding 0.25 Nm		N/A
	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		N/A
	Each pin subjected to a tork of 0.4Nm; the pins are not rotating unless rotating does not impair compliance with the standard		N/A
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		P
22.5	No risk of electric shock when touching the pins of the plug, the appliance being disconnected from the supply at the instant of voltage peak. (IEC 60335-1/A1 : 2004)		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
	Drain hole correct positioned to prevent water from impairing electrical insulation (IEC 60335-2-21:2003)		P
	Dimension of drain hole: min. ∅=5mm or 20 mm^2 with width min. 3mm (IEC 60335-2-21:2003)		P
22.7	Adequate safeguards against the risk of excessive pressure in appliances provided with steam-producing devices		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
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		P
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/A
22.10	Not possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance (IEC 60335-1/A1 : 2004)		N/A
	Non-self resetting thermal motor protectors have a trip-free action, unless		N/A
	they are voltage maintained (IEC 60335-1/A1 : 2004)		N/A
	Location or protection of reset buttons of non-self-resetting controls is so that accidental resetting is unlikely (IEC 60335-1/A1 : 2004)		N/A
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		N/A
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		N/A
	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		N/A
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		P
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

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
22.15	Storage hooks and the like for flexible cords smooth and well rounded		N/A
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/A
	Cord reel tested with 6000 operations, as specified		N/A
	Electric strength test of 16.3, voltage of 1000 V applied		N/A
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		N/A
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		N/A
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non-combustible		N/A
	Compliance is checked by inspection and, if necessary, by appropriate test		N/A
	Thermal insulation not used for basic insulation of internal wiring (IEC 60335-2-21:2003)		N/A
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated		P
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
22.24	Bare heating elements adequately supported in case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N/A
22.25	Sagging heating conductors cannot come into contact with accessible metal parts		N/A
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		N/A
22.27	Parts connected by protective impedance separated by double or reinforced insulation		N/A
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water: separated from live parts by double or reinforced insulation		N/A
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		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or 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/A
	Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation		N/A
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N/A
22.33	Conductive liquids that are or may become accessible in normal use are not in direct contact with live parts		P
	Electrodes not used for heating liquids	Not used	N/A
	For class II constructions, conductive liquids that are or may become accessible in normal use, not in direct contact with basic or reinforced insulation		P
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation		N/A
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		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/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	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/A
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/A
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42		N/A
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		N/A
22.38	Capacitors not connected between the contacts of a thermal cut-out		N/A
22.39	Lamp holders used only for the connection of lamps		N/A
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/A
22.41	No components, other than lamps, containing mercury		P
22.42	Protective impedance consisting of at least two separate components		N/A
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N/A
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N/A
22.44	Appliances are not allowed to have an enclosure that is shaped and decorated so that the appliance is likely to be treated as a toy by children		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		N/A
22.46	Software used in protective electronic circuits is software class B or C (IEC 60335-1/A1 : 2004)		N/A
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use (IEC 60335-1/A1 : 2004)		P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	No leakage from any part, including any inlet water hose (IEC 60335-1/A1 : 2004)		P
22.48	Appliances connected to the water mains constructed to prevent backsiphonage of non-potable water (IEC 60335-1/A1 : 2004)		N/A
22.101	The rated pressure of : (IEC 60335-2-21:2002)		
	- closed water heaters intended for direct connection to the water main shall be at least 0.6 MPa		N/A
	- closed water heaters and low pressure water heaters to be supplied by a pressure reducing valve which is not incorporated in the appliance shall be at least 0.1 MPa		N/A
	Cistern-fed water heaters: -rated pressure max. 0.2 Mpa (see Note)		N/A
22.102	Appliances shall withstand the water pressure occurring in normal use. (IEC 60335-2-21:2002)		
	twice the rated pressure, for closed water heaters. If the water heater is supplied through a pressure reducing valve, the container is subjected to twice the working pressure instead;		N/A
	-1,5 times rated pressure, for cistern-fed water heaters and low-pressure water heaters;		N/A
	- 0,15 MPa, for open-outlet water heaters		N/A
	- 0,03 MPa, for cistern-type water heaters.		P
	Water shall not leak from the appliance and there shall be no permanent deformation to such an extent that compliance with this standard is impaired.		P
22.103	Closed water heaters: pressure relief devise prevent pressure from exceeding rated pressure by more than 0.1 Mpa. (IEC 60335-2-21:2002)		N/A
22.104	Outlet of **open-outlet water heaters** shall be constructed so that the water flow is not limited to such an extent that the container is subjected to a significant pressure. (IEC 60335-2-21:2002)		N/A
	The vent pipe of low pressure water heaters shall have an internal diameter of at least 20mm		N/A
22.105	Cistern-type water heaters shall be constructed so that the container is always at atmospheric pressure by means of a vent having an area of at least 30 mm^2 and a minimum dimension of at least 3 mm. (IEC 60335-2-21:2002)		P
22.106	Closed water heaters: thermal cut-out providing all-pole disconnection, independent from the thermostat (IEC 60335-2-21:2002)		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
22.107	Heating elements and thermal control sensors in contact with the outer surface of the container shall be held in position securely. (IEC 60335-2-21:2002)		P
22.108	Appliances for wall mounting shall have reliable provision for fixing to a wall, independent of the connection to the water mains. (IEC 60335-2-21:2002)		N/A
22.109	Appliances having a capacity of more than 15 l that cannot be emptied through a drain fitted in the water pipes shall incorporate means for draining that requires a tool for its operation. (IEC 60335-2-21:2002)		N/A
22.110	Open-outlet water heaters with plastic enclosure instructions ensure correct installation (see NOTE) (IEC 60335-2-21:2002)		N/A
22.111	Closed water heaters with heat exchanger shall be constructed so that during normal use the thermal cut-out does not operate due to heat from the exchanger. (IEC 60335-2-21:2002)		N/A
22.112	Closed water heaters shall be constructed so that repeated drawing off does not cause the water to boil. (IEC 60335-2-21:2002)		N/A
	Temperature of the water, measured by means of a thermocouple at the outlet, shall not exceed 98 °C		N/A
23	**INTERNAL WIRING**		
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		P
	Wiring effectively prevented from coming into contact with moving parts		N/A
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners		N/A
	Beads inside flexible metal conduits contained within an insulating sleeve		N/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N/A
	Flexible metallic tubes not causing damage to insulation of conductors		N/A
	Open-coil springs not used		N/A
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	No damage after 10 000 flexings for conductors flexed during normal use or 100 flexings for conductors flexed during user maintenance		N/A
	Electric strength test, 1000 V between live parts and accessible metal parts		N/A
23.4	Bare internal wiring sufficiently rigid and fixed		N/A
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/A
23.7	The colour combination green/yellow used only for earthing conductors		P
23.8	Aluminium wires not used for internal wiring		P
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless		P
	clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		N/A
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52) (IEC 60335-1/A1 : 2004)		N/A
24	**COMPONENTS**		
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components	(see appended table)	P
	Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.6		P
	Components not tested and found to comply with relevant IEC 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 interference suppression or for voltage dividing, complying with IEC 60384-14, or		N/A
	tested according to annex F		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
24.1.2	Safety isolating transformers complying with IEC 61558-2-6, or		N/A
	tested according to annex G		N/A
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000, or		P
	tested according to annex H		N/A
24.1.4	Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being:		
	- thermostats: 10 000		N/A
	- temperature limiters: 1 000		N/A
	- self-resetting thermal cut-outs: 300		N/A
	- non-self-resetting thermal cut-outs: 30		N/A
	- timers: 3 000		N/A
	- energy regulators: 10 000		N/A
	-Thermal cut-outs incorporated in closed water heaters shall comply with the requirements of IEC 60730-1(EN 60730-1) for type 2B controls, unless they are tested with the appliance. (IEC 60335-2-21:2002)		N/A
24.1.5	Appliance couplers complying with IEC 60320-1		N/A
	However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N/A
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		N/A
24.2	No switches or automatic controls in flexible cords		P
	No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	No thermal cut-outs that can be reset by soldering		P
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/A
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N/A
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	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 IEC 60252		N/A
	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/A
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/A
	In addition, the motors are complying with the requirements of Annex I		N/A
24.7	Hose-sets for connection of appliances to the water mains, complying with IEC 61770 and supplied with the appliance (IEC 60335-1/A1 : 2004)		P
24.101	Thermal cut-outs shall be non-self-resetting. They shall have a trip-free switching mechanism or be located so that they can only be reset after removal of a non-detachable cover. (IEC 60335-2-21:2002)		P
24.102	The operating temperature of the thermal cut-out of a closed water heater shall ensure that the water temperature cannot exceed either 99 °C or 130 °C. (IEC 60335-2-21:2002)		N/A
24.102	The operating temperature of the thermal cut-out of a closed water heater shall ensure that the water temperature cannot exceed either 99 °C or that the thermal cut out operate before its temperature exceeds 110 °C . (EN 60335-2-21:2003 / A1:2005)		N/A
24.102.1	Tested as specified Water temperature not exceeding 99°C		N/A
24.102.2	Tested as specified The thermal cut-off temperature shall operate before its temperature exceeds 110°C. The water temperature shall not exceed 130°C (IEC 60335-2-21:2002)		N/A
24.102.2	Tested as specified The thermal cut-off temperature shall operate before its temperature exceeds 110°C. The water temperature shall not exceed 20K of the maximum permitted operating temperature of the thermal cut-out. (EN 60335-2-21:2003 / A1:2005)		N/A
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		P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance		N/A
	- pins for insertion into socket-outlets		N/A
	- appliance inlet not allowed (IEC 60335-2-21:2002)		N/A
25.2	Appliance not provided with more than one means of connection to the supply mains		P
	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/A
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/A
	Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.6		N/A
	Appliance provided with a set of terminals allowing the connection of a flexible cord		N/A
	Appliance provided with a set of supply leads accommodated in a suitable compartment		N/A
	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/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 10		N/A
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29		N/A
25.5	Method for assemble supply cord with the appliance:		-
	- type X attachment		N/A
	- type Y attachment		P
	- type Z attachment, if allowed in part 2		N/A
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A
25.6	Plugs fitted with only one flexible cord		P
	Supply cords of single-phase portable appliances having a rated current not exceeding 16A: plug complying with the following standard sheets of IEC 60083:1975 (EN 60335-1:2002)		-
	- class I appliances: standard sheet C2b, C3b or C4 (EN 60335-1:2002)		P
	- class II appliances: standard sheet C5 or C6 (EN 60335-1:2002)		N

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
25.7	Supply cord not lighter than:		-
	- braided cord (60245 IEC 51)		N/A
	- ordinary tough rubber sheathed cord (60245 IEC 53)		N/A
	-ordinary polychloroprene sheathed flexible cord [60245 IEC 57] (IEC 60335-1/A1 : 2004)		N/A
	- flat twin tinsel cord (60227 IEC 41)		N/A
	- light polyvinyl chloride sheathed cord (60227 IEC 52), appliance not exceeding 3 kg		N/A
	- ordinary polyvinyl chloride sheathed cord (60227 IEC 53), appliance exceeding 3 kg	H05VV-F	P
	-Sheathed cord and rubber isolation [60245 IEC 86] (EN 60335-1:02)		N/A
	-Polyvinyl chloride reticulated sheathed cord and rubber isolation [60245 IEC 87] (EN 60335-1:02)		N/A
	-Sheathed cord and polyvinyl chloride reticulated insulation (60245 IEC 88] (EN 60335-1:02)		N/A
	Temperature rise of external metal parts exceeding 75 K, PVC cord not used, unless		N/A
	appliance so constructed that the supply cord is not likely to touch external metal parts in normal use, or		P
	the supply cord is appropriate for higher temperatures, type Y or type Z attachment used		P
25.8	Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area (mm²).....	0.75 mm²	P
25.9	Supply cord not in contact with sharp points or edges		P
25.10	Green/yellow core for earthing purposes in Class I appliance		P
25.11	Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless		N/A
	clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder		N/A
25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		N/A
25.13	Inlet opening so shaped as to prevent damage to the supply cord		P
	Unless the enclosure at the inlet opening is of insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		P
	If unsheathed supply cord, a similar additional bushing or lining is required, unless		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	the appliance is class 0		N/A
25.14	Supply cords adequately protected against excessive flexing		N/A
	Flexing test:		-
	- applied force (N) ..... :		N/A
	- number of flexings ..... :		N/A
	The test does not result in:		-
	- short circuit between the conductors		N/A
	- breakage of more than 10% of the strands of any conductor		N/A
	- separation of the conductor from its terminal		N/A
	- loosening of any cord guard		N/A
	- damage, within the meaning of the standard, to the cord or the cord guard		N/A
	- broken strands piercing the insulation and becoming accessible		N/A
25.15	Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		P
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		P
	Pull and torque test of supply cord, values shown in table 10: pull (N); torque (not on automatic cord reel) (Nm):	100 N; 0.35 Nm	P
	Max. 2 mm displacement of the cord, and conductors not moved more than 1 mm in the terminals		P
	Creepage distances and clearances not reduced below values specified in 29.1		P
25.16	Cord anchorages for type X attachments constructed and located so that:		-
	- replacement of the cord is easily possible		N/A
	- it is clear how the relief from strain and the prevention of twisting are obtained		N/A
	- they are suitable for different types of cord		N/A
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from accessible metal parts by supplementary insulation		N/A
	- the cord is not clamped by a metal screw which bears directly on the cord		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	- at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord		N/A
	- screws which have to be operated when replacing the cord do not fix any other component, if applicable		N/A
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N/A
	- 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/A
	- for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation		N/A
25.17	Adequate cord anchorages for type Y and Z attachment		P
25.18	Cord anchorages only accessible with the aid of a tool, or		N/A
	so constructed that the cord can only be fitted with the aid of a tool		P
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N/A
	Tying the cord into a knot or tying the cord with string not used		N/A
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		P
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 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.		N/A
	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/A
25.22	Appliance inlet:		-
	- live parts not accessible during insertion or removal		N/A
	- connector can be inserted without difficulty		N/A
	- the appliance is not supported by the connector		N/A
	- 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/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified		N/A
	If necessary, electric strength test of 16.3		N/A
25.24	Interconnection cords not detachable without the aid of a tool if compliance with the standard is impaired when they are disconnected		N/A
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 IEC 60083		N/A
26	**TERMINALS FOR EXTERNAL CONDUCTORS**		
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		P
	Terminals only accessible after removal of a non-detachable cover		N/A
	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 (IEC 60335-1/A1 : 2004)		P
26.2	Appliances with type X attachment and appliances for connection to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless the connections are soldered		N/A
	Screws and nuts serve only to clamp supply conductors, except		N/A
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N/A
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone		N/A
	Soldering alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free at the soldered joint		N/A
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/A
	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/A
	- internal wiring is not subjected to stress		N/A
	- clearances and creepage distances are not reduced below the values in 29		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	Compliance checked by inspection and by the test of subclause 8.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm):		N/A
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/A
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 parts that result in a hazard		N/A
	Stranded conductor test, 8 mm insulation removed		N/A
	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/A
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 (mm²)..... :		N/A
	Terminals only suitable for a specially prepared cord		N/A
26.7	Terminals for type X attachment accessible after removal of a cover or part of the enclosure		N/A
26.8	Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other		N/A
26.9	Terminals of the pillar type constructed and located as specified		N/A
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/A
	Pull test of 5 N to the connection		N/A
26.11	For type Y and Z attachment: soldered, welded, crimped and similar connections may be used		P
	For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N/A
	For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free		N/A
27	**PROVISION FOR EARTHING**		

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
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		P
	Earthing terminals not connected to neutral terminal		P
	Class 0, II and III appliance have no provision for earthing		N/A
	Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits		N/A
	Class I water heaters, sheath of heating element permanently and reliably connected to earthing terminal, unless (IEC 60335-2-21:2002)		N/A
	-provided with inlet and outlet pipes of metal permanently and reliably connected to earthing terminal (IEC 60335-2-21:2002)		N/A
	-other accessible metal parts in contact with the water permanently and reliably connected to earthing terminal (IEC 60335-2-21:2002)		N/A
27.2	Clamping means adequately secured against accidental loosening		P
	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm², and		N/A
	do not provide earthing continuity between different parts of the appliance		N/A
	Conductors cannot be loosened without the aid of a tool		P
27.3	For detachable parts that are plugged into another part of the appliance, and having an earth connection, the earth connection made before and separated after current-carrying connections when removing the part (IEC 60335-1/A1 : 2004)		N/A
	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		P
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal		P
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		P
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 µm		P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		P
	In case of aluminium alloys precautions taken to avoid risk of corrosion		N/A
27.5	Low resistance of connection between earthing terminal and earthed metal parts		P
	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/A
	Resistance not exceeding 0,1 Ω at the specified low-resistance test	0.01 Ω	P
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand held appliances		N/A
	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/A
	- the material of the printed circuit board complies with IEC 60249-2-4 or IEC 60249-2-5		N/A
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		N/A
	Diameter of screws of insulating material min. 3 mm		N/A
	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		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N/A
	Type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		N/A
	For screws and nuts; test as specified	(see appended table)	P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated		P
	This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0.5A		N/A
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N/A
	Thread-cutting (self-tapping) screws only used for electrical connections if they generate a full form standard machine screw thread		N/A
	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/A
	Thread-cutting and space-threaded screws may be used in connections providing earthing continuity, provided unnecessary to disturb the connection and at least two screws are used for each connection		N/A
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		P
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion		N/A
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 (Type A) or to provide basic insulation (Type B), annex J applies (IEC 60335-1/A1 : 2004)		N/A
	The microenvironment is pollution degree 1 under Type A coating (IEC 60335-1/A1 : 2004)		N/A
	No creepage distance or clearance requirements under Type B coating (IEC 60335-1/A1 : 2004)		N/A
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		P
	for basic insulation and functional insulation they comply with the impulse voltage test of clause 14 (IEC 60335-1/A1 : 2004)		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	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 (IEC 60335-1/A1 : 2004)		N/A
	Impulse voltage test not applicable: (IEC 60335-1/A1 : 2004)		-
	- when the microenvironment is pollution degree 3		N/A
	- for basic insulation of class 0 and class 01 appliances		N/A
	Appliances are in overvoltage category II		P
	Clearances less than specified in table 16 not allowed for basic insulation of class 0 and class 0I appliances,		N/A
	or if pollution degree 3 is applicable		N/A
	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/A
	Lacquered conductors of windings considered to be bare conductors (IEC 60335-1/A1 : 2004)		N/A
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		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		N/A
	Clearances at crossover points of lacquered conductors not measured		N/A
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N/A
	Lacquered conductors of windings considered to be bare conductors (IEC 60335-1/A1 : 2004)		P
	However, clearances at crossover points are not measured (IEC 60335-1/A1 : 2004)		P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	Lacquered conductors of windings assumed to be bare conductors, but the clearances specified in table 16 are reduced by 0.5mm for rated impulse voltages of at least 1500V		N/A
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/A
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N/A
	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/A
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/A
	insulation subjected to conductive pollution; pollution degree 3		P
	Compliance is checked by inspection and measurements as specified		P
29.2.1	Creepage distances of basic insulation not less than specified in table 17		P
	For pollution degree 1, creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14		N/A
29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17		P
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17		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/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
29.3	Supplementary and reinforced insulation having adequate thickness, or a sufficient number of layers, to withstand the electrical stresses (IEC 60335-1/A1 : 2004)		P
	Compliance checked by: (IEC 60335-1/A1 : 2004)		-
	- measurement, in accordance with 29.3.1, or		P
	- an electric strength test in accordance with 29.3.2, or		N/A
	- an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3		N/A
29.3.1	Supplementary insulation having a thickness of at least 1 mm (IEC 60335-1/A1 : 2004)		N/A
	Reinforced insulation having a thickness of at least 2 mm (IEC 60335-1/A1 : 2004)		P
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation (IEC 60335-1/A1 : 2004)		N/A
	Supplementary insulation consisting of at least 2 layers (IEC 60335-1/A1 : 2004)		N/A
	Reinforced insulation consisting of at least 3 layers (IEC 60335-1/A1 : 2004)		N/A
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		N/A
	the electric strength test of 16.3 (IEC 60335-1/A1 : 2004)		N/A
	If the temperature rise during the tests of Clause 19 does not exceed the value specified in Table 3, the test of IEC 60068-2-2 is not carried out (IEC 60335-1/A1 : 2004)		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	RESISTANCE TO HEAT AND FIRE		
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		P
	thermoplastic material providing supplementary or reinforced insulation,		P
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P
	External parts: at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C) ..... :	(see appended table)	P
	Parts supporting live parts: at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125°C, whichever is the higher; temperature (°C):	(see appended table)	P
	Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C) ..... :		N/A
	The temperature rises occurring during the tests of 19.2, 19.3 and 19.101 are not taken into account. (IEC 60335-2-21:2002)		P
30.2	Relevant parts of non-metallic material adequately resistant to ignition and spread of fire		P
30.2.1	Glow-wire test of IEC 60695-2-11 at 550 °C, unless		P
	the material is classified at least HB40 according to IEC 60695-11-10		N/A
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category FH3 material		N/A
30.2.2	Appliances operated while attended, parts of insulating material supporting current-carrying connections and parts within a distance of 3mm subjected to the glow-wire test of IEC 60695-2-11 at a temperature of:		
	-750°C, for connections carrying a current exceeding 0,5A during normal operation		N/A
	-650°C, for other connections		N/A
	Test not applicable to conditions as specified		N/A
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	Test not applicable to conditions as specified		N/A
30.2.3.1	Parts of insulating material supporting connections carrying a current exceeding 0.2A during normal operation, and		P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	parts of insulating material within a distance of 3mm,		P
	having a glow-wire flammability index of at least 850°C according to IEC 60695-2-12		P
30.2.3.2	Parts of insulating material supporting current-carrying connections, and		P
	parts of insulating material within a distance of 3mm,		P
	subjected to glow-wire test of IEC 60695-2-11		P
	Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 as specified		N/A
	Glow-wire test of IEC 60695-2-11, the temperature being:		-
	-750°C, for connections carrying a current exceeding 0,2A during normal operation		P
	-650°C, for other connections		N/A
	Parts that during the test produce a flame persisting longer than 2 s, tested as specified		N/A
	If a flame persists longer than 2 s during the test, parts above the connection, as specified, subjected to the needle-flame test of annex E, unless		N/A
	the material is classified as V-0 or V-1 according to IEC 60695-11-10		N/A
30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E		P
	Test not applicable to conditions as specified		N/A
31	**RESISTANCE TO RUSTING**		
	Relevant ferrous parts adequately protected against rusting		N/A
32	**RADIATION, TOXICITY AND SIMILAR HAZARDS**		
	Appliance does not emit harmful radiation		N/A
	Appliance does not present a toxic or similar hazard		N/A
A	**ANNEX A (INFORMATIVE) ROUTINE TESTS**		
	Description of routine tests to be carried out by the manufacturer		N/A
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/A
	This annex does not apply to battery chargers		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
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/A
	-the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N/A
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N/A
	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/A
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N/A
5.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N/A
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N/A
7.12	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information		N/A
	Details about how to remove batteries containing materials hazardous to the environment given		N/A
7.15	Markings placed on the part of the appliance connected to the supply mains		N/A
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/A
	If the appliance can be operated without batteries, double or reinforced insulation required		N/A
11.7	The battery is charged for the period described		N/A
19.1	Appliances subjected to tests of 19.101, 19.102 and 19.103		N/A
19.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N/A
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/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
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/A
21.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IEC 68-2-32		N/A
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-32, the number of falls being:		-
	- 100, the mass of part does not exceed 250 g		N/A
	- 50, the mass of part exceeds 250 g		N/A
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N/A
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N/A
25.13	An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage		N/A
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N/A
	For other parts, 30.2.2 applies		N/A
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/A
D	**ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS (IEC 60335-1/A1 : 2004)**		
	Applicable to appliances having motors that incorporate thermal motor protectors		N/A
E	**ANNEX E (NORMATIVE) NEEDLE-FLAME TEST**		
	Needle-flame test carried out in accordance with IEC 60695-2-2, with the following modifications:		P
5	Severities		-
	The duration of application of the test flame is 30 s ± 1 s		P
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		P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
8.4	The first paragraph does not apply		P
	If possible, the flame is applied at least 10 mm from a corner		P
8.5	The test is carried out on one specimen		P
	If the specimen does not withstand the test, the test may be repeated on two further specimens, both withstanding the test		N/A
10	Evaluation of test results		-
	The duration of burning not exceeding 30 s		N/A
	However, for printed circuit boards, the duration of burning not exceeding 15 s		P
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 IEC 60384-14, with the following modifications:		-
1.5	Terminology		-
1.5.3	Class X capacitors tested according to subclass X2		N/A
1.5.4	This subclause is applicable		N/A
1.6	Marking		-
	Items a) and b) are applicable		N/A
3.4	Approval testing		-
3.4.3.2	Table II is applicable as described		N/A
4.1	Visual examination and check of dimensions		-
	This subclause is applicable		N/A
4.2	Electrical tests		-
4.2.1	This subclause is applicable		N/A
4.2.5	This subclause is applicable		-
4.2.5.2	Only table IX is applicable		N/A
	Values for test A apply		N/A
	However, for capacitors in heating appliances the values for test B or C apply		N/A
4.12	Damp heat, steady state		-
	This subclause is applicable		N/A
	Only insulation resistance and voltage proof are checked		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
4.13	Impulse voltage		-
	This subclause is applicable		N/A
4.14	Endurance		-
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable		N/A
4.14.7	Only insulation resistance and voltage proof are checked		-
	Visual examination, no visible damage		N/A
4.17	Passive flammability test		-
	This subclause is applicable		N/A
4.18	Active flammability test		-
	This subclause is applicable		N/A
G	**ANNEX G (NORMATIVE)** **SAFETY ISOLATING TRANSFORMERS**		
	The following modifications to this standard are applicable for safety isolating transformers:		N/A
7	Marking and instructions		-
7.1	Transformers for specific use marked with:		N/A
	-name, trademark or identification mark of the manufacturer or responsible vendor		N/A
	-model or type reference		N/A
17	Overload protection of transformers and associated circuits		-
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N/A
22	Construction		-
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N/A
29	Clearances, creepage distances and solid insulation (EN 60335-1/A11)		-
29.1 and 29.2	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		N/A
H	ANNEX H (NORMATIVE) SWITCHES		
	Switches comply with the following clauses of IEC 61058-1, as modified:		-
	-The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N/A
	-Before being tested, switches are operated 20 times without load		N/A
8	Marking and documentation		-

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	Switches are not required to be marked		N/A
	However, switches that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N/A
13	Mechanism		-
	The tests may be carried out on a separate sample		N/A
15	Insulation resistance and dielectric strength		-
15.1	Not applicable		N/A
15.2	Not applicable		N/A
15.3	Applicable for full disconnection and micro-disconnection		N/A
17	Endurance		-
	Compliance is checked on three separate appliances or switches		N/A
	For 17.2.4.4, the number of cycles is 10 000, unless otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335		N/A
	Switches for operation under no load and which can be operated only by a tool and switches operated by hand that are interlocked so that they cannot be operated under load, are not subjected to the tests		N/A
	Subclauses 17.2.2 and 17.2.5.2 not applicable (IEC 60335-1/A1 : 2004)		N/A
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1 (IEC 60335-1/A1 : 2004)		N/A
	Temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1		N/A
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/A
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/A
8	Protection against access to live parts		-
8.1	Metal parts of the motor are considered to be bare live parts		N/A

EN 60335-2-21 / IEC 60335-2-21			
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/A
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/A
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/A
19	Abnormal operation		-
19.1	The tests of 19.7 to 19.9 not carried out		N/A
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/A
	- short circuit of each diode of the rectifier		N/A
	- open circuit of the supply to the motor		N/A
	- open circuit of any parallel resistor, the motor being in operation		N/A
	Only one fault simulated at a time, the tests carried out consecutively		N/A
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/A
	Compliance checked by the tests specified for double and reinforced insulation		N/A
J	**ANNEX J (NORMATIVE)** **COATED PRINTED CIRCUIT BOARDS**		
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N/A
6.6	Climatic sequence		-
	When production samples are used, three samples of the printed circuit board are tested		N/A
6.6.1	Cold		-
	The test is carried out at -25°C		N/A
6.6.3	Rapid change of temperature		-

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	Severity 1 is specified		N/A
6.8.6	Partial discharge extinction voltage		-
	Type A coatings not subjected to a partial discharge test		N/A
6.9	Additional tests		-
	This subclause is not applicable		N/A
K	**ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES**		
	The information on overvoltage categories is extracted from IEC 60664-1		P
	Overvoltage category is a numeral defining a transient overvoltage condition		P
	Equipment of overvoltage category IV is for use at the origin of the installation		N/A
	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/A
	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/A
	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/A
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 IEC 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

EN 60335-2-21 / IEC 60335-2-21			
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/A
	- 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		P
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N/A
N	ANNEX N (NORMATIVE) PROOF TRACKING TEST (IEC 60335-1/A1 : 2004)		
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		N/A
7	Test apparatus		-

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
7.3	Test solutions		-
	Test solution A is used		P
10	Determination of proof tracking index (PTI)		-
10.1	Procedure		-
	The proof voltage is 100V, 175V, 400V or 600V :		P
	The last paragraph of Clause 3 applies		P
	The test is carried out on five specimens		P
	In case of doubt, additional test with proof voltage reduced by 25V, the number of drops increased to 100		P
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		P
5	Test apparatus		-
5.1	Electrodes		-
	The note does not apply		N/A
5.4	Test solutions		-
	Test solution A is used		P
6	Procedure		-
6.3	Proof tracking test		-
	Voltage is 100V, 175V, 400V or 600V .....:		P
	Note 3 of clause 3 applies		P
	The test is carried out on five specimens		P
	In case of doubt, additional test with voltage reduced by 25V, the number of drops increased to 100		N/A
7	Report		-
	The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		P
O	**ANNEX O (INFORMATIVE)** **SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30**		
	Description of tests for determination of resistance to heat and fire		P
P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES (IEC 60335-1/A1 : 2004)		
	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		-

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	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		-
	General conditions for the tests		-
5.7	The ambient temperature for the tests of Clauses 11 and 13 is 40 $^{+3}_{0}$ °C.		N/A
7	Marking and instructions		N/A
7.1	The appliance marked with the letters WDaE		N/A
7.12	The instructions state that the appliance is to be supplied through a RCD having a rated residual operating current not exceeding 30 mA		N/A
	The instructions state that the appliance is considered to be suitable for use in countries having a warm damp equable climate, but may also be used in other countries		N/A
11	Heating		-
11.8	The values of Table 3 are reduced by 15 K		N/A
13	Leakage current and electric strength at operating temperature		-
13.2	The leakage current for class I appliances not exceeding 0,5 mA		N/A
15	Moisture resistance		-
15.3	The value of t is 37 °C		N/A
16	Leakage current and electric strength		-
16.2	The leakage current for class I appliances not exceeding 0,5 mA		N/A
19	Abnormal operation		-
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		N/A
			-
R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION (IEC 60335-1/A1 : 2004)		-
	Software evaluated in accordance with the following clauses of Annex H of IEC 60730-1, as modified		-
H.2	Definitions		-
	Only definitions H.2.16 to H.2.20 applicable		N/A
H.7	Information		-
	Only footnotes 12) to 18) of Table 7.2, as modified, applicable		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
H.11-12	Controls using software		N/A
	All the subclauses of H.11.12, as modified, except H.11.12.6 and H.11.12.6.1, applicable		N/A
H.11.12.7 1	For appliances using software class C having a single channel with self-test and monitoring structure, the manufacturer provides the measures necessary to address the fault/errors in safety related segments and data		N/A
H.11.12.8	Software fault/error detection occurs before compliance with 19.13 of IEC 60335-1 is impaired		N/A
H.11.12.8 1	Replace text		N/A
H.11.12.1 3	Software and safety related hardware under its control initializes and terminates before compliance with 19.13 of IEC 60335-1 is impaired		N/A
			N/A
	ANNEX ZA to EN 60335-1:02 SPECIAL NATIONAL CONDITIONS (EN 60335-1:2002)		
7.12	DENMARK Requirements regarding marking tag of power supply cord and connection of earthing wire		N/A
19.5	NORWAY The test is also applicable to appliances intended to be permanently connected to fixed wiring		N/A
22.2	FRANCE and NORWAY The second paragraph of this subclause dealing with single-phase class I appliances with heating elements is not applicable due to the supply system.		N/A
25.6	Plugs according to standard sheet C 2b are not allowed in the following countries: Belgium, France, Spain and the United Kingdom		N/A
	Plugs according to standard sheet C 3b are not allowed in the following countries: Austria, Finland, Germany, Iceland, Ireland, Italy Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.		N/A
	DENMARK		N/A
	Supply cords of single-phase port-able appliances having a rated current not exceeding 13 A provided with a plug according to the following:		N/A
	Class I appliances: Section 107-2-D1 Standard Sheet DKA 2-1a		N/A
	For appliances covered by a part 2 of EN 60335, also plugs in accordance with section 107-2-D1, ed 3, 1998, Standard Sheet C 2b, C 3b or C 4		N/A
	Class II appliances: section 107-2-D1, ed 3, 1998, Standard Sheet C 5 or C 6, DKA 2-1a and DKA 2-1b		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	Stationary single-phase appliances, having a rated current not exceeding 13 A, and provided with a plug, the plug is in accordance with the requirements above.		N/A
	Multi-phase appliances and single-phase appliances having a rated current exceeding 13 A, and provided with a plug, the plug is in accordance with the requirements below:		N/A
	Class I appliances: Section 107-2-D1, Standard Sheet DK 6-1a / EN 60309-2, Standard Sheet 2-II, 2-IV		N/A
	Class II appliances: Section 107-2-D1, Standard Sheet DK 6-1a / 2-II, 2-IV		N/A
	Current not exceeding C5: 2,5A, DKA 2-1a and 1b: 10A, DK 2-1a: 13A, C 1b, C 6, C 2b, C 3b, C 4: 16A		N/A
	IRELAND Plug is in accordance with standard sheets B2 and C5		N/A
	IITALY only plug mentioned on the test report R0BT-005:2001 are allowed		N/A
	SPAIN Household appliance, only plug provided complying with standard UNE 20 315		N/A
	ESC 10-1b, C2b, C4, C6 or ESB 25-5b		N/A
	complying with standard UNE-EN 50075		N/A
	SWITZERLAND Supply cords of portable household and similar electrical appliances, rated current not exceeding 10 A, provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:		N/A
	SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A		N/A
	SEV 6533-2.1991 Plug Type 11 L+N 250 V 10A		N/A
	SEV 6533-2.1991 Plug Type 12 L+N+PE 250 V, 10 A		N/A
	UNITED KINGDOM Plug according to standard sheet B2 or C5 used. Refer to annex ZB , ,		N/A
25.8	IRELAND and UNITED KINGDOM Replacement of figures (rated current/cross-sectional area) in the table.		N/A

ZB	**ANNEX ZB TO EN 60335-1/A1: 2004 – NATIONAL DIVERGENCES**		
29.3	GERMANY 29.3 not apply to appliances when insulation is accessible		N/A

ZC	**ANNEX ZC TO EN 60335-1/A1 : 2004 (INFORMATIVE)**
	IEC standards and EN standards used

ZD	**ANNEX ZD (informative)**

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict
	IEC and CENELEC code designations for flexible cords		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict

10.1	TABLE: Power input deviation				P
Input deviation of/at:	P rated (W)	P measured (W)	dP	Required dP	Remark
100 V	430	435	+ 1.1 %	- 10 %, + 5 %	Heater output, Main frequency= 50Hz
100 V	430	436	+ 1.3 %	- 10 %, + 5 %	Heater output, Main frequency= 60Hz

10.2	TABLE: Current deviation				P
Current deviation of/at:	I rated (A)	I measured (A)	dI	Required dI	Remark
100 V	2.1	2.15	+ 2.4 %	+ 15 %	Compressor output, Main frequency= 50Hz
100 V	2.1	1.89	- 10.0 %	+ 15 %	Compressor output, Main frequency= 60Hz

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict

11.8	TABLE: Heating test, thermocouples		P
	Test voltage (V) ..... :	106	—
	Ambient (°C) ..... :	32.3	—

Thermocouple locations	dT (K)	Max. dT (K)
Power cord sheath	7.2	35
Power cord internal wire	10.2	50
AC connector surface	13.6	Cl. 30.1
Fuse-holder surface	16.5	Cl. 30.1
Compressor top	42.0	150 °C
Compressor socket surface	22.2	Cl. 30.1
Internal wire of heater	30.2	105 °C
Internal wire of compressor	22.6	50
Internal wire of cooling thermostat	18.7	50
Hot water outlet surface	5.4	60
External enclosure, front	4.9	60
External enclosure, top	4.9	60
Test wall, rear	4.4	60
Test wall, bottom	3.6	60
Test wall, side	5.2	60
Heater switch surface	8.0	60

11.8	TABLE: Heating test, resistance method		P
	Test voltage (V) ..... :	106	—
	Ambiant, t_1 (°C) ..... :	24.6	—
	Ambiant, t_2 (°C) ..... :	32.3	—

Temperature rise of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class
Compressor Main-Left	7.12	9.13	65.4	90	E
Compressor Main-Right	9.55	12.07	60.7	90	E

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict

13.2	TABLE: Leakage current		P
	Heating appliances: 1.15 x rated input.....:	-	—
	Motor-operated and combined appliances: 1.06 x rated voltage .....:	115 V	—

Leakage current between	I (mA)	Max. allowed I (mA)
Accessible metal parts and L	0.10	3.5
Accessible metal parts and N	0.10	3.5
Other accessible non-metallic parts and N	0.01	0.25
Other accessible non-metal parts and L	0.01	0.25

13.3	TABLE: Electric strength		P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)
live parts and accessible parts over basic insulation		500 V a.c.	N/A
Live parts and accessible parts over basic insulation		1 000 V a.c.	No
Live parts and accessible parts over supplementary insulation		1 000 V a.c.	No
Live parts and accessible parts over reinforced insulation		2 500 V a.c.	No

14	TABLE: Transient overvoltages				N/A
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 .....:	106 V	—
	Three phase appliances 1.06 x rated voltage divided by √3: .....:	-	—

Leakage current between	I (mA)	Max. allowed I (mA)
Live parts and external metal enclosure	0.10	3.5
Live parts and external enclosure(plastic)	0.01	0.25

16.3	TABLE: Electric strength		P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)
live parts and accessible parts over basic insulation		500 V a.c.	N/A
Live parts and accessible parts over basic insulation		1 000 V a.c.	No

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict

Live parts and accessible parts over supplementary insulation	1 000 V a.c.	No
Live parts and accessible parts over reinforced insulation	2 500 V a.c.	No

17	TABLE: Overload protection, temperature rise	N/A

Temperature rise of part/at:	dT (K)	Max. dT (K)

19.7	TABLE: Abnormal operation, locked rotor/moving parts		N/A
	Test voltage (V) ..... :		—
	Ambiant, t_1 (°C) ..... :		—
	Ambiant, t_2 (°C) ..... :		—

Temperature of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	T (°C)	Max. T (°C)

19.9	TABLE: Abnormal operation, running overload		N/A
	Test voltage (V) ..... :		—
	Ambiant, t_1 (°C) ..... :		—
	Ambiant, t_2 (°C) ..... :		—

Temperature of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	T (°C)	Max. T (°C)

19.11	TABLE: abnormal operation, temperature rise measurements		P
Part	Fault condition		Result
	Short	Open	
Resister	X		Normal operation. Power, Cool LED off. No part exceed limit No hazard

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict

Diode (Rectifier)	X		Normal operation. No part exceed limit No hazard

19.13	TABLE: Abnormal operation, temperature rises			P
Thermocouple locations	dT (K)			Max. dT (K)
	Cl. 19.2	Cl 19.3	Cl 19.4	
Power cord sheath	7.4	7.0	7.4	150
Test wall	10.6	4.7	5.4	150
External enclosure	9.7	4.5	5.3	cl. 30.1

24.1	TABLE: Components				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
Attachment plugs with Cord connector bodies	Hwajin KDK	KKP-30T VCTF	125 V, 7 A, 3G 0.75 mm^2	Article 1 of the Technical Requirements of the METI Ordinance Appendix 4 Section 1 and Section 6	JET
Alt.	Jang-Won Hitec Korea Cord	JP-45 VCTF	125 V, 12 A 3G 0.75 mm^2	Article 1 of the Technical Requirements of the METI Ordinance Appendix 4 Section 1 and Section 6	JET
AC Connector	Yeon Ho	YAW396	V-0	IEC 60335-1	Tested in appliance (UL)
Compressor	Dae Woo electronics Corp.	WX30LHF0T	100 V; 50/60 Hz, Class E	IEC 60335-1	Tested in appliance
Motor starting relay with thermal motor protector	Sensata Technologies Holland, B.V.	11SP15A743 UF	Thermal motor protector: 250 V Start relay: 400 V; 12 A Max. operating temp. relay 135 °C Mounting surface temp. max. 105 °C	EN 60730-1; EN 60730-2-4 EN 60730-2-10 IEC 60335-1, 4th edition 2001, clause 30.2.3	KEMA

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict

Cartridge Fuses	Chi Lick Schurter	FST 5x20-Serie(s)	125 V, 5 A	J60127-1(H14) and J60127-2(H14)	JET
Fuse holder	E I dupont de nemours & co inc	FR7025V0F (+)	V-0; 130 °C	IEC 60335-1	Tested in appliance (UL)
Heater-sheathed type	Shinhwa Tech	HD-2260	100 V; 600 W	IEC 60335-1	Tested in appliance
Heater-band type	Hyundai Precision	HDH-02-02-01	100 V; 500 W	IEC 60335-1	Tested in appliance
Thermostat (for compressor)	Pacific control co., ltd	PFN series	125 V / 250 V; 6A	EN 60730-1; EN 60730-2-9	SEMKO
Thermostat (for heater)	Pacific Controls Co., Ltd.	PW-2*	250 V; 7,5 A Max 150 °C	EN 60730-1; EN 60730-2-9	VDE
Thermal cut-out	Pacific control co., ltd	PBR-380-****	250 V; 7,5 A; 125 V; 15 A Max 150 °C	EN 60730-1; EN 60730-2	TUV
Cord bushing	Jeon-o Electric	6N-4	V-0	IEC 60335-1	Tested in appliance (UL)
Enclosure	Basf Co., Ltd.	GP-35	HB; 90 °C	IEC 60335-1	Tested in appliance (UL)
[1)] An asterisk indicates a mark which assures the agreed level of surveillance					

28.1	TABLE: Threaded part torque test			P
Threaded part identification		Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
Rear enclosure		> 3.6 and ≤ 4.1	II	1.2
Rear enclosure		> 3.6 and ≤ 4.1	II	1.2

29.1	TABLE: Clearances					P
	Overvoltage category....:		II			—
		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0,5	-	-	-	-	N/A
500	0,5	-	-	-	-	N/A
800	0,5	-	-	-	-	N/A
1500	1,0	1.5	1.5	1.5	-	P
2500	2,0	-	-	-	3.0	P

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict

4000	3,5	-	-	-	-	N/A
6000	6,0	-	-	-	-	N/A
8000	8,5	-	-	-	-	N/A
10000	11,5	-	-	-	-	N/A

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		—	—	N/A
=50	0,2	0,6	0,9	1,2	1,5	1,7	1,9	—		—	N/A
=50	0,4	1,2	1,8	2,4	3,0	3,4	3,8	—	—		N/A
>50 and = 125	0,3	0,8	1,1	1,5	1,9	2,1	2,4		—	—	N/A
>50 and = 125	0,3	0,8	1,1	1,5	1,9	2,1	2,4	—		—	N/A
>50 and = 125	0,6	1,6	2,2	3,0	3,8	4,2	4,8	—	—		N/A
>125 and = 250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	1.5	—	—	P
>125 and = 250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	—	1.5	—	P
>125 and = 250	1,2	2,6	3,6	5,0	6,4	7,2	8,0	—	—	3.0	P
>250 and = 400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	N/A
>250 and = 400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	N/A
>250 and = 400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		N/A
>400 and = 500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	N/A
>400 and = 500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	N/A
>400 and = 500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		N/A
>500 and = 800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	N/A
>500 and = 800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	N/A
>500 and = 800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		N/A
>800 and = 1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	N/A
>800 and = 1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	N/A
>800 and = 1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		N/A
>1000 and = 1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict

>1000 and = 1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	N/A
>1000 and = 1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict

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

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict

*), 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	N/A
>50 and = 125	0,3	0,7	1,0	1,4	1,8	2,0	2,2	P
>125 and = 250	0,4	1,0	1,4	2,0	2,5	2,8	3,2	N/A
>250 and = 400	0,8	1,6	2,2	3,2	4,0	4,5	5,0	N/A
>400 and = 500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	N/A
>500 and = 800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	N/A
>800 and = 1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	N/A
>1000 and = 1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	N/A
>1250 and = 1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	N/A
>1600 and = 2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	N/A
>2000 and = 2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	N/A
>2500 and = 3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	N/A
>3200 and = 4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	N/A
>4000 and = 5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	N/A
>5000 and = 6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	N/A
>6300 and = 8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	N/A
>8000 and = 10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	N/A
>10000 and = 12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	N/A

EN 60335-2-21 / IEC 60335-2-21			
Clause	Requirement - Test	Result - Remark	Verdict

30.1	TABLE: Ball pressure			P
Part		Test temperature (°C)	Impression diameter (mm)	Allowed impression diameter (mm)
Enclosure(plastic)		75	0.8	2.0
Fuse holder		125	1.0	2.0
AC connector		125	1.0	2.0
PCB		125	0.7	2.0

30.2	TABLE: glow-wire test		P
Part		Test temperature (°C)	Verdict
Enclosure(plastic)		550	P
AC connector		850	P
Fuse holder		850	P

TEST REPORT

IEC/EN 60335-2-24

Safety of household and similar electrical appliances

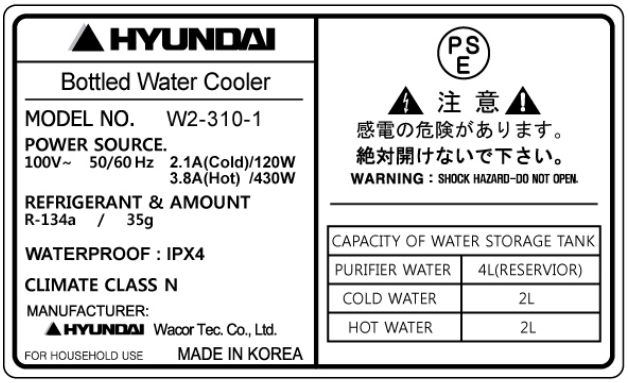
Part 2: Particular requirements for

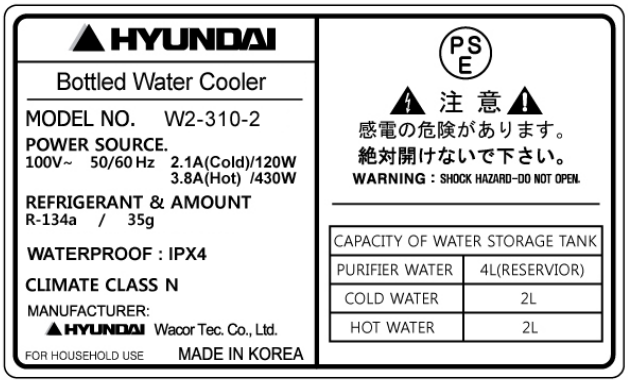
refrigerating appliances, ice-cream appliances and ice-makers

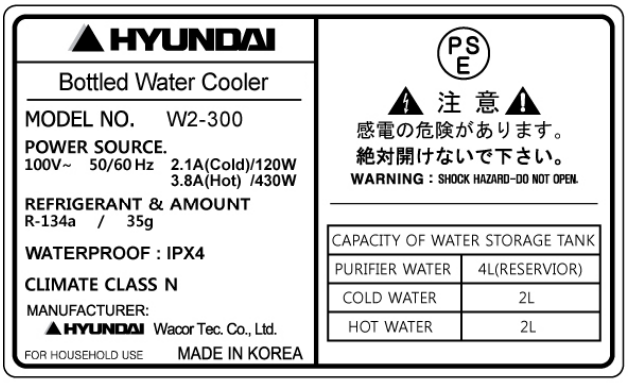
Report reference No. ..... :	ETLS100630.0047
Tested by (name + signature) ..... :	Sang-Hyung, Lee
Approved by (name + signature) .. :	Dong-Jun, Oh
Date of issue ..... :	2010-11-15
Testing Laboratory ..... :	ETL Inc.
Address ..... :	#371-51, Gasan-Dong, Geumcheon-Gu, Seoul, 153-803, Korea.
Applicant's Name ..... :	HYUNDAI Wacor Tec Co., Ltd.
Address ..... :	684-49, Gongreung-dong, Nowon-Ku, Seoul, Republic of Korea
Test specification	
Standard ..... :	IEC 60335-2-24:2002 (Sixth edition) used in conjuction with IEC 60335-1:2001
Test procedure ..... :	-
Procedure deviation ..... :	ETL
Non-standard test method ..... :	CCA
Test Report Form No ..... :	IECEN60335_2_24F
TRF Originator ..... :	SEV
Master TRF ..... :	Dated 2005-08

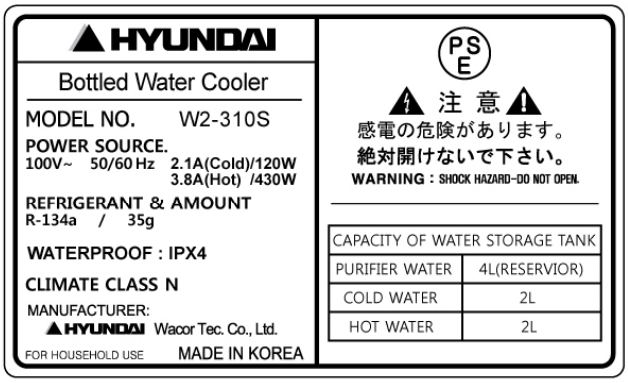
Test item description	..... :	Bottled Water Cooler
Trade Mark	..... :	HYUNDAI
Manufacturer	..... :	Same as applicant
Model /Type reference	..... :	W2-310-1, W2-310-2, W2-300, W2-300S, W2-310S
Ratings	..... :	100 V ~; 50/60 Hz; 2.1 A(Cold); 430 W(Hot); Climate Class N; IPX1

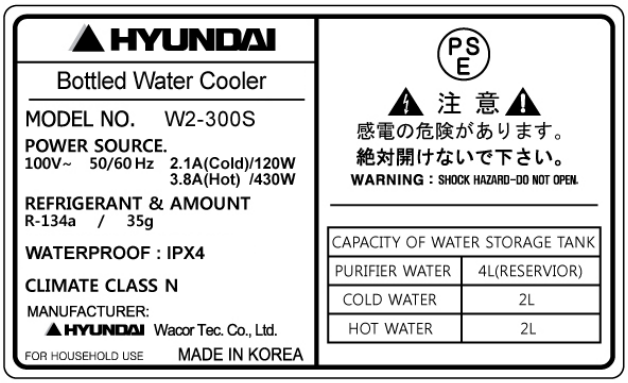
Copy of marking plate and summary of test results (information/comments):











Summary of testing:

-. All tests were conducted on model W2-310-2 and W2-300S.

-. The items tested were found to be in compliance with the test standards of IEC 60 335-2-24:2002 (Sixth edition) conj. with IEC 60335-1:2001 (fourth edition) concerning cold water storage system in the product and test standars of IEC 60335-2-21:2002 (Fifth Edition) concerning hot water storage system in the product.

-. The item tested were found to be in conformity with the specified standards and is also compatible with test standards of JIS C 9335-2-24:2005 and JIS C 9335-2-21:2005 used in conjunction with JIS C 9335-1:2003

-. This test report is used for reference for the application for Japan PSE declaration of conformity according to Ordinance 2 procedure of Japan Electrical Appliance and Material Law.

-. Attachment1: National differences for Japan -> 10 pages

-. Attachment1: Comparison table between JIS C 9335-1:2003 and IEC 60335-1:2001 -> 10 pages

-. Attachment2: Comparison table between JIS C 9335-2-21:2005 and IEC 60335-2-21:2002 -> 5 pages

-. Attachment3: Comparison table between JIS C 9335-2-24:2005 and IEC 60335-2-24:2002 -> 7 pages

-. Attachment4: Photos -> 7 pages

Test items particulars :

Classification of installation and use ..... :	Class I, Floor-standing and table-top or counter-top
Supply Connection..... :	Supply cord with plug

Possible 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 .....:	2010-07-20
Date(s) of performance of test .....:	2010-07-20 until 2010-11-15
Product verification per IECEE 02, Clause 6.2.5 ..:	N/A
Steps taken by the NCB to ensure that the products from all the factories stated in the CB Test Certificate are equal.....:	

General remarks

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

"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

General product information:

- Model W2-300S is bottled water cooler having a compressor and a sheathed heater and it is tested as the represented model for counter-top or table-top type.
- Model W2-310-2 is a floor standing type bottled water cooler it is tested as the represented model for floor standing type.
- Model difference and external dimension.

1) Model W2-310-1 and W2-300 are similar with the tested model W2-310-2 except for the small difference of external dimension of enclosure and cosmetic design.

2) Model W2-310S is similar with the tested model W2-300S except for the small difference of external dimension of enclosure and the cosmetic design.

3) The same critical components including a compressor and a sheathed heater are provided for the each model.

4) Bottled water cooler for floor standing type and counter-top or table-top are located in the top of enclosure.

Model No.	Dimension (mm)	Installation and use
W2-310-2	310(W) x 310(D) x 1090(H)	Floor standing type
W2-310-1	310(W) x 310(D) x 970(H)	Floor standing type
W2-300	310(W) x 310(D) x 970(H)	Floor standing type
W2-300S	310(W) x 310(D) x 550(H)	Counter-top or table top type
W2-310S	310(W) x 310(D) x 550(H)	Counter-top or table top type

IEC/EN 60 335-2-24			
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
5.3	Before starting the tests (IEC 60335-2-24:2002):		
	- ice cream appliances are operated empty of rated voltage for 1 h		N/A
	- other compression-type appliances shall be operated at rated voltage for 24 h then switched off for 12 h		P
5.4	Tests are additionally carried out with all combinations of energy sources supplied simultaneously unless this is prevented by interlocking devices (IEC 60335-2-24:2002)		N/A
5.7	Tests according to sub-clause 10, 11,13 and subcl. 19.103 at ambient temperature of (IEC 60335-2-24:2002) :		
	(23 ± 2) °C for ice-cream appliances		N/A
	(32 ± 1) °C Climatic class	SN ☐	N/A
	(32 ± 1) °C Climatic class	N ☒	P
	(38 ± 1) °C Climatic class	ST ☐	N/A
	(43 ± 1) °C Climatic class	T ☐	N/A
5.102	Compression-type appliances with heating systems and Peltier-type appliances are tested as combined appliances (IEC 60335-2-24:2002)		P

6	CLASSIFICATION		
6.1	Protection against electric shock: Class 0, 0I, I, II, III	Class I	P
6.2	Protection against harmful ingress of water	IPX1	P
6.101	Appliances, other than ice-cream appliances, shall be of one or more of the following climatic classes: SN, N, ST, T (IEC 60335-2-24:2002)		

7	MARKING AND INSTRUCTIONS		
7.1	Rated voltage or voltage range (V):	100 V	P
	Nature of supply:	"~"	P
	Rated frequency (Hz):	50/60 Hz	P
	Rated power input (W):	120 W (Cold); 430 W (Hot)	P
	Rated current (A):	2.1 A (Cold); 3.8 A (Hot)	P
	Manufacturer's or responsible vendor's name, trademark or identification mark:	HYUNDAI	P
	Model or type reference:	See marking plate	P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	Symbol 5172 of IEC 60417, for Class II appliances	Class I appliance	N/A
	IP number, other than IPX0:	IPX1	P
	Power input of heating systems, if greater than 100 W, (W) (IEC 60335-2-24:2002)	430 W (Hot)	P
	Defrosting input, in W, if greater than the rated power input, (W) (IEC 60335-2-24:2002)		N/A
	Rated power input in Watts (IEC 60335-2-24:2002)		P
	Rated current in Amperes for compression-type appliances (IEC 60335-2-24:2002)		P
	Climatic class of the appliance (SN, N, ST or T) (IEC 60335-2-24:2002)	N	P
	Maximum rated input of lamps in Watts (IEC 60335-2-24:2002)	No lamp	N/A
	Total mass of the refrigerant (IEC 60335-2-24:2002)	See marking plate	P
	For a single component refrigerant, at least one of the following (IEC 60335-2-24:2002) :		
	- the chemical name		N/A
	- the chemical formula		N/A
	- the refrigerant number		N/A
	For a blended refrigerant, at least one of the following (IEC 60335-2-24:2002) :		
	- the chemical name and nominal proportion of each of the components		N/A
	- the chemical formula and nominal proportion for each of the components		N/A
	- the refrigerant numbers and nominal proportion of each of the components		N/A
	- the refrigerant number of the refrigerant blend	R-134a	P
	The chemical name or refrigerant number of the insulation blowing gas (IEC 60335-2-24:2002)		N/A
	Battery voltage for appliances which can be mains and battery operated (IEC 60335-2-24:2002)		N/A
	Max. power input for incorporated ice-maker, if greater than 100 W (IEC 60335-2-24:2002)		N/A
	Ice-makers shall be marked with the maximum permissible water level (IEC 60335-2-24:2002)		N/A
	Compression-type refrigerating systems appliance shall be marked with mass of the refrigerant for each separate refrigerant circuit (IEC 60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	Compression-type appliances flammable which use refrigerants shall be marked with warning sign B.3.2 from ISO 3864 (IEC 60335-2-24:2002)		N/A
A	The enclosure of electrically-operated water valves incorporated in external hose-sets for connection of an appliance to the water mains shall be marked with symbol IEC 60417-5036 (DB:2002-10) if their working voltage exceeds extra-low voltage (IEC 60335-1:01 + A1:2004)		N/A
7.2	Warning for stationary appliances for multiple supply		N/A
	Warning placed in vicinity of terminal cover		N/A
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen		N/A
	Different rated values marked with the values separated by an oblique stroke		N/A
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible		N/A
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless		N/A
	the power input is related to the mean value of the rated voltage range		N/A
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N/A
7.6	Correct symbols used		P
	The perpendicular height of the triangle shall be at least 15 mm (IEC 60335-2-24:2002)		N/A
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply		N/A
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/A
	- marking of protective earthing terminals (symbol 5019 of IEC 60417)		P
	- marking not placed on removable parts		P
7.9	Marking or placing of switches which may cause a hazard		P
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means:		P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N/A
	See Note (IEC 60335-2-24:2002)		N/A
7.11	Indication for direction of adjustment of controls		N/A
7.12	Instructions for safe use provided		P
	Instructions for refrigerating appliances and ice-makers for camping or similar use include the substance of the following (IEC 60335-2-24:2002) :		
	- suitable for camping use		N/A
	- the appliances connected to more than one source of energy		N/A
	- the appliances shall not be exposed to rain unless at least IPX4		N/A
	- for ice-makers not intended to be connected to the water supply WARNING: fill with potable water only		N/A
	For compression-type appliances which use flammable refrigerants, instructions shall include information pertaining to the installation, handling, servicing (IEC 60335-2-24:2002)	Non flammable refrigerants used	N/A
	The instructions shall include the warnings (IEC 60335-2-24:2002)		N/A
	WARNING – Keep ventilation openings, in the appliance enclosure or in the built-in structure, clear of obstruction (IEC 60335-2-24:2002)		N/A
	WARNING – Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer (IEC 60335-2-24:2002)		N/A
	WARNING – Do not damage the refrigerant circuit (IEC 60335-2-24:2002)		N/A
	WARNING – Do not use electrical appliances inside the food storage compartments of the appliance, unless they are of the type recommended by the manufacturer (IEC 60335-2-24:2002)		N/A
	Appliances which use flammable insulation blowing gases, instructions shall include information regarding disposal of the appliance (IEC 60335-2-24:2002)		N/A
	Instructions for ice-cream appliances shall include ingredients and max. quantity of mixtures that can be used in the appliance (IEC 60335-2-24:2002)		N/A
7.12.1	Sufficient details for installation supplied		P
	The method for replacing illuminating lamps included (IEC 60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	Appliances designed for incorporating ice-makers, the types of ice-makers (IEC 60335-2-24:2002)		N/A
	Information on the installation of incorporated ice-makers as optional accessories (IEC 60335-2-24:2002)		N/A
	Incorporated ice-makers installed only by the manufacturer or its service agent (IEC 60335-2-24:2002)		N/A
	Ice makers intended to be connected to the water supply (IEC 60335-2-24:2002) :		
	- the maximum permissible inlet water pressure, (Pa) or (bar)		N/A
	- the minimum permissible inlet water pressure, if necessary (Pa) or (bar)		N/A
	WARNING: connect to potable water supply only (IEC 60335-2-24:2002)		N/A
	Instructions for fixed appliances shall include the following warning (IEC 60335-2-24:2002) :		
	WARNING: To avoid a hazard due to instability of the appliance, it must be fixed in accordance with the instructions (IEC 60335-2-24:2002)		N/A
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/A
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/A
7.12.4	Instructions for built-in appliances:		
	- dimensions of space	No built-in appliances	N/A
	- dimensions and position of supporting means		N/A
	- distances between parts and surrounding structure		N/A
	- dimensions of ventilation openings and arrangement		N/A
	- connection to supply mains and interconnection of separate components		N/A
	- plug accessible after installation, unless		N/A
	a switch complying with 24.3		N/A
	Applicable to fixed appliances (IEC 60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
R	- necessity to allow disconnection of the appliance from the supply after installation, unless the appliance incorporates a switch complying with 24.3 (IEC 60335-1:01 + A1:2004)		N/A
R	- The disconnection may be achieved by having the plug accessible or by incorporating a switch in the fixed wiring in accordance with the wiring rules (IEC 60335-1:01 + A1:2004)		N/A
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N/A
	Replacement cord instructions, type Y attachment		P
	Replacement cord instructions, type Z attachment		N/A
7.13	Instructions and other texts in an official language	English, Japanese	P
7.14	Marking clearly legible and durable (IEC 60335-1:01 + A1:2004)		P
7.15	Marking on a main part		P
	Marking clearly discernible from the outside, if necessary after removal of a cover		N/A
	For portable appliances, cover can be removed or opened without a tool		N/A
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		P
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		N/A
	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
	Max. rated input of lamps discernible (IEC 60335-2-24:2002)		N/A
	Compression-type appliances the marking of the type of flammable refrigerant and of the flammable insulation blowing gas, as well as the warning sign B.3.2 from ISO 3864, shall be visible when gaining access to the motor-compressors (IEC 60335-2-24:2002)	No flammable refrigerant and of the flammable insulation blowing gas	N/A
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		P
7.101	Appliances which can be battery operated the connection shall be indicated by the symbol “+” or the colour red and “-“ or black (IEC 60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
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		N/A
	Use of test probe B of IEC 61032: no contact with live parts		P
	Removal of lamps: protection against contact with live parts (IEC 60335-2-24:2002)		N/A
8.1.2	Use of test probe 13 of IEC 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 non-conductive coating: no contact with live parts		P
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032: no contact with live parts of visible glowing heating elements		N/A
8.1.4	Accessible part not considered live if:		
	- safety extra-low a.c. voltage: peak value not exceeding 42.4 V		N/A
	- safety extra-low d.c. voltage: not exceeding 42.4 V		N/A
	- or separated from live parts by protective impedance		N/A
	If protective impedance: d.c. current not exceeding 2 mA, and		N/A
	a.c. peak value not exceeding 0.7 mA		N/A
	- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 μF		N/A
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μC		N/A
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		
	- built-in appliances		N/A
	- fixed appliances		N/A
	- appliances delivered in separate units		N/A
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

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	Only possible to touch parts separated from live parts by double or reinforced insulation		P

9	STARTING OF MOTOR-OPERATED APPLIANCES	
	Not applicable	

10	POWER INPUT AND CURRENT		
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1	(see appended table)	P
	Appliances being operated under normal operation, user adjustable temperature controls are set to give the lowest temperature (IEC 60335-2-24:2002)		P
	The power input stabilized, steady conditions established (IEC 60335-2-24:2002)		P
	A period between the making and the breaking of the temperature control, or highest and lowest values of power input measured (IEC 60335-2-24:2002)		P
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2	(see appended table) Compressor for cold water	P
	The appliance being operated under normal operation, user adjustable temperature controls are set to give the lowest temperature (IEC 60335-2-24:2002)		P
	The appliance is operated for 1 h. The max. value of the current averaged over any 5 min period is obtained. The interval shall not exceed 30s. Starting after 1 min (IEC 60335-2-24:2002)		P
10.101	The power input of the defrosting system, deviation shown in table 1 (IEC 60335-2-24:2002)	Without defrosting system	N/A
10.102	The power input of any heating system, deviation shown in table 1 (IEC 60335-2-24:2002)		P

11	HEATING		
11.1	No excessive temperatures in normal use		P
	If the winding temperatures of motor-compressors exceed the values given in table 101, compliance is checked by the test of 11.101 (IEC 60335-2-24:2002)		N/A
	The winding temperatures of motor-compressors conforming IEC 60335-2-34 (incl. Annex AA) are not measured (IEC 60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
11.2	Placing and mounting of appliance as described (IEC 60335-2-24:2002)		P
	- according to instructions for installation		N/A
	- in a test corner		N/A
	- test enclosure		P
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		P
	the windings makes it difficult to make the necessary connections		N/A
11.4	Heating appliances operated under normal operation at 1.15 times rated power input:		N/A
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage:		N/A
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage:	94 V and 106 V	P
11.7	The appliances is operated until steady conditions are established (IEC 60335-2-24:2002)		P
11.8	Temperature rises not exceeding values in table 3	(see appended tables)	P
	During the test protective devices do not operate (IEC 60335-2-24:2002)		P
	During the test sealing compound doesn't flow out (IEC 60335-2-24:2002)		P
	During the test temperatures are monitored continuously (IEC 60335-2-24:2002)		P
	For (SN) and (N) class, the temperature rises not exceeding values in table 3 (IEC 60335-2-24:2002)		P
	For (ST) and (T) class, the temperature rises not exceeding values in table 3 reduced by 7 K (IEC 60335-2-24:2002)		N/A
	The temperature rise of the external enclosure of motor-operated appliances not applicable for: (IEC 60335-2-24:2002)		
	- built-in appliances		N/A
	- other appliances (distance from a wall ≤ 75 mm)		N/A
	- max. temperature rises specified in table 101		P
	- temperatures are not measured for motor-compressors complying with (IEC 60 335-2-34) (IEC 60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
A	However, components in protective electronic circuits are allowed to operate provided they are tested for the number of cycles of operation specified in 24.1.4. (IEC 60335-1:01 + A1:2004)		N/A
A	The temperature of ballast windings and their associated wiring shall not exceed the values specified in 12.4 of IEC 60598-1, when measured under the conditions stated. (IEC 60335-2-24:2002/A1:2005)		N/A
11.101	If the temperatures exceed the limits, the test is carried out again (IEC 60335-2-24:2002) :		
	- winding temperatures at the end of a running cycle not higher than the limits given in table 101		N/A
11.102	Any defrosting system, temperature rises don't exceed the values given in 11.8 (IEC 60335-2-24:2002)	No defrosting system	N/A
	Manual defrosting (IEC 60335-2-24:2002)		N/A
	Automatic defrosting (IEC 60335-2-24:2002)		N/A
11.103	Heating systems, other than defrosting, temperature rises don't exceed the values given in 11.8 (IEC 60335-2-24:2002)		P

13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1.15 times rated power input:		N/A
	Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage:	106 V	P
	Protective impedance and radio interference filters disconnected before carrying out the tests		N/A
	The test of 13.2 does not apply to battery circuit (IEC 60335-2-24:2002)		N/A
13.2	Leakage current measured by means of the circuit described in figure 4 of IEC 60990		P
	Leakage current measurements and limits (IEC 60335-2-24:2002)	(see appended table)	P
13.3	Electric strength tests according to table 4	(see appended table)	P
	No breakdown during the tests		P
	The test voltage for reinforced insulation is applied between separate circuits for battery operation and mains supply operation (IEC 60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
14	TRANSIENT OVERVOLTAGES		
	Appliances withstand the transient overvoltages to which they may be subjected		N/A
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6	(see appended table)	N/A
	No flashover during the test, unless of functional insulation		N/A
	In case of flashover of functional insulation, the appliance complies with clause 19 with the clearance short circuited		N/A

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		P
	No trace of water on insulation which can result in a reduction of clearances and creepage distances below values specified in clause 29		P
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529:	IPX1	P
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N/A
	Built-in appliances installed according to the instructions		N/A
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		P
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		N/A
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N/A
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube		N/A
	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/A
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Detachable parts tested as specified		P
15.2	Spillage of liquid does not affect the electrical insulation		P
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A
	Detachable parts removed		P
	Overfilling test with additional amount of water, over a period of 1 min (l):	0.6 (l)	P
	The appliance withstands the electric strength test of 16.3		P
	No trace of water on insulation that can result in a reduction of clearances and creepage distances below values specified in clause 29		P
	Lamp covers are not removed (IEC 60335-2-24:2002)		N/A
15.3	Appliances proof against humid conditions	93 % R.H., 30 °C	P
	Humidity test for 48 h in a humidity cabinet		P
	The appliance withstands the tests of clause 16		P
15.101	Spillage of liquid from inside does not affect their electrical insulation (IEC 60335-2-24:2002)		P
	The relevant tests of 15.102, 15.103 and 15.104. are carried out (IEC 60335-2-24:2002)		P
15.102	The apparatus shown in figure 101 is filled with water containing 1% NaCl and 0,6% of acid rinsing agent (IEC 60335-2-24:2002)		P
15.103	Appliances, other than built-in appliances, ice-makers and ice-cream appliances, are tilted at an angle of up to 2° (IEC 60335-2-24:2002)		P
	Test with 0,5 l water containing 1% NaCl and 0,6% of acid rinsing agent over the top of the appliance (IEC 60335-2-24:2002)		P
15.104	Ice-makers which are directly connected to the water supply, is filled with water as in normal use. The inlet valve is then held open for 1 min (IEC 60335-2-24:2002)		N/A
15.105	Operation of a defrosting system does not affect the electrical insulation of defrost heating elements (IEC 60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	If the water is in contact with the defrost heating element or its insulation, test of 22.102 is carried out (IEC 60335-2-24:2002)		N/A

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		N/A
	The test of 16.2 does not apply to battery circuits (IEC 60335-2-24:2002)		N/A
16.2	Single-phase appliances: test voltage 1.06 times rated voltage:	106 V	P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by √3:		N/A
	Leakage current measurements	(see appended table)	P
	Limits for class 0I appliances and the various types of class I appliances (IEC 60335-2-24:2002)	(see appended table)	P
16.3	Electric strength tests according to table 7	(see appended table)	P
	No breakdown during the tests		P
	The test voltage specified in Table 7 for reinforced insulation is applied between separate circuits for battery operation and mains supply operation (IEC 60335-2-24:2002)		N/A

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	(see appended table)	N/A
	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/A
	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/A
	Temperature of the winding not exceeding the value specified in table 8,		N/A
	however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
18	ENDURANCE		
	Not applicable		

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
	Subclauses 19.2 and 19.3 do not apply to heating systems (IEC 60335-2-24:2002)		P
	Motor compressors not conforming to IEC 60335-2-34 are subjected to the tests specified in IEC 60335-2-34 19.101, 19.102 and 19.104 (IEC60335-2-24:2002)		P
	Fan motors of ice-cream appliances are not subject to the locked-rotor test specified in Annex (IEC 60335-2-24:2002)		N/A
19.2 A	Controls that operate during the test of Clause 11 are allowed to operate (IEC 60335-1:01 + A1:2004)		
19.3 A	Controls that operate during the test of Clause 11 are allowed to operate (IEC 60335-1:01 + A1:2004)		
19.4	Test conditions as in cl. 11, any control limiting the temperature during tests of cl. 11 short-circuited		P
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the elements sheath		P
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		P
	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/A
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions	No PTC heating elements	N/A
	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/A
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/A
	Locked rotor, motor capacitors open-circuited or short-circuited, if required		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	Locked rotor, capacitors open-circuited one at a time		N/A
	Test repeated with capacitors short-circuited one at a time, if required		N/A
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed		N/A
	Other appliances supplied with rated voltage for a period as specified		N/A
	Winding temperatures not exceeding values specified in table 8	(see appended table)	N/A
	Fan motors of ice-cream appliances are tested for 5 min (IEC 60335-2-24:2002)		N/A
19.8	Three-phase motors operated at rated voltage with one phase disconnected		N/A
	Three-phase motor compressors operated at rated voltage with one phase disconnected, unless complying with IEC 60335-2-34 (IEC 60335-2-24:2002)		N/A
19.9	Not applicable		
19.10	Series motor operated at 1.3 times rated voltage for 1 min:		N/A
	During the test, parts not being ejected from the appliance		N/A
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		P
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		P
	- 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		P
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/A
	b) open circuit at the terminals of any component		P
	c) short circuit of capacitors, unless they comply with IEC 60384-14		P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	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		P
	e) failure of triacs in the diode mode		N/A
	f) failure of an integrated circuit. The possible hazardous situations of the appliance are assessed to ensure that safety does not rely on the correct functioning of such a component		P
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	No protective electronic circuit	N/A
	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/A
	- the appliance complies with the conditions specified in 19.13		N/A
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		N/A
	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		N/A
	- 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/A
	- the appliance withstands the tests of 19.11.2 with open-circuited conductor bridged		N/A
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 IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A):		N/A
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		N/A
	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

IEC/EN 60 335-2-24			
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:		
	- basic insulation:	1000 Va.c.	P
	- supplementary insulation:		N/A
	- reinforced insulation:	2500 Va.c.	P
	Temperature rises not exceeding the values shown in table 7 or 150 °C for housing of motor-compressors (IEC 60335-2-24:2002)		P
19.101	Heating systems dimensioned and located properly and comply with 19.13 during and after the test (IEC 60335-2-24:2002)		P
19.102	Ice-makers and ice-cream appliances so constructed that they do not cause any risk and comply with 19.13 during and after the tests (IEC 60335-2-24:2002)		N/A
19.103	Appliances intended for camping and similar use tested on an inclined support (5°) and comply with 19.13 during and after the test (IEC 60335-2-24:2002)		N/A
19.104	Illuminating equipment shall not cause any fire hazard under abnormal operating conditions (IEC 60335-2-24:2002)		N/A
19.105	Appliances intended for battery operation properly constructed and comply with 19.13 during and after the test (IEC 60335-2-24:2002)		N/A

20	STABILITY AND MECHANICAL HAZARDS		
20.1	Adequate stability		P
	Tilting test through an angle of 10° (appliance placed on an inclined plane/horizontal plane); appliance does not overturn		P
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		P
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		P
	Ice-cream appliances shall have adequate stability (IEC 60335-2-24:2002)		N/A
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		N/A
	Protective enclosures, guards and similar parts are non-detachable		N/A
	Adequate mechanical strength and fixing of protective enclosures		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, by unexpected reclosure		N/A
	Not possible to touch dangerous moving parts with test probe		N/A
20.101	Refrigeration appliances and ice-makers shall have adequate stability. Tests according to 20.102, 20.103 and 20.104 (IEC 60335-2-24:2002)		N/A
	This requirement does not apply to built-in appliances (IEC 60335-2-24:2002)		N/A
20.102	Test with door opened to 90° (IEC60335-2-24:2002 + A1:05)		N/A
	Test with door opened to 180° or to the limit of door stop (IEC60335-2-24:2002 + A1:05)		N/A
20.103	Test with one of the drawers is pulled to the most onerous out position (IEC 60335-2-24:2002)		N/A
	Test with two drawers are pulled to the most onerous out position (IEC 60335-2-24:2002)		N/A
20.104	Test with sliding drawers accessible without opening a door (IEC 60335-2-24:2002)		N/A
	Doors shelves are loaded as specified in 20.102 and opened 90° (IEC 60335-2-24:2002)		N/A

21	MECHANICAL STRENGTH		
	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
	No damage after three blows applied to various parts of the enclosure, impact energy 0,5 ± 0,04 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/A
	Covers of lamps within the appliance are considered likely to be damaged in normal use. Lamps are not tested (IEC 60335-2-24:2002)		N/A
21.101	Appliances for camping or similar use tested against the effects of dropping and vibration as specified (IEC 60335-2-24:2002)		N/A
21.102	Lamps are protected against mechanical shocks (IEC 60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
22	CONSTRUCTION		
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	IPX1	N/A
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		P
	- a switch complying with 24.3		N/A
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided		N/A
	- an appliance inlet		N/A
	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/A
22.3	Appliance provided with pins: no undue strain on socket-outlets		N/A
	Applied torque not exceeding 0.25 Nm		N/A
	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		N/A
	Each pin subjected to a tork of 0.4Nm; the pins are not rotating unless rotating does not impair compliance with the standard		N/A
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		P
22.5	No risk of electric shock when touching the pins of the plug		P
R	The appliance is supplied at rated voltage. Any switch is then placed in the off position and the appliance is disconnected from the supply mains at the instant of voltage peak. One second after disconnection, the voltage between the pins of the plug is measured with an instrument that does not appreciably affect the value to be measured (IEC 60335-1:01 + A1:2004)		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
	Thermostats are not in contact with the evaporator unless they are adequately protected (IEC 60335-2-24:2002)		P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	Fluids don't flow along parts such as stems and tubes of thermostats (IEC 60335-2-24:2002)		P
22.7	Compression-type appliances, including protective enclosures of a protected cooling system, using flammable refrigerants shall withstand (IEC 60335-2-24:2002)		
	- a pressure of 3,5 times the saturated vapour pressure (70 °C)		N/A
	- a pressure of 5 times the saturated vapour pressure (20 °C)		N/A
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		P
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/A
22.10	Location or protection of reset buttons of non-self-resetting controls is so that accidental resetting is unlikely		P
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		N/A
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		N/A
	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		N/A
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		P
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	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		N/A
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/A
	Cord reel tested with 6000 operations, as specified		N/A
	Electric strength test of 16.3, voltage of 1000 V applied		N/A
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		N/A
	Not applicable to refrigeration appliances and ice-makers (IEC 60335-2-24:2002)		
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		N/A
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non-combustible		N/A
	Compliance is checked by inspection and, if necessary, by appropriate test		N/A
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated		P
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
22.24	Bare heating elements adequately supported		N/A
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N/A
22.25	Sagging heating conductors cannot come into contact with accessible metal parts		N/A
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		N/A
22.27	Parts connected by protective impedance separated by double or reinforced insulation		N/A
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water: separated from live parts by double or reinforced insulation		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
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		N/A
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		N/A
22.31 TME	Clearances and creepage distances over supplementary and reinforced insulation not reduced below values specified in clause 29 as result of war		P
TME	Clearances and creeping distances between live parts and accessible parts not reduced below values for supplementary insulation, if wires, screws, etc. become loose		N/A
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/A
	Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation		N/A
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N/A
22.33	Conductive liquids that are or may become accessible in normal use are not in direct contact with live parts		P
	Electrodes not used for heating liquids		N/A
	For class II constructions, conductive liquids that are or may become accessible in normal use, not in direct contact with basic or reinforced insulation		P
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation		N/A
	Heating conductors having only one layer of insulation are not in direct contact with water or ice during normal use (IEC 60335-2-24:2002)		N/A
	NOTE : Frozen water is regarded as a conducting liquid (IEC 60335-2-24:2002)		P
22.34	Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed		P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
22.35	Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of an insulation fault		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/A
	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/A
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/A
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42		N/A
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		N/A
22.38	Capacitors not connected between the contacts of a thermal cut-out		P
22.39	Lamp holders used only for the connection of lamps		N/A
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/A
22.41	No components, other than lamps, containing mercury		P
22.42	Protective impedance consisting of at least two separate components		N/A
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N/A
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N/A
22.44	Appliances are not allowed to have an enclosure that is shaped and decorated so that the appliance is likely to be treated as a toy by children		P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
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
22.101	Lampholders properly fixed (IEC 60335-2-24:2002)		N/A
	NOTE: Normal use includes replacement of lamps (IEC 60335-2-24:2002)		N/A
	Test with torque of (IEC 60335-2-24:2002) :		N/A
22.102	Insulated wire heaters and their joints protected against entry of water (IEC 60335-2-24:2002)		N/A
	3 heating elements: 24 h immersion in water with 1% NaCl; electric strength test between heating conductor and water (1250 V 15 min) (IEC 60335-2-24:2002)		N/A
22.103	Ice-makers and appliances incorporating ice-makers withstand the water pressure as specified (IEC 60335-2-24:2002)		N/A
22.104	Appliances with two or more temperature control devices controlling the same motor-compressor don't cause undue operation of the thermal motor-protector (IEC 60335-2-24:2002)		N/A
	The test is carried out separately with each combination of control devices (IEC 60335-2-24:2002)		N/A
22.105	Appliances which can also be battery operated, the battery circuit is insulated from live parts by double insulation or reinforced insulation (IEC 60335-2-24:2002)		N/A
	It is not possible to touch live parts when making the connections to the battery (IEC 60335-2-24:2002)		N/A
	Specified for double insulation or reinforced insulation (IEC 60335-2-24:2002)		N/A
22.106	The mass of refrigerant (flammable refrigerant) shall not exceed 150g (IEC 60335-2-24:2002)	No flammable refrigerant used	N/A
22.107	Compression-type appliances with a protected cooling system and which use flammable refrigerants shall be constructed to avoid any fire or explosion hazard, in the event of leakage of the cooling system (IEC 60335-2-24:2002)	No flammable refrigerant used	N/A
22.107.1	A leakage is simulated at the most critical point of the cooling system (method as specified) (IEC60335-2-24:2002 + A1:05)		N/A
	The measured value shall not exceed 75% LEL of the refrigerant (table 102) and shall not exceed 50% LEL for a period exceeding 5 min. (IEC 60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
22.107.2	All accessible surfaces of protected cooling system components, are scratched using the tool whose tip is shown in figure 102 (IEC 60335-2-24:2002)		N/A
	The tool is applied using the following parameters (IEC 60335-2-24:2002) :		
	- force at right angles to the surface to be tested 35 N ± 3 N		N/A
	- force parallel to the surface to be tested 250 N		N/A
	The appropriate part shall withstand the test of 22.7 reduced by 50% (IEC 60335-2-24:2002)		N/A
22.108	Compression-type appliances with unprotected cooling systems and which use flammable refrigerants, any electrical apparatus other than non-self resetting protective devices, shall be tested and found to comply with the requirements in Annex CC for group IIA gases or the refrigerant used (IEC60335-2-24:2002)		N/A
	Refrigerant leakage into food storage shall not result in an explosive atmosphere outside the food storage compartment in areas where electrical apparatus are mounted, except in those areas which contain only non-self resetting protective devices, necessary for compliance with the requirements in Annex CC for group IIA gases or the refrigerant used (IEC60335-2-24:2002)		N/A
	The measured value shall not exceed 75% LEL of the refrigerant (table 102) and shall not exceed 50% LEL for a period exceeding 5 min (IEC60335-2-24:2002)		N/A
22.109	Compression-type appliance which use flammable refrigerants shall be constructed so that leaked refrigerant will not stagnate so as to cause a fire hazard in areas outside the food storage compartments where the appliance's electrical components, other than non-self-resetting protective devices necessary for compliance with clause 19, are fitted (IEC60335-2-24:2002)		N/A
	Unless the electrical components comply least with the requirements in Annex CC for group IIA gases or the refrigerant used (IEC60335-2-24:2002)		N/A
	Test: A quantity equal to 50% ± 1,5g of the refrigerant charge is injected into the considered area (IEC 60335-2-24:2002)		N/A
	The measured value shall not exceed 75% LEL of the refrigerant (table 102) and shall not exceed 50% LEL for a period exceeding 5 min (IEC60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
22.110	Temperatures on surfaces be exposed to leakage of flammable refrigerants shall not exceed the ignition temperature (table 102) reduced by 100 K (IEC 60335-2-24:2002)		N/A
22.111	Doors and lids of compartments in appliances with a free space shall be capable of being opened from the inside (IEC 60335-2-24:2002)		N/A
	The door shall open before the force exceeds 70 N (IEC 60335-2-24:2002)		N/A
22.112	Drawers which are only accessible after openings a door or lid shall not contain a free space (IEC 60335-2-24:2002)		N/A
22.113	Drawers which are accessible with out opening a door and which contain a free space shall have an opening in their rear wall and be capable of being opened from the inside (IEC 60335-2-24:2002)		N/A
	The drawers shall open before the force exceeds 70 N (IEC 60335-2-24:2002)		N/A
22.114	Appliances for household use which contain compartments with a free space any door or drawer shall not be fitted with a self-latching lock (IEC 60335-2-24:2002)		N/A
	Key operated locks shall require two independent movements to actuate the lock or be of a type that automatically ejects the key when unlocked (IEC 60335-2-24:2002)		N/A
22.115	The fixing means for fixed appliances shall have adequate mechanical strength (IEC 60335-2-24:2002)		N/A

23	INTERNAL WIRING		
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		P
	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/A
	Beads inside flexible metal conduits contained within an insulating sleeve		N/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	Flexible metallic tubes not causing damage to insulation of conductors		N/A
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N/A
	No damage after 10 000 flexings for conductors flexed during normal use or 100 flexings for conductors flexed during user maintenance		N/A
	Electric strength test, 1000 V between live parts and accessible metal parts		N/A
	Open-coil springs not used. NOTE : It does not apply to external conductors (IEC 60335-2-24:2002)		N/A
23.4	Bare internal wiring sufficiently rigid and fixed		N/A
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/A
23.7	The colour combination green/yellow used only for earthing conductors		P
23.8	Aluminium wires not used for internal wiring		P
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless		P
	clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		N/A

24	COMPONENTS		
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components	(see appendix components)	P
	Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.6		P
	Components not tested and found to comply with relevant IEC standard, components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		P
	Motor-compressors are not required to be separately tested according to (IEC 60 335-2-34) nor are they required to meet the requirements of (IEC 60 335-2-34) if they meet the requirements of this standard (IEC 60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, complying with IEC 60384-14, or		N/A
	tested according to annex F		N/A
24.1.2	Safety isolating transformers complying with IEC 61558-2-6, or		N/A
	tested according to annex G		N/A
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000, or		N/A
	tested according to annex H		N/A
	The number of operations for other switches (IEC 60335-2-24:2002) :		
	- quick-freeze switches:	300	N/A
	- manual and semi-automatic defrost switches	300	N/A
	- door switches	50 000	N/A
	- on/off switches	300	N/A
24.1.4	Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being:		
	- thermostats:	10 000	N/A
	- temperature limiters:	1 000	N/A
	- self-resetting thermal cut-outs:	300	N/A
	- non-self-resetting thermal cut-outs:	30	N/A
	- timers:	3 000	N/A
	- energy regulators:	10 000	N/A
	- thermostats which control the motor-compressor: (IEC 60335-2-24:2002)	100'000	N/A
	- self-resetting thermal cut-outs which may influence the test results of 19.101 and which are not short-circuited during this test: (IEC 60335-2-24:2002)	100'000	N/A
	- motor-compressor starting relays: (IEC 60335-2-24:2002)	100'000	N/A
	- automatic thermal motor-protectors for motor-compressors of the hermetic and semi-hermetic type: minimum 2000, but not less than the number of operations during the locked-rotor test (IEC 60335-2-24:2002)		N/A
	- manual reset thermal motor-protectors for motor-compressors of the hermetic and semi-hermetic type: 50 (IEC 60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	- other automatic thermal motor-protectors: (IEC 60335-2-24:2002)	2000	N/A
	- other manual test thermal motor protectors: (IEC 60335-2-24:2002)	30	N/A
24.1.5	Appliance couplers complying with IEC 60320-1		N/A
	However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N/A
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		N/A
24.2	No switches or automatic controls in flexible cords		P
	No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	No thermal cut-outs that can be reset by soldering		P
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/A
	Appliances for camping or similar use (IEC 60335-2-24:2002) :		
	Voltage selection switches used in appliances for camping or similar use shall have a contact separation in all poles that provide full disconnection from the supply under overvoltage category III conditions (IEC 60335-2-24:2002)		N/A
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N/A
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly		N/A
	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/A
	For starting capacitors, the voltage across the capacitors shall not exceed 1,3 times the rated voltage of the capacitor at $1.1xU_n$ (IEC 60335-2-24:2002)		N/A
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/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	In addition, the motors are complying with the requirements of Annex I		N/A
24.101	Lampholders shall be of the insulated type (IEC 60335-2-24:2002)		N/A

25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		
	Motor-compressors with facilities for connecting a supply cord, complying with the appropriate requirements of IEC 60 335-2-34 are not subjects to the following tests (IEC 60335-2-24:2002)		N/A
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		
	- supply cord fitted with a plug		P
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance		N/A
	- pins for insertion into socket-outlets		N/A
25.2	Appliance not provided with more than one means of connection to the supply mains		P
	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/A
	Mains-operated appliances provided with not more than one means of connection to the supply unless (IEC 60335-2-24:2002)		N/A
	- the appliance consists of two or more completely independent units built together in one enclosure (IEC 60335-2-24:2002)		N/A
	- the relevant circuits are adequately insulated from each other (IEC 60335-2-24:2002)		N/A
	Appliances which can be both mains and battery operated shall be provided with a separate means for connection (IEC 60335-2-24:2002)		N/A
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/A
	Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.6		N/A
	Appliance provided with a set of terminals allowing the connection of a flexible cord		N/A
	Appliance provided with a set of supply leads accommodated in a suitable compartment		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	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/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 10		N/A
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29		N/A
25.5	Method for assemble supply cord with the appliance:		
	- type X attachment		N/A
	- type Y attachment		P
	- type Z attachment, if allowed in part 2		N/A
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A
25.6	Plugs fitted with only one flexible cord		P
25.7	Supply cord not lighter than:		
	- braided cord (60245 IEC 51)		N/A
	- ordinary tough rubber sheathed cord (60245 IEC 53)		N/A
	- flat twin tinsel cord (60227 IEC 41)		N/A
	- ordinary polyvinyl chloride sheathed cord (60227 IEC 53), appliance exceeding 3 kg		P
	Temperature rise of external metal parts exceeding 75 K, PVC cord not used, unless		N/A
	appliance so constructed that the supply cord is not likely to touch external metal parts in normal use, or		N/A
	the supply cord is appropriate for higher temperatures, type Y or type Z attachment used		N/A
	Appliance supply cord other then SELV power supply not lighter than (IEC 60335-2-24:2002) :		
	- light polyvinyl chloride sheathed cord (code designation 60227 IEC 52)		N/A
25.8	Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area (mm²):	0.75 mm²	P
25.9	Supply cord not in contact with sharp points or edges		P
25.10	Green/yellow core for earthing purposes in Class I appliance		P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
25.11	Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless		P
	clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder		N/A
25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		P
25.13	Inlet opening so shaped as to prevent damage to the supply cord		P
	Unless the enclosure at the inlet opening is of insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		N/A
	If unsheathed supply cord, a similar additional bushing or lining is required, unless		N/A
	the appliance is class 0		N/A
	Does not apply to flexible leads used to connected an appliance to a SELV power supply (IEC 60335-2-24:2002)		N/A
25.14	Supply cords adequately protected against excessive flexing		N/A
	Flexing test:		
	- applied force (N):		N/A
	- number of flexings:		N/A
	The test does not result in:		
	- short circuit between the conductors		N/A
	- breakage of more than 10% of the strands of any conductor		N/A
	- separation of the conductor from its terminal		N/A
	- loosening of any cord guard		N/A
	- damage, within the meaning of the standard, to the cord or the cord guard		N/A
	- broken strands piercing the insulation and becoming accessible		N/A
25.15	Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		P
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		P
	Pull and torque test of supply cord, values shown in table 10: pull (N); torque (not on automatic cord reel) (Nm) :	100 N; 0.35 Nm	P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	Max. 2 mm displacement of the cord, and conductors not moved more than 1 mm in the terminals		P
	Creepage distances and clearances not reduced below values specified in 29.1		P
25.16	Cord anchorages for type X attachments constructed and located so that:		
	- replacement of the cord is easily possible		N/A
	- it is clear how the relief from strain and the prevention of twisting are obtained		N/A
	- they are suitable for different types of cord		N/A
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from accessible metal parts by supplementary insulation		N/A
	- the cord is not clamped by a metal screw which bears directly on the cord		N/A
	- at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord		N/A
	- screws which have to be operated when replacing the cord do not fix any other component, if applicable		N/A
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N/A
	- 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/A
	- for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation		N/A
25.17	Adequate cord anchorages for type Y and Z attachment		P
25.18	Cord anchorages only accessible with the aid of a tool, or		N/A
	so constructed that the cord can only be fitted with the aid of a tool		P
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N/A
	Tying the cord into a knot or tying the cord with string not used		N/A
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
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 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.		N/A
	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/A
25.22	Appliance inlet:		
	- live parts not accessible during insertion or removal		N/A
	- connector can be inserted without difficulty		N/A
	- the appliance is not supported by the connector		N/A
	- 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/A
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified		N/A
	If necessary, electric strength test of 16.3		N/A
	Interconnection cord for battery operated appliances (IEC 60335-2-24:2002)		N/A
25.24	Interconnection cords not detachable without the aid of a tool if compliance with the standard is impaired when they are disconnected		N/A
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 IEC 60083		N/A
25.101	Appliances which can be battery operated shall have suitable means for connection of the battery (IEC 60335-2-24:2002)		N/A

26	TERMINALS FOR EXTERNAL CONDUCTORS		
	This clause of part 1 is not applicable to those parts of motor-compressors with facilities for connecting a supply cord and complying with IEC 60 335-2-34 (IEC 60335-2-24:2002)		P
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		P
	Terminals only accessible after removal of a non-detachable cover		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
26.2	Appliances with type X attachment and appliances for connection to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless the connections are soldered		N/A
	Screws and nuts serve only to clamp supply conductors, except		N/A
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N/A
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone		N/A
	Soldering alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free at the soldered joint		N/A
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/A
	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/A
	- internal wiring is not subjected to stress		N/A
	- clearances and creepage distances are not reduced below the values in 29		N/A
	Compliance checked by inspection and by the test of subclause 8.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm):		N/A
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/A
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 parts that result in a hazard		N/A
	Stranded conductor test, 8 mm insulation removed		N/A
	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/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
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 (mm²):		N/A
	Terminals only suitable for a specially prepared cord		N/A
26.7	Terminals for type X attachment accessible after removal of a cover or part of the enclosure		N/A
26.8	Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other		N/A
26.9	Terminals of the pillar type constructed and located as specified		N/A
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/A
	Pull test of 5 N to the connection		N/A
26.11	For type Y and Z attachment: soldered, welded, crimped and similar connections may be used		N/A
	For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N/A
	For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free		N/A
	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection between live parts and accessible metal parts, between battery supply terminals if any (IEC 60335-2-24:2002)		N/A

27	PROVISION FOR EARTHING		
	Compliance is not checked on parts related to motor-compressors if the motor-compressor complies with IEC 60 335-2-34 (IEC 60335-2-24:2002)		N/A
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		P
	Earthing terminals not connected to neutral terminal		P
	Class 0, II and III appliance have no provision for earthing		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits		N/A
27.2	Clamping means adequately secured against accidental loosening		P
	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm², and		N/A
	do not provide earthing continuity between different parts of the appliance		N/A
	Conductors cannot be loosened without the aid of a tool		P
27.3	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		P
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal		P
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		P
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 µm		P
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		P
	In case of aluminium alloys precautions taken to avoid risk of corrosion		N/A
27.5	Low resistance of connection between earthing terminal and earthed metal parts		P
	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/A
	Resistance not exceeding 0,1 Ω at the specified low-resistance test	0.01 Ω, 25 A	P
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand held appliances		N/A
	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/A
	- the material of the printed circuit board complies with IEC 60249-2-4 or IEC 60249-2-5		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
28	SCREWS AND CONNECTIONS		
	Compliance is not checked on parts related to motor-compressors if the motor-compressor complies with IEC 60 335-2-34 (IEC 60335-2-24:2002)		N/A
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		N/A
	Diameter of screws of insulating material min. 3 mm		N/A
	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		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N/A
	Type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		N/A
	For screws and nuts; test as specified	(see appended table)	P
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated		P
	This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0.5A		N/A
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N/A
	Thread-cutting (self-tapping) screws only used for electrical connections if they generate a full form standard machine screw thread		N/A
	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/A
	Thread-cutting and space-threaded screws may be used in connections providing earthing continuity, provided unnecessary to disturb the connection and at least two screws are used for each connection		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		P
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion		N/A

29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		
	Compliance is not checked on parts related to motor-compressors if the motor-compressor complies with IEC 60 335-2-34 (IEC 60335-2-24:2002)		N/A
	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/A
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	(see appended table)	P
	The values specified may be smaller for basic insulation and functional insulation if the clearance meets the impulse voltage test of clause 14		N/A
	Appliances are in overvoltage category II		P
	Clearances less than specified in table 16 not allowed for basic insulation of class 0 and class 0I appliances,		N/A
	or if pollution degree 3 is applicable		N/A
	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 1 mm if the microenvironment is pollution degree 1		N/A
	Lacuered conductors of windings assumed to be bare conductors, but the clearances specified in table 16 are reduced by 0.5 mm for rated impulse voltages of at least 1500 V		N/A
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		P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
29.1.4	For functional insulation, the values of table 16 are applicable, unless		P
	the appliance complies with clause 19 with the functional insulation short-circuited		N/A
	Clearances at crossover points of lacquered conductors not measured		P
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N/A
	Lacquered conductors of windings assumed to be bare conductors, but the clearances specified in table 16 are reduced by 0.5mm for rated impulse voltages of at least 1500V		N/A
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/A
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N/A
	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/A
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/A
	insulation subjected to conductive pollution; pollution degree 3		N/A
	Compliance is checked by inspection and measurements as specified		P
	Insulation in refrigeration appliances and ice-makers is in pollution degree 3 and shall have a CTI value of 250 unless the insulation to be protected to pollution by condensation (IEC 60335-2-24:2002)		P
29.2.1	Creepage distances of basic insulation not less than specified in table 17	(see appended table)	P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	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/A
29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17		P
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17		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/A
29.3	Solid insulation having a minimum thickenss of 1 mm for supplementary insulation,		N/A
	And 2 mm for reinforced insulation		P
	This requirement does not apply if the supplementary insulation, other than mica or similar scaly material, consists of at least two layers, each of the layers withstands the electric strength test of 16.3		N/A
	This requirement does not apply if the reinforced insulation, other than mica or similar scaly material, consists of at least three layers, any two layers together withstands the electric strength test of 16.3		N/A
	This requirement also does not apply to inaccessible insulation and does not exceed the maximum permissible temperature values, or		N/A
	If the insulation, after conditioning as specified, withstands the electric strength test of 16.3		N/A

30	RESISTANCE TO HEAT AND FIRE		
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		P
	thermoplastic material providing supplementary or reinforced insulation,		P
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2	(see appended table)	P
	External parts: at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C):	(see appended table)	P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	Parts supporting live parts: at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125°C, whichever is the higher; temperature (°C):	(see appended table)	P
	Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C):		N/A
	Relevant external parts of non-metallic material also within the storage compartment parts (IEC 60335-2-24:2002)		N/A
	Accessible parts within the storage compartment 65 °C (IEC 60335-2-24:2002)		N/A
	Following tests do not apply to parts related to the motor-compressor if the motor-compressor complies with IEC 60 335-2-34 (IEC 60335-2-24:2002)		N/A
30.2	Relevant parts of non-metallic material adequately resistant to ignition and spread of fire	(see appended table)	P
	Following tests do not apply to parts related to the motor-compressor if the motor-compressor complies with IEC 60 335-2-34 with no ignition (IEC 60335-2-24:2002)		N/A
30.2.1	Glow-wire test of IEC 60695-2-11 at 550 °C, unless		P
	the material is classified at least HB40 according to IEC 60695-11-10		N/A
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category FH3 material		N/A
30.2.2	Appliances operated while attended, parts of insulating material supporting current-carrying connections and parts within a distance of 3 mm subjected to the glow-wire test of IEC 60695-2-11 at a temperature of:		
	-750 °C, for connections carrying a current exceeding 0,5 A during normal operation		N/A
	-650 °C, for other connections		N/A
	Test not applicable to conditions as specified		N/A
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	Test not applicable to conditions as specified		N/A
30.2.3.1	Parts of insulating material supporting connections carrying a current exceeding 0.2A during normal operation, and		P
	parts of insulating material within a distance of 3mm,		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	having a glow-wire flammability index of at least 850°C according to IEC 60695-2-12		N/A
30.2.3.2	Parts of insulating material supporting current-carrying connections, and		P
	parts of insulating material within a distance of 3mm,		N/A
	subjected to glow-wire test of IEC 60695-2-11		P
	Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 as specified		N/A
	Glow-wire test of IEC 60695-2-11, the temperature being:		
	-750°C, for connections carrying a current exceeding 0,2A during normal operation		P
	-650°C, for other connections		N/A
	Parts that during the test produce a flame persisting longer than 2 s, tested as specified		N/A
	If a flame persists longer than 2 s during the test, parts above the connection, as specified, subjected to the needle-flame test of annex E, unless		N/A
	the material is classified as V-0 or V-1 according to IEC 60695-11-10		N/A
30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E		P
	Test not applicable to conditions as specified		N/A

31	RESISTANCE TO RUSTING		
	Relevant ferrous parts adequately protected against rusting		P

32	RADIATION, TOXICITY AND SIMILAR HAZARDS		
	Appliance does not emit harmful radiation		P
	Appliance does not present a toxic or similar hazard		P

A	ANNEX A (INFORMATIVE) ROUTINE TESTS		
	Description of routine tests to be carried out by the manufacturer		P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
AA	ANNEX AA, (NORMATIVE) LOCKED-ROTOR TEST OF FAN MOTORS (IEC 60335-2-24:2002)		
	The winding of a fan motor does not reach excessive temperatures if the motor locks or fails to start		N/A
	The motor is supplied at rated voltage according to supply circuit fig. AA.1.		N/A

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/A
	This annex does not apply to battery chargers		N/A
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/A
	-the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N/A
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N/A
	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/A
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N/A
5.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N/A
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N/A
7.12	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information		N/A
	Details about how to remove batteries containing materials hazardous to the environment given		N/A
7.15	Markings placed on the part of the appliance connected to the supply mains		N/A
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/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	If the appliance can be operated without batteries, double or reinforced insulation required		N/A
11.7	The battery is charged for the period described		N/A
19.1	Appliances subjected to tests of 19.101, 19.102 and 19.103		N/A
19.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N/A
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/A
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/A
21.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IEC 68-2-32		N/A
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-32, the number of falls being:		
	- 100, the mass of part does not exceed 250 g		N/A
	- 50, the mass of part exceeds 250 g		N/A
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N/A
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N/A
25.13	An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage		N/A
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N/A
	For other parts, 30.2.2 applies		N/A

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/A
	This annex does not apply to motor-compressors (IEC 60335-2-24:2002)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
CC	ANNEX CC (NORMATIVE) NON-SPARKING “N” ELECTRICAL APPARATUS		
	Where reference is made to IEC 60079-15, the following clauses are applicable as modified below (IEC 60335-2-24:2002/A1:2005)		
21	Supplementary requirements for non-sparking luminaires (IEC 60335-2-24:2002/A1:2005)		
	All of subclauses of Clause 21 are applicable, except 21.2.5.1, 21.2.5.5, 21.2.7, 21.2.8, 21.2.9, 21.2.10, 21.2.11, 21.2.12 and 21.3 (IEC 60335-2-24:2002/A1:2005)		N/A
29	Supplementary requirements for sealed devices or encapsulated devices producing arcs, sparks or hot surfaces (IEC 60335-2-24:2002/A1:2005)		
	All of the subclauses of Clause 29 are applicable, except 29.1 and 29.8, which are replaced by the following (IEC 60335-2-24:2002/A1:2005)		N/A
29.1	Non metallic materials (IEC 60335-2-24:2002/A1:2005)		
	Seals are tested using 33.5. However if the device is tested in the appliance, then 33.5.1 and 33.5.1 are not applicable. (IEC 60335-2-24:2002/A1:2005)		N/A
	However, after the tests of Clause 19 in IEC 60335-2-24, by inspection, no damage of the encapsulation that could impair the type of protection shall be evident, such as cracks in the resin or exposure of encapsulated parts (IEC 60335-2-24:2002/A1:2005)		N/A
29.8	Type tests (IEC 60335-2-24:2002/A1:2005)		
	The type tests described in 33.5 shall be performed where relevant (IEC 60335-2-24:2002/A1:2005)		N/A
30	Supplementary requirements for energy-limited apparatus and circuits producing arcs, sparks or hot surfaces (IEC 60335-2-24:2002/A1:2005)		
	All of the subclauses of Clause 30 are applicable, except 30.5, 30.6 and 30.10		N/A
31	Supplementary requirements for restricted-breathing enclosures protecting apparatus producing arcs, sparks or hot surfaces (IEC 60335-2-24:2002/A1:2005)		
	All of the subclauses of Clause 31 are applicable, except 31.6 which is replaced by the following		N/A
31.6	Restricted-breathing enclosures shall be type tested, including the cable entry devices (IEC 60335-2-24:2002/A1:2005)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
D	ANNEX D (NORMATIVE) ALTERNATIVE REQUIREMENTS FOR PROTECTED MOTORS		
	Applicable to protected motors for unattended use, test of 19.7 carried out on a separate sample according to the specification		N/A
	This annex does not apply to motor-compressors or condenser fan motors (IEC 60335-2-24:2002)		N/A
	This annex is applicable to appliances having motors that incorporate thermal motor protectors (IEC 60335-1:01 + A1:2004).		N/A
	The appliance is supplied at rated voltage with the rotor of the motor locked. (IEC 60335-1:01 + A1:2004)		N/A
	The duration of the test is as follows: (IEC 60335-1:01 + A1:2004)		
	- motors having self-resetting thermal motor protectors are operated for 300 cycles or for 72 h, whichever occurs first, unless they are likely to be permanently subjected to the supply voltage in which case the duration is 432 h; (IEC 60335-1:01 + A1:2004)		N/A
	- motors having non-self-resetting thermal motor protectors are operated for 30 cycles, the thermal motor protector being reset as soon as possible after each operation, but in not less than 30 s; (IEC 60335-1:01 + A1:2004)		N/A
	During the test, temperatures shall not exceed the values specified in 19.7 and the appliance shall comply with 19.13 (IEC 60335-1:01 + A1:2004)		N/A
	NOTE This test may be carried out on a separate appliance. (IEC 60335-1:01 + A1:2004)		
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		
	Needle-flame test carried out in accordance with IEC 60695-2-2, with the following modifications:		P
5	Severities		
	The duration of application of the test flame is 30 s ± 1 s		N/A
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		P
8.4	The first paragraph does not apply		P
	If possible, the flame is applied at least 10 mm from a corner		P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
8.5	The test is carried out on one specimen		P
	If the specimen does not withstand the test, the test may be repeated on two further specimens, both withstanding the test		N/A
10	Evaluation of test results		
	The duration of burning not exceeding 30 s		N/A
	However, for printed circuit boards, the duration of burning not exceeding 15 s		P

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 IEC 60384-14, with the following modifications:		-
1.5	Terminology		
1.5.3	Class X capacitors tested according to subclass X2		N/A
1.5.4	This subclause is applicable		N/A
1.6	Marking		
	Items a) and b) are applicable		N/A
3.4	Approval testing		
3.4.3.2	Table II is applicable as described		N/A
4.1	Visual examination and check of dimensions		
	This subclause is applicable		N/A
4.2	Electrical tests		
4.2.1	This subclause is applicable		N/A
4.2.5	This subclause is applicable		N/A
4.2.5.2	Only table IX is applicable		N/A
	Values for test A apply		N/A
	However, for capacitors in heating appliances the values for test B or C apply		N/A
4.12	Damp heat, steady state		
	This subclause is applicable		N/A
	Only insulation resistance and voltage proof are checked		N/A
4.13	Impulse voltage		
	This subclause is applicable		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
4.14	Endurance		
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable		N/A
4.14.7	Only insulation resistance and voltage proof are checked		N/A
	Visual examination, no visible damage		N/A
4.17	Passive flammability test		
	This subclause is applicable		N/A
4.18	Active flammability test		
	This subclause is applicable		N/A

G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		
	The following modifications to this standard are applicable for safety isolating transformers:		N/A
7	Marking and instructions		
7.1	Transformers for specific use marked with:		
	-name, trademark or identification mark of the manufacturer or responsible vendor		N/A
	-model or type reference		N/A
17	Overload protection of transformers and associated circuits		
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N/A
22	Construction		
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N/A
29	Clearances, creepage distances and solid insulation		
29.1 and 29.2	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		N/A

H	ANNEX H (NORMATIVE) SWITCHES		
	Switches comply with the following clauses of IEC 61058-1, as modified:		
	-The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N/A
	-Before being tested, switches are operated 20 times without load		N/A
8	Marking and documentation		
	Switches are not required to be marked		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	However, switches that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N/A
13	Mechanism		
	The tests may be carried out on a separate sample		N/A
15	Insulation resistance and dielectric strength		
15.1	Not applicable		N/A
15.2	Not applicable		N/A
15.3	Applicable for full disconnection and micro-disconnection		N/A
17	Endurance		
	Compliance is checked on three separate appliances or switches		N/A
	For 17.2.4.4, the number of cycles is 10 000, unless otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335		N/A
	Switches for operation under no load and which can be operated only by a tool and switches operated by hand that are interlocked so that they cannot be operated under load, are not subjected to the tests		N/A
	Subclause 17.2.5.2 is not applicable		N/A
	Temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1		N/A
	Subclauses 17.2.2 and 17.2.5.2 are not applicable. The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1, as specified in footnote b of Table 3. (IEC 60335-1:01 + A1:2004)		N/A
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/A

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/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
8	Protection against access to live parts		
8.1	Metal parts of the motor are considered to be bare live parts		N/A
11	Heating		
11.3	Temperature rise of the body of the motor is determined instead of the temperature rise of the windings		N/A
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/A
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/A
19	Abnormal operation		
19.1	The tests of 19.7 to 19.9 not carried out		N/A
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/A
	- short circuit of each diode of the rectifier		N/A
	- open circuit of the supply to the motor		N/A
	- open circuit of any parallel resistor, the motor being in operation		N/A
	Only one fault simulated at a time, the tests carried out consecutively		N/A
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/A
	Compliance checked by the tests specified for double and reinforced insulation		N/A

J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
K	ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES		
	The information on overvoltage categories is extracted from IEC 60664-1		P
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 IEC 60664-1		P
N	ANNEX N (NORMATIVE) PROOF TRACKING TEST		
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		P
5	Test apparatus		
5.1	Electrodes		
	The note does not apply		N/A
5.4	Test solutions		
	Test solution A is used		P
6	Procedure		
6.3	Proof tracking test		
	Voltage is 100V, 175V, 400V or 600V:		P
	Note 3 of clause 3 applies		P
	The test is carried out on five specimens		P
	In case of doubt, additional test with voltage reduced by 25V, the number of drops increased to 100		N/A
7	Report		
	The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		P
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications: (IEC 60335-1:01 + A1:2004)		P

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
	Test apparatus (IEC 60335-1:01 + A1:2004)		
7.3	Test solutions (IEC 60335-1:01 + A1:2004)		
	Test solution A is used (IEC 60335-1:01 + A1:2004)		P
10	Determination of proof tracking index (PTI) (IEC 60335-1:01 + A1:2004)		
10.1	The last paragraph of Clause 3 applies (IEC 60335-1:01 + A1:2004)		P
	The test is carried out on five specimens (IEC 60335-1:01 + A1:2004)		P
	In case of doubt, a material is considered to have a PTI of the specified value if it withstands the test at a voltage equal to the proof voltage reduced by 25 V, the number of drops being increased to 100. (IEC 60335-1:01 + A1:2004)		N/A
10.2	The report shall state if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V (IEC 60335-1:01 + A1:2004)		P

O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		
	Description of tests for determination of resistance to heat and fire		P

P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES		
	The following modifications to this standard are applicable for class 0 appliances and class OI appliances having a rated voltage exceeding 150 V, that are intended to be used in countries having a warm damp equable climate and that are marked WDaE. (IEC 60335-1:01 + A1:2004)		N/A
	NOTE Warm damp equable climates are characterized by high humidity and high ambient temperatures with little variation, as specified in IEC 60721-2-1. (IEC 60335-1:01 + A1:2004)		
	They may also be applied to class I appliances having a rated voltage exceeding 150 V that are intended to be used in countries having a warm damp equable climate and that are marked WDaE, if they are able to be connected to a supply mains that excludes the protective earthing conductor due to deficiencies in the fixed wiring system. (IEC 60335-1:01 + A1:2004)		
5.7	The ambient temperature for the tests of Clauses 11 and 13 is 40 +3/0 (IEC 60335-1:01 + A1:2004)		
7.1	The appliance marked with the letters WdaE (IEC 60335-1:01 + A1:2004)		

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
7.12	The instructions shall state that the appliance is to be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA. (IEC 60335-1:01 + A1:2004)		
	The instructions shall state the substance of the following: (IEC 60335-1:01 + A1:2004)		
11.8	The values of Table 3 are reduced by 15 K (IEC 60335-1:01 + A1:2004)		N/A
13.2	The leakage current for class I appliances not exceeding 0,5 mA (IEC 60335-1:01 + A1:2004)		N/A
15.3	The value of t is 37 °C (IEC 60335-1:01 + A1:2004)		N/A
16.2	The leakage current for class I appliances not exceeding 0,5 mA (IEC 60335-1:01 + A1:2004)		N/A
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3 (IEC 60335-1:01 + A1:2004)		N/A

R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION		
	Software evaluated in accordance with the following clauses of Annex H of IEC 60730-1, as modified (IEC 60335-1:01 + A1:2004)		
H.2	Definitions		
	Only definitions H.2.16 to H.2.20 applicable (IEC 60335-1:01 + A1:2004)		N/A
H.7	Information		
	Only footnotes 12) to 18) of Table 7.2, as modified, applicable (IEC 60335-1:01 + A1:2004)		N/A
H.11.12	Controls using software		
	All of the subclauses of H.11.12 as modified below are applicable, except subclauses H.11.12.6 and H.11.12.6.1 which are not applicable. (IEC 60335-1:01 + A1:2004)		N/A
	In the second paragraph, replace "required in items 66 to 72 inclusive" by "referred to in footnotes 12) to 18) inclusive". (IEC 60335-1:01 + A1:2004)		N/A
H.11.12.7	*Delete "and identified in table 7.2, requirement 68* (IEC 60335-1:01 + A1:2004)		
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 in Table H. 11.12.7-1. (IEC 60335-1:01 + A1:2004)		N/A

IEC/EN 60 335-2-24			
Clause	Requirement – Test	Result – Remark	Verdict
H.11.12.8	Software fault/error detection shall occur before compliance with 19.13 of IEC 60335-1 is impaired. (IEC 60335-1:01 + A1:2004)		N/A
H.11.12.8.1F	*Replace* "result in the response declared in table 7.2, requirement 72" *by* "occur before compliance with 19.13 of IEC 60335-1 is impaired". (IEC 60335-1:01 + A1:2004)		
H.11.12.13	The software and safety related hardware under its control shall initialize and terminate before compliance with 19.13 of IEC 60335-1 is impaired. (IEC 60335-1:01 + A1:2004)		N/A

IEC/EN 60 335-2-24						
Remarks						
10.1	TABLE: Power input deviation					P
Input deviation of/at:		P rated (W)	P measured (W)	dP	Required dP	Remark
100 V		430	435	+ 1.1 %	- 10 %, + 5 %	Heater output, Main frequency= 50Hz
100 V		430	436	+ 1.3 %	- 10 %, + 5 %	Heater output, Main frequency= 60Hz

10.2	TABLE: Current deviation					P
Current deviation of/at:		I rated (A)	I measured (A)	dI	Required dI	Remark
100 V		2.1	2.15	+ 2.4 %	+ 15 %	Compressor output, Main frequency= 50Hz
100 V		2.1	1.89	- 10.0 %	+ 15 %	Compressor output, Main frequency= 60Hz

11.8	TABLE: Heating test, thermocouples		P
	Ambient, t1 (°C) :	24.6	-
	Ambient, t2 (°C) :	32.3	-
	test voltage (V) :	106	-

Thermocouple locations	dT (K)	required dT (K)
Power cord sheath	7.2	35
Power cord internal wire	10.2	50
AC connector surface	13.6	Cl. 30.1
Fuse-holder surface	16.5	Cl. 30.1
Compressor top	42.0	150 °C
Compressor socket surface	22.2	Cl. 30.1
Internal wire of heater	30.2	105 °C
Internal wire of compressor	22.6	50
Internal wire of cooling thermostat	18.7	50
Hot water outlet surface	5.4	60
External enclosure, front	4.9	60
External enclosure, top	4.9	60
Test wall, rear	4.4	60
Test wall, bottom	3.6	60
Test wall, side	5.2	60
Heater switch surface	8.0	60

	Heating test, resistance method:		-
	insulation class :		-

temperature rise of winding:	R_1 (Ω)	R_2 (Ω)	dT (K)	required dT (K)	insulation class
Compressor main winding	7.12	9.13	65.4	140 °C	E
Compressor sub winding	9.55	12.07	60.7	140 °C	E

13.2	TABLE: Leakage current		P
	Heating appliances: 1.15 x rated input ..... :	-	
	Motor-operated and combined appliances: 1.06 x rated voltage..... :	115 V	

Leakage current between		Max. allowed I (mA)
Accessible metal parts and L	0.10	3.5
Accessible metal parts and N	0.10	3.5
Other accessible non-metallic parts and N	0.01	0.25
Other accessible non-metal parts and L	0.01	0.25

13.3	TABLE: Electric strength	P

Test voltage applied between:	Voltage (V)	Breakdown (Yes/No)
live parts and accessible parts over basic insulation	500 V a.c.	N/A
Live parts and accessible parts over basic insulation	1 000 V a.c.	No
Live parts and accessible parts over supplementary insulation	1 000 V a.c.	No
Live parts and accessible parts over reinforced insulation	2 500 V a.c.	No

14	TABLE: Transient overvoltages	N/A

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..... :	106 V	-
	Three phase appliances 1.06 x rated voltage divided by √3:..... :	-	-

Leakage current between	I (mA)	Max. allowed I (mA)
Class I Between live parts and metal parts – basic insulation only	0.10	3.5
Class II Between live parts and accessible parts – reinforced insulation	0.01	0.25

16.3	TABLE: Electric strength		P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)
live parts and accessible parts over basic insulation		500 V a.c.	N/A
Live parts and accessible parts over basic insulation		1 000 V a.c.	No
Live parts and accessible parts over supplementary insulation		1 000 V a.c.	No
Live parts and accessible parts over reinforced insulation		2 500 V a.c.	No

17	TABLE: Overload protection of transformers and associated circuits				N/A
Temperature rise of part/at:			dT (K)	Max. dT (K)	
	Heating test, resistance method:				-
temperature rise of winding:	R_1 (Ω)	R_2 (Ω)	dT (K)	required dT (K)	insulation class

19.7	TABLE: Abnormal operation, locked rotor/moving parts		N/A
	Test voltage (V) ..... :		-
	Ambient, t_1 (°C) ..... :		-
	Ambient, t_2 (°C) ..... :		-

Temperature of winding	R_1 (Ω)	R_2 (Ω)	(°C)	required (°C)	insulation class

19.9	TABLE: Abnormal operation, running overload		N/A
	Test voltage (V) ..... :		-
	Ambient, t_1 (°C) ..... :		-
	Ambient, t_2 (°C) ..... :		-

Temperature of winding	R_1 (Ω)	R_2 (Ω)	(°C)	required (°C)	insulation class

19.11	TABLE: abnormal operation, temperature rise measurements	P

Part	Fault condition		Result
	Shor	Open	
Resister	X		Normal operation. Power, Cool LED off. No part exceed limit No hazard
Diode (Rectifier)	X		Normal operation. No part exceed limit No hazard

19.13	TABLE: Abnormal operation, temperature rises	P

Thermocouple locations	dT (K)			Max. dT (K)
	Cl. 19.2	Cl 19.3	Cl 19.4	
Power cord sheath	7.4	7.0	7.4	150
Test wall	10.6	4.7	5.4	150
External enclosure	9.7	4.5	5.3	cl. 30.1

24.1	TABLE: Components				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
Attachment plugs with Cord connector bodies	Hwajin KDK	KKP-30T VCTF	125 V, 7 A, 3G 0.75 mm^2	Article 1 of the Technical Requirements of the METI Ordinance Appendix 4 Section 1 and Section 6	JET
Alt.	Jang-Won Hitec Korea Cord	JP-45 VCTF	125 V, 12 A 3G 0.75 mm^2	Article 1 of the Technical Requirements of the METI Ordinance Appendix 4 Section 1 and Section 6	JET
AC Connector	Yeon Ho	YAW396	V-0	IEC 60335-1	Tested in appliance (UL)
Compressor	Dae Woo electronics Corp.	WX30LHF0T	100 V; 50/60 Hz, Class E	IEC 60335-1	Tested in appliance
Motor starting relay with thermal motor protector	Sensata Technologies Holland, B.V.	11SP15A743 UF	Thermal motor protector: 250 V Start relay: 400 V; 12 A Max. operating temp. relay 135 °C Mounting surface temp. max. 105 °C	EN 60730-1; EN 60730-2-4 EN 60730-2-10 IEC 60335-1, 4th edition 2001, clause 30.2.3	KEMA
Cartridge Fuses	Chi Lick Schurter	FST 5x20-Serie(s)	125 V, 5 A	J60127-1(H14) and J60127-2(H14)	JET
Fuse holder	E I dupont de nemours & co inc	FR7025V0F (+)	V-0; 130 °C	IEC 60335-1	Tested in appliance (UL)
Heater-sheathed type	Shinhwa Tech	HD-2260	100 V; 600 W	IEC 60335-1	Tested in appliance
Heater-band type	Hyundai Precision	HDH-02-02-01	100 V; 500 W	IEC 60335-1	Tested in appliance
Thermostat (for compressor)	Pacific control co., ltd	PFN series	125 V / 250 V; 6A	EN 60730-1; EN 60730-2-9	SEMKO
Thermostat (for heater)	Pacific Controls Co., Ltd.	PW-2*	250 V; 7,5 A Max 150 °C	EN 60730-1; EN 60730-2-9	VDE
Thermal cut-out	Pacific control co., ltd	PBR-380-****	250 V; 7,5 A; 125 V; 15 A Max 150 °C	EN 60730-1; EN 60730-2	TUV
Cord bushing	Jeon-o Electric	6N-4	V-0	IEC 60335-1	Tested in appliance (UL)
Enclosure	Basf Co., Ltd.	GP-35	HB; 90 °C	IEC 60335-1	Tested in appliance (UL)
[1] An asterisk indicates a mark which assures the agreed level of surveillance					

28.1	TABLE: Threaded part torque test		P
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
Rear enclosure	> 3.6 and ≤ 4.1	II	1.2
Rear enclosure	> 3.6 and ≤ 4.1	II	1.2

29.1	TABLE: Clearances					P
	Overvoltage category ... :	II				-
		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0,5	-	-	-	-	N/A
500	0,5	-	-	-	-	N/A
800	0,5	-	-	-	-	N/A
1500	1,0	1.5	1.5	1.5	-	P
2500	2,0	-	-	-	3.0	P
4000	3,5	-	-	-	-	N/A
6000	6,0	-	-	-	-	N/A
8000	8,5	-	-	-	-	N/A
10000	11,5	-	-	-	-	N/A

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		—	—	N/A
≤ 50	0,2	0,6	0,9	1,2	1,5	1,7	1,9	—		—	N/A
≤ 50	0,4	1,2	1,8	2,4	3,0	3,4	3,8	—	—		N/A
> 50 and ≤ 125	0,3	0,8	1,1	1,5	1,9	2,1	2,4	1.5	—	—	P
> 50 and ≤ 125	0,3	0,8	1,1	1,5	1,9	2,1	2,4	—	1.5	—	P
> 50 and ≤ 125	0,6	1,6	2,2	3,0	3,8	4,2	4,8	—	—	3.0	P
> 125 and ≤ 250	0,6	1,3	1,8	2,5	3,2	3,6	4,0		—	—	N/A
> 125 and ≤ 250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	—		—	N/A
> 125 and ≤ 250	1,2	2,6	3,6	5,0	6,4	7,2	8,0	—	—		N/A
> 250 and ≤ 400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	N/A
> 250 and ≤ 400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	N/A
> 250 and ≤ 400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		N/A
> 400 and ≤ 500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	N/A
> 400 and ≤ 500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	N/A
> 400 and ≤ 500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		N/A
> 500 and ≤ 800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	N/A
> 500 and ≤ 800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	N/A
> 500 and ≤ 800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		N/A
> 800 and ≤ 1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	N/A
> 800 and ≤ 1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	N/A
> 800 and ≤ 1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		N/A
> 1000 and ≤ 1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	N/A
> 1000 and ≤ 1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	N/A
> 1000 and ≤ 1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		N/A
> 1250 and ≤ 1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—	N/A
> 1250 and ≤ 1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—		—	N/A
> 1250 and ≤ 1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—		N/A
> 1600 and ≤ 2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		—	—	N/A
> 1600 and ≤ 2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—		—	N/A
> 1600 and ≤ 2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—		N/A
> 2000 and ≤ 2500	7,5	10,0	14,0	20,0	25, 0	28,0	32,0		—	—	N/A
> 2000 and ≤ 2500	7,5	10,0	14,0	20,0	25, 0	28,0	32,0	—		—	N/A

> 2000 and ≤ 2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	—	—		N/A
> 2500 and ≤ 3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0		—	—	N/A
> 2500 and ≤ 3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—		—	N/A
> 2500 and ≤ 3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	—	—		N/A
> 3200 and ≤ 4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0		—	—	N/A
> 3200 and ≤ 4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—		—	N/A
> 3200 and ≤ 4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	—	—		N/A
> 4000 and ≤ 5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0		—	—	N/A
> 4000 and ≤ 5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—		—	N/A
> 4000 and ≤ 5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	—	—		N/A
> 5000 and ≤ 6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0		—	—	N/A
> 5000 and ≤ 6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—		—	N/A
> 5000 and ≤ 6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	—	—		N/A
> 6300 and ≤ 8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0		—	—	N/A
> 6300 and ≤ 8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—		—	N/A
> 6300 and ≤ 8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	—	—		N/A
> 8000 and ≤ 10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0		—	—	N/A
> 8000 and ≤ 10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—			N/A
> 8000 and ≤ 10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	—	—		N/A
> 10000 and ≤ 12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0		—	—	N/A
> 10000 and ≤ 12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—		—	N/A
> 10000 and ≤ 12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	—	—		N/A
*), 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	N/A
> 50 and ≤ 125	0,3	0,7	1,0	1,4	1,8	2,0	2,2	P
> 125 and ≤ 250	0,4	1,0	1,4	2,0	2,5	2,8	3,2	N/A
> 250 and ≤ 400	0,8	1,6	2,2	3,2	4,0	4,5	5,0	N/A
> 400 and ≤ 500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	N/A
> 500 and ≤ 800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	N/A
> 800 and ≤ 1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	N/A
> 1000 and ≤ 1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	N/A
> 1250 and ≤ 1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	N/A
> 1600 and ≤ 2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	N/A
> 2000 and ≤ 2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	N/A
> 2500 and ≤ 3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	N/A
> 3200 and ≤ 4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	N/A
> 4000 and ≤ 5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	N/A
> 5000 and ≤ 6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	N/A
> 6300 and ≤ 8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	N/A
> 8000 and ≤ 10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	N/A
> 10000 and ≤ 12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	N/A

30.1	TABLE: ball pressure test	P
part	temperature (°C)	Verdict
Enclosure(plastic)	75	0.8 mm
Fuse holder	125	1.0 mm
AC connector	125	1.0 mm
PCB	125	0.7 mm

30.2	TABLE: glow-wire test		P
part		temperature (°C)	Verdict
Enclosure(plastic)		550	P
AC connector		850	P
Fuse holder		850	P

IEC 60335-1 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT 2 TO TEST REPORT IEC 60335-1
JAPAN NATIONAL DIFFERENCES

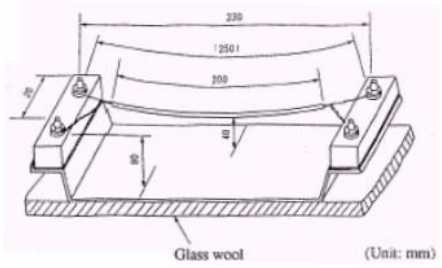
Household and similar electrical appliances - Safety - Part 1: General requirements

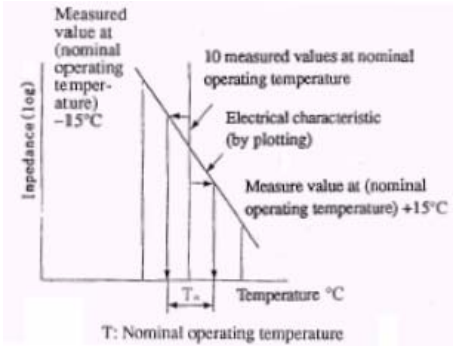
Differences according to.....: IEC 60335-1:2001

Attachment Form No.....: JP_ND_IEC60335_1G
Attachment Originator .....: JET
Master Attachment.....: 2009-02

National Differences - Japan			
6.1.101	Addition: Add to subclause as follows. 6.1.101 Note - Class 0 is allowed for only the appliances of rated voltage not exceeding 150 V and indoor use.		N/A
11.8 Table 3	Delete the reference to E27.		N/A
	Replacement of footnote f: The temperature rise has to be determined in order that the tests of Clause 30.1 can be carried out. Materials for which temperature limits are not specified in the table, but which comply with the requirements as shown in Attachment 1 are considered to be acceptable.		P
	Addition of new footnote j: This limit applies to cords and wires complying with the relevant IEC standards. In other case, they shall comply with the requirements as shown in Attachment 1.		P
	Addition new sentence of in NOTE 1 by the following. Materials which comply with the requirements as shown in Attachment 1 are considered to be acceptable.		P
16.2	Modification: The test voltage is 1.06 times rated voltage.	106 V	P
16.3	Modification: The test voltage is 1250 V for class 0 appliances, class 0I appliances and class I appliances and 1750 V for class II appliances.		P
19.12	Addition: Note 4 - If the fusing characteristics are different from IEC 60127, those characteristics are taken into consideration.		N/A

IEC 60335-1 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
22.31	Addition to note as 5th indent: Hooking the wire into a hole in the terminal before soldering is considered to be a suitable means for keeping clearance and creepage distances over basic insulation.		N/A
25.8 Table 11	Addition to footnote a: In this case, a fuse with the rated current not exceeding 3 A and the rated breaking capacity at least 500 A has to be incorporated inside the plug.		N/A
25.25	Replace: Replace ”IEC 60083” by ”JIS C 8303” in 1st paragraph.		N/A
29.1 Table 16	Modify column ”1500 for rated impuls voltage” as follows. 1500 | 1.0 [c] (1.5) [d]		P
	Addition to footonote d: The value with parenthesis apply to basic insulation for class 0 appliances.		N/A
Figure 3	Replace N in Key as follows. N the earth pole for delta connection.		-
Figure 4	Replace N in Key as follows. N the earth pole for delta connection.		-
Annex JA	Uniformity of Heat Sensing Wires		N/A
	If heat sensing wires are used in appliances to prevent excessive temperature rise, those heat sensing wires shall comply with the following table after the measurement specified thereafter: Mean operating temperature (degC) | Deviation (degC) <=120 | ±7 >120 | ±10		N/A
	Measurement method:		-
	A system in which the heat sensing wires are short circuited due to melting of the insulation between the said wires or the resistance between the said wires decreases significantly due to the said melting.		N/A

IEC 60335-1 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Divide the whole length of heat sensing wire evenly into 10, cut each division to a length of 20 cm excluding terminal treatment parts at both ends to prepare specimen heat sensing wires (place the said length at one measurement point in a thermostatic chamber and carry out the measurement for a heat sensing wire which will cause error in the operating temperature due to cutting) mount the specimen to the device shown in Fig.1, apply the rated voltage and pass the rated current of the circuit to which the heat sensing wire is connected, and measure the operating temperature of specimen while raising the temperature of specimen at a rate of 1degC per minute by externally heating it.  Fig 1 Device to mount the specimen		N/A
	A system which utilizes change in electrical characteristics (resistance, capacitance, impedance, etc. the same meaning applies in this Table), or utilizes change in electric characteristics of heat sensing component wire itself.		N/A
	(1) Divide the whole length of heat sensing wire evenly into 10 place each division into a thermostatic chamber at a temperature equal to the nominal operating temperature of the heat sensing wire ±2 degC for 1 h, and then measure the electrical characteristics in the chamber.		N/A
	(2) Take out a specimen which shows a characteristic value most close to the average of 10 measured values in the procedure of (1), maintain it in a thermostatic chamber at the nominal operating temperature of the heat sensing wire plus (15± 2 degC) and also minus (-15 ± 2 degC) each for 1 h, and then measure the electrical characteristics in the chamber.		N/A

IEC 60335-1 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	(3) Prepare a graph showing the relation between the temperature and the electrical characteristic value from the data obtained in (1) and (2) as illustrated in Fig.2, and convert the dispersion of the electrical characteristic value into that of the temperature.  Fig.2 Dispersion of characteristic converted into temperature		N/A
	Note: Impedance measurement is to be carried out by means of an a.c. power.		N/A

IEC 60335-1 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Attachment 1 of IEC 60335-1		-
	The insulating materials shall not be exposed to the temperature exceeding the values when the appliances is operated at rated voltage and normal operating condition.		—
	These values may be increased by		N/A
	- 8 degrees for Duty 2 appliance, and		N/A
	-16 degrees for Duty 3 appliance.		N/A
	In order to classify the appliances, following assumptions are to be used.		N/A
	- Duty 1 appliances : considered to be connected to supply mains throughout the years such as refrigerators		P
	- Duty 2 appliances : considered to be connected to be in between Duty 1 and Duty 3 such as room heaters		N/A
	- Duty 3 appliances : considered to be connected to supply mains when it is operated for rather short time such as portable coffee mill.		N/A
	Permissible temperature limits of insulating materials		P
	Natural materials		-
	Material	Permissible temperature limit (degC)	-
	Bituminous compound for filter	75 (105) 1)	N/A
	Paper, cotton, silk, other natural fiber and wood	90 (105) 2)	N/A
	Oil denatured natural resin	105	N/A
	Asbestos	400	N/A
	Silica powder	500	N/A
	Mica (Hard)	500 (600) 3)	N/A
	(Soft)	650 (850) 3)	N/A
	Notes: 1) Value applies to thermal insulating materials.		N/A
	2) Value applies to materials impregnated with varnish.		N/A
	3) Value in parenthesis is applied when mechanical external force is absent.		N/A
	Mica splittings and untreated mica papers		N/A

	Lining	Adhesive							Permissible Temperature Limit (℃)	
		a	b	c	d	e	f	g		-
	None	X	X	X	X				130	N/A
						X			155	N/A
							X		180,450(700) 1)	N/A

IEC 60335-1 ATTACHMENT										
Clause	Requirement + Test						Result - Remark			Verdict
						X		600(800) 2)		N/A
							X	600(700) 1), 700(850) 2)		P
	Paper	X	X	X	X			130		N/A
	Polyethylene terephtalate film				X			130		N/A
	Glass fabric				X			130		N/A
						X		155		N/A
							X	180		N/A
	Polyester nonwoven fabric,				X			130		N/A
	Polyester woven and					X		155		N/A
	Polyethylene naphthalate film									N/A
	Polyamide-imide film						X	155		N/A
	Aramide film and						X	180		N/A
	Polymide film									N/A
	a: with asphalt base									-
	b: with natural resin or denatured natural resin base									-
	c: with ceramic base									-
	d: with oil-denatured synthetic resin, alkyd orthophatalate resin or cross-linked polyester base.									-
	e: with silicon–denatured synthetic resin, isophatalate alkyd resin, telephatalate alkyd resin or epoxy resin.									-
	f: with silicon resin.									-
	g: inorganic									-
	Notes: 1) value applies to hard mica-made heating substrate.									-
	2) value applies to soft mica-made heating substrate.									-
	Remarks: value in parenthesis is applied when mechanical external force is abcent.									-
	Organic materials									-
	Material						Permissible temperature limit (℃)			-
	laminated melamine resin mixed with glass fiber						75 (100) 1)			N/A
	moulded lemaine resin mixed with: cellulose						120			N/A

IEC 60335-1 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	inorganics	140	N/A
	laminated phenol resin with: cotton fiber base	115 (85) 2)	N/A
	paper base	120 (70) 3)	N/A
	polyamide cloth base	75	N/A
	Inorganics	140	N/A
	moulded phenol resin with: inorganics	150 (160) 1)	N/A
	other	140 (150) 1)	N/A
	moulded melamine phenol resin with the gravity of less than 1.55	130	N/A
	moulded urea resin mixed with cellulose	90	N/A
	unsaturated polyester-casting	120	N/A
	laminated unsaturated polyester mixed with inorganics	140	N/A
	moulded unsaturated polyester mixed with: other than organics	120	N/A
	inorganic powder	140	N/A
	glass fiber	155	N/A
	epoxy resin-casting	120	N/A
	laminated epoxy resin mixed with: inorganic	130 (140) 1)	N/A
	other than inorganics	110 (90) 3)	N/A
	moulded epoxy resin mixed with inorganics	130	N/A
	laminated diallyl phthalate resin mixed with inorganics	140	N/A
	moulded diallyl phthalate resin mixed with: other than inorganics	130	N/A
	inorganic powder	150	N/A
	glass fiber	155	N/A
	xylene resin-casting	140	N/A
	polyamide-imide film	180	N/A
	laminated silicone resin mixed with inorganics	180 (220) 1)	N/A
	moulded silicon resins mixed with inorganics	180 (240) 4)	N/A
	polymide film	210	N/A
	laminated polymide	190	N/A
	polybutadiene-casting	120	N/A
	moulded polybutadiene mixed with inorganics	130	N/A
	laminated dipheny oxide mixed with inorganics	180	N/A
	Notes: 1) Values apply to thermal insulating materials.		N/A
	2) Values apply to materials with a thickness less than 0.8 mm.		N/A

IEC 60335-1 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	3) Values apply to materials with a thickness less than 0.8 mm when treated to retard flame.		N/A
	4) Values apply to materials used for thermal insulation and to seal outlets of sheathed heating wires.		N/A
	Organic materials(Thermoplastic Resins)		-
	Material	Permissible temperature limit (degC)	-
	methacrylic resin, cellulose resin, cellulose acetate butylate resin, cellullose, polyethylene	50	N/A
	foamed polyethylene compound for insulated conductors, polyvinyl chloride	60	N/A
	polyethylene compound for insulated conductors, heat-resistant polyvinyl chloride, cross-linked polyvinyl chloride compound for insulated conductors	75	N/A
	cross-linked polyethylene, chlorinated polyethylene compound for insulated conductors	90	N/A
	acrylonitrile acrylic rubber styrene resin, acrylontirile chlorinate polyethylene styrene resin	55	N/A
	acrylonitrile styrene resin, acrylonitrile butadiene resin, acrylonitrile butadiene chlorinated polyethylene resin		-
	: general	55	P
	: reinforced with glass fiber	80	N/A
	polypropylene : general	105 (85) 3)	N/A
	: reinforced with glass fiber	110	N/A
	denatured polyphenyle oxide : general	75	N/A
	: reinforced with glass fiber	100	N/A
	Polystyrene	50 (70) 1)	N/A
	polyacetal : general	100	N/A
	: reinforced with glass fiber	120	N/A
	polyamide : general	90	N/A
	: reinforced with glass fiber	120	N/A
	polycarbonate : general	110	N/A
	: reinforced with glass fiber	120	N/A
	polyethylene terephtalate : general	120	N/A
	: reinforced with glass fiber	130	N/A
	polybutylene terephtalate : general	120	N/A
	: reinforced with glass fiber	135	P
	heat resistant polyethylene terephthalate film	135	N/A

IEC 60335-1 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	fluorinated polyvinylidene compound for insulated conductors, polychlorotrifluoroethylene(ethylene-trifluoride resin), ethylene-tetrafleorethylene copomylene for insulated conductors	150	N/A
	tetrafluoroethylene hexafluoropropylene resin	200	N/A
	polytetrafluoroethylene(ethylene-tetrafluoride) perflouroalkoxy compound for insulated conductors	250	N/A
	aramide(aromatic polyamide paper)	220	N/A
	Polysulfone	140 (150) 2)	N/A
	polyethylene naphthalate	155	N/A
	polyallylate : general	120	N/A
	: reinforced with glass fiber	130	N/A
	Notes : 1) Values apply to capacitor dielectrics.		N/A
	2) Values apply to thermal insulating material		N/A
	3) Values apply to materials with a thickness of less than 0.8 mm		N/A
	Inorganic materials		-
	Material	Permission temperature limit (degC)	-
	glass fiber (only alkaline free)	300	N/A
	lead glass	380	N/A
	borosilicate glass	490	N/A
	quartz glass	800	N/A
	ceramic	800 (1000) 1)	N/A
	Note: 1) Value apply to materials used as electric heating elements		N/A
	Rubber compounds		-
	Material	Permission temperature limit (degC)	-
	natural rubber, polyurethane rubber, ebonite	60	N/A
	nitrile rubber, styrene butadiene rubber, chloroprene rubber	75	N/A
	butyl rubber	80	N/A
	ethylene propylene (diene) rubber chlorosulfonated polyethylne rubber	90	N/A
	silicone rubber	180 (200) 1)	N/A
	Note : 1) Value apply to thermal insulating material and sealing compounds for sheathed heating elements.		N/A

IEC 60335-1 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

	Sleeves, Cloth, Tapes and like			-
	Material	Impergnat or coating	Permission temperature limit (degC)	-
	rayon, cellulose acetate, vinylon	adhesive, oil varnish	105	N/A
	paper, cotton fabric, silk fabric, polyamide, polyester fabric, polyester nonwoven fabric	oil varnish	105	N/A
	polyester fabric, polyester nonwoven fabric	alkyd resin varnish	120	N/A
	glass fabric	ditto	130	N/A
	paper	Iso or terephtalate alkyd resin varnish, epoxy resin varnish, alkyd resin varnish	105	N/A
	polyester fabric, polyester nonwoven fabric	ditto	120	N/A
	glass fabric, aramide Paper asebestors paper	Iso or terephtalate alkyd resin varnish, epoxy resin varnish,	155	N/A
		silicone resin varnish, silicone rubber	180	N/A
	vulcanized fiber		105	N/A
	heat resistant fiber		120	N/A

-End of Test Report-

Attachment 2: Comparison table between JIS C 9335-1:2003 and IEC 60335-1:2001

Requirement	verdict

附属書2（参考）　JISと対応する国際規格との対比表

JIS C 9335-1:2003　家庭用及びこれに類する電気機器の安全性　第1部：一般要求事項					IEC 60335-1:2001　Household and similar electrical appliances-Safety-Part1:General requirements		
(I)JIS の規定		(II)国際規格番号	(III)国際規格の規定		(IV)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線又は実線の側線		(V)JIS と国際規格との技術的差異の理由及び今後の対策
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容	
1.適用範囲	定格電圧が単相 250V 以下，及びその他 480V 以下の家庭用及びこれに類する機器	IEC60335-1	1	JIS に同じ	IDT	―	
2. 引用規格	本文で引用される規格 JIS，IEC 規格，ISO 規格	IEC60335-1	2	JIS と同等	MOD/　変更・追加	引用規格の内，JIS に置き換えられるものは JIS とした。また，デビエーションで引用する JIS を追加した。	引用できる JIS がある場合は，すべて JIS に置き換える。
3. 定義	定格，絶縁の種類，感電に対する保護クラス，機器の種類，保護手段など	IEC60335-1	3	次を除き，JIS に同じ ・ 保護インピーダンスはクラス 0 に対応していない。 ・ 2 ピンのプラグにアース用口出しを設けたコードセットを扱っていない。 ・ 機能アースを認めていない。	MOD/追加	3.3.6　保護インピーダンス 保護インピーダンスはクラス 0 機器にも適用できるようにした。 3.3.8　クラス 0I 機器 2 ピンのプラグにアース用口出しを設けたコードセットはクラス 0I 機器として扱うことを明確にした。 3.100.1　機能アースの定義を追加した。	クラス 0 機器及びクラス 0I 機器の扱いは，日本配電事情による。
4. 一般要求事項	安全の原則	IEC60335-1	4	JIS に同じ	IDT	―	

verdict
P
P
N/A
P

Requirement								verdict
JIS C 9335-1:2003　家庭用及びこれに類する電気機器の安全性　第1部：一般要求事項					IEC 60335-1:2001 Household and similar electrical appliances-Safety-Part1:General requirements			
(I)JIS の規定		(II)国際規格番号	(III)国際規格の規定		(IV)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線又は実線の側線		(V)JIS と国際規格との技術的差異の理由及び今後の対策	
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容		
5.試験のための一般条件	サンプル数，試験順序，設置条件，周囲温度，試験電圧など	IEC60335-1	5	JIS に同じ	IDT	―		P
6.分類	感電に対する保護分類，有害な水の浸入に対する保護分類	IEC60335-1	6	JIS に同じ ただし，クラス０機器の範囲は決めていない。	MOD/追加	6.1.101 定格電圧が 150V を超える機器にはクラス０機器を認めない。	クラス０機器の扱いは，日本配電事情による。	N/A
7. 表示及び取扱説明	銘板表示，取扱説明書に記載する内容及び表示の消えにくさ	IEC60335-1	7	JIS に同じ ただし，機能アースの表示は扱っていない。	MOD/追加	7.8 機能アース記号は，保護アース記号と同一としてはいけない。	機能アースは保護アースではないので，記号を区別する。	N/A
8. 充電部への接近に対する保護	試験指，テストピン及びテストプローブによる検査	IEC60335-1	8	次を除き，JIS に同じ ・ ねじ込みランプホルダは，挿入中の感電保護を検証 ・ テストピンをコネクタに適用 ・ クラス０機器の安全トランスも２重絶縁を要求 ・ 現地組立ユニットの電源端子に基礎絶縁を要求	MOD/追加	8.1.1 ねじ込みランプホルダのうち，日本で標準化されているものについては，装着状態で感電保護を検証する。 8.2 テストピンはコードセットのコネクタには適用しない。 8.1.4 クラス０機器の安全トランスは強化絶縁の耐圧に適合すればよい。 8.1.5 組立ユニットの電源端子は出荷時に基礎絶縁で覆わなくてもよい。	8.1.1,8.1.2,8.1.5 日本の既存のものに対する緩和規定。 ・ ランプホルダ ・ コネクタ ・ 電源端子 8.1.4 クラス０機器の露出充電部の扱いを明確にした。	N/A

Requirement								verdict
JIS C 9335-1:2003　家庭用及びこれに類する電気機器の安全性　第1部：一般要求事項					IEC 60335-1:2001 Household and similar electrical appliances-Safety-Part1:General requirements			
(I)JIS の規定		(II)国際規格番号	(III)国際規格の規定		(IV)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線又は実線の側線		(V)JIS と国際規格との技術的差異の理由及び今後の対策	
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容		
9. モータ駆動機器の始動	個別規格で規定	IEC60335-1	9	JIS に同じ	IDT			N/A
10. 入力及び電流	定格入力又は定格電流の表示値と測定値の許容差	IEC60335-1	10	JIS に同じ ただし，PTC 電熱素子も他の電熱素子と同じ扱い。	MOD/追加	10.1 PTC 電熱素子の入力許容差を緩和した。	PTC は外部要因（風など）の影響を受け易く，測定の再現性が難しい。 モータ駆動機器と同様の許容差にすることを検討し，IEC に提案する必要がある。	N/A
11. 温度上昇	通常使用状態における許容温度	IEC60335-1	11	次を除き，JIS に同じ ・ ランプホルダについては E27 をカバー。 ・ 材料の温度上限値は不明確	MOD/ 変更・追加	11.8 ランプホルダの温度上限値は JISC8105-1 を適用 材料の温度上限値で不明確なものは，省令第1項を適用	ランプホルダの形状は，日本と IEC とで異なる。 材料の温度上限値の明確化を行った。	N/A
12.(規定なし)	規定なし	IEC60335-1	12	JIS に同じ	IDT			N/A
13. 動作温度での漏えい電流及び耐電圧	運転状態における漏えい電流及び耐電圧試験	IEC60335-1	13	JIS に同じ	IDT			P
14. 過渡過電圧	空間距離の既定値を満たさない箇所に対するインパルス試験による代替え試験	IEC60335-1	14	JIS に同じ	IDT			N/A

Requirement							verdict
JIS C 9335-1:2003　家庭用及びこれに類する電気機器の安全性　第1部：一般要求事項					IEC 60335-1:2001 Household and similar electrical appliances-Safety-Part1:General requirements		
(I)JIS の規定		(II)国際規格番号	(III)国際規格の規定		(IV)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線又は実線の測線	(V)JIS と国際規格との技術的差異の理由及び今後の対策	
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容	
15.耐湿性	IPX 試験，滋水試験及び耐湿試験	IEC60335-1	15	JIS に同じ	IDT		P
16. 漏えい電流及び耐電圧	耐湿試験後の絶縁性の評価	IEC60335-1	16	以下を除き，JIS に同じ ・ 三相機器の漏えい電流試験電圧は，定格電圧／√3×1.06 ・ クラス 0I 機器のブッシング耐電圧試験の規定なし	MOD/ 変更・追加	16.2 漏えい電流の試験電圧を三相機器も定格電圧の 1.06 倍とした。 16.3 クラス 0I 機器のコードブッシングの耐電圧試験をクラス I 機器と同じとした。	16.2 日本の三相電源はデルタ結線であり，スター結線を意図した IEC 規格とは試験電圧が異なる。 16.3 クラス 0I 機器はクラス I 機器と同じ扱いにする。	N/A
17. 変圧器及びその関連回路の過負荷保護	変圧器が過負荷又は短絡状態を模擬した温度試験	IEC60335-1	17	JIS に同じ ただし，クラス 0 機器の特別扱いはない。	MOD/追加	SELV トランスに適用する温度限度値をクラス 0 機器用のトランスにも適用する。	8.1.4 項との関連で，クラス 0 トランスも SELV トランスと同様に扱う。	N/A
18. 耐久性	個別規格で規定	IEC60335-1	18	JIS に同じ	IDT			N/A
19. 異常運転	電熱機器の不適切な放熱，シーズヒータの短絡，モータ駆動機器の拘束，三相欠相，電子部品の短絡開放など	IEC60335-1	19	JIS に同じ ただし，IEC60127 ヒューズだけの特性を考慮	MOD/追加	19.12 省令第 1 項に適合するヒューズを使用する場合は，その特性を考慮する。	日本では，IEC60127 ヒューズよりも省令第 1 項ヒューズが使用される場合が多い。	P
20. 安定性及び機械的危険	機器の安定性及び可動部への接近に対する保護	IEC60335-1	20	JIS に同じ	IDT			P

Requirement								verdict
JIS C 9335-1:2003　家庭用及びこれに類する電気機器の安全性　第1部：一般要求事項					IEC 60335-1:2001 Household and similar electrical appliances-Safety-Part1:General requirements			
(I)JIS の規定		(Ⅱ)国際規格番号	(Ⅲ)国際規格の規定		(Ⅳ)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線又は実線の側線		(Ⅴ)JIS と国際規格との技術的差異の理由及び今後の対策	
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容		
21. 機械的強度	外郭の機械的強度	IEC60335-1	21	JIS に同じ	IDT			P
22.構造	ハンドル，コードレール，が玩具形状の禁止などの構造一般	IEC60335-1	22	次を除き，JIS に同じ ・ ダイレクトプラグイン機器のプラグピン試験は丸ピンに対応 ・ 自動コードリールの耐久試験回数は 10000 回 ・ 保護インピーダンスはクラス０機器を考慮していない。 ・ 基礎絶縁部分に関する電線のはんだ付け方法は規定なし	MOD/追加	22.3 ダイレクトプラグイン機器のプラグピンの回転については，平刃には適用しない。 22.16 シースなし平形コードを使用した巻き取り機構の試験回数の緩和（2000 回） 22.27 保護インピーダンスを通して接続された部分の二重絶縁要求は，クラス０機器には適用しない。 22.31 基礎絶縁部分の電線をはんだ付けするときは，十分に固定する。	22.3 平刃に回転試験は適用できない。 22.16 10000 回の試験を適用した場合，シースなしコードは巻き取り機構が壊れる前に破損してしまう。 22.7 3.3.6 で保護インピーダンスをクラス０機器にも適用することにした。 22.31 クラス 01 機器及びクラス０機器の基礎絶縁部の電線は，十分に固定してある必要がある。	N/A N/A N/A P
23. 内部配線	内部配線の屈曲，耐電圧など	IEC60335-1	23	次を除き，JIS に同じ ・ IEC60227 及び IEC60245 のシースは付加絶縁として使用可 ・ 保護アース導体以外は緑と黄色との配色を禁じている。	MOD/追加	23.5 省令第一項に適合した電線のシースも付加絶縁として認める。 23.7 機能アース電線は緑と黄色の配色線を使用しなくてもよい。	23.5 省令第一項電線は IEC と同レベルに扱う。 23.7 機能アースは，必ずしもアースしなくてもよいので識別の必要なし。	P P

Requirement	Verdict

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(I)JIS の規定		(II)国際規格番号	(III)国際規格の規定		(IV)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線又は実線の側線		(V)JIS と国際規格との技術的差異の理由及び今後の対策
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容	
24.部品	コンデンサ，スイッチ，サーモスタット，機器用カプラー，変圧器などの部品の適用規格	IEC60335-1	24	次を除き，JIS に同じ ・ 原則として IEC 規格適合部品を要求 ・ 安全絶縁変圧器は，IEC61558-2-6 を適用 ・ 特別低電圧に接続する接続器は，IEC60083，IEC60906-1 又は IEC60320-1 と互換性があってはならない。	MOD/ 変更・追加	24.1 電安法適用部品の扱いを明確化 24.1.2 クラス 0 機器用のトランスは附属書 G を適用しなくてもよい。 24.4 特別低電圧に接続する接続器は，IEC の標準接続器以外にも JISC8303 の形状のものと互換性があってはいけない。	24.1 電安法適用部品は電安法に適合する必要がある。 24.1.2 8.1.4 項との関連 24.4 日本の電源電圧供給用接続器と低電圧用の接続器が互換性があると誤接続時に危険が生じる。
25. 電源接続及び外部可とうコード	電源電線の適用規格，断面積，折り曲げ試験，コード止めなど	IEC60335-1	25	次を除き，JIS に同じ ・ 電線管サイズは，IEC の他アメリカサイズもあり。 ・ 電線の適用規格は，IEC60227 及び IEC60245 ・ 許容電流は IEC の規定 ・ クラス I のアース線の配色（黄色と緑）を規定 ・ 折り曲げ試験は，運転中に動かす機器にだ	MOD/ 変更・追加	25.4 省令第一項適合電線管サイズも考慮した。 25.7 省令第一項適合電線も使用可とした。 25.8 省令第一項適合電線を使用した場合の許容電流は内線規定によることとした。 25.10 クラス 0I 機器のアース線も緑と黄色の配色を必要とした。 25.13	25.4 省令第一項の電線管を使用する機器にも対応させる。 25.7,25.8 省令第一項の電線を使用可能とし，その許容電流を明確にした。 25.10 クラス 0I 機器の保護アースは，クラス I 機器と同様に扱う。 25.13,25.14,25.20 シースなしコードは認めるが，折り曲げ試験等の一部を強化する。 25.22 マグネットプラグは IEC では認

Requirement	Verdict
24.部品	P
25. 電源接続及び外部可とうコード	N/A
	N/A
	N/A
	P
	N/A
	P

JIS C 9335-1:2003　家庭用及びこれに類する電気機器の安全性　第1部：一般要求事項					IEC 60335-1:2001 Household and similar electrical appliances-Safety-Part1:General requirements			
(I)JIS の規定		(II)国際規格番号	(III)国際規格の規定		(IV)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線又は実線の側線		(V)JIS と国際規格との技術的差異の理由及び今後の対策	
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容		
				け適用。10000 回 ・ Y形及びZ形取り付けの場合，機器内部において，追加絶縁を要求 ・ マグネットプラグ使用できない。		シースなしコードは引込み口において，被覆を損傷してはならない。 25.14 シースなし平形コードを使用する非定置形可搬形機器は，折り曲げ試験を適用することにした。 25.20 Y形及びZ形取り付けのシースなしコードの場合は，機器内部で追加絶縁は必要としない。 25.22 マグネットプラグは，個別で認めない限り，使用禁止。	められていないが，普及している機器に限定して認めることにした。	N/A
26. 外部導体用端子	端子ねじの緩み防止，端子ねじの大きさなど	IEC60335-1	26	次を除き，JIS に同じ ・ X形取付け及び固定配線用端子は2種類の導体の接続を要求 ・ クラス 0I 機器のアース用端子は考慮されていない。	MOD/ 変更・追加	26.6 X形取付け及び固定配線用端子は導体を接続する端子の大きさを省令第一項電線にも適用できるように変更した。 26.101 クラス 0I 機器のアース端子又は口出し線は外部の見やすい位置とした。	26.6 省令第一項適合電線の使用を認めたことによる。 26.101 クラス 0I 機器は，使用者が接地するので見やすい位置が妥当と判断した。	N/A N/A

Requirement	Verdict

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(I)JIS の規定		(II)国際規格番号	(III)国際規格の規定		(IV)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線又は実線の側線		(V)JIS と国際規格との技術的差異の理由及び今後の対策	
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容		
27. 接地接続の手段	アース線の緩み防止，耐腐食性，アース導通試験など	IEC60335-1	27	JIS に同じ ただし，クラス０機器及びクラス II 機器にはアースは使用してはならない。	MOD/追加	27.1 機能アースはクラス０機器及びクラスII機器にも使用可能とした。	クラス０機器は日本の配電事情によるが，クラス II 機器についてはさらに検討する。	N/A
28. ねじ及び接続	ねじの耐久性，種類，緩み止めなど	IEC60335-1	28	JIS に同じ	IDT			N/A
29. 空間距離，沿面距離及び固体絶縁	空間距離，沿面距離，固体絶縁の厚さ	IEC60335-1	29	JIS に同じ ただし，クラス０機器の定格インパルス電圧 1500V に対応する空間距離は 1.0mm	MOD/追加	29.1 クラス０機器の空間距離を強化（1.5mm）	クラス０機器は基礎絶縁だけであり，インパルス耐電圧を考慮した場合，現状並の空間距離を満たす必要がある。	N/A
30. 耐熱性及び耐火性	ボールプレッシャ試験，グローワイヤ試験，ニードルフレーム試験	IEC60335-1	30	JIS に同じ	IDT			P
31. 耐腐食性	腐食に対する保護対策	IEC60335-1	31	JIS に同じ	IDT			P
32.放射線，毒性その他これに類する危険性	有害な放射線に対する保護	IEC60335-1	32	JIS に同じ	IDT			P
図	本文で引用される図	IEC60335-1	図	JIS に同じ ただし，漏えい電流測定用三相電源に接地側極を使用	MOD/変更	図 3,4 N極をデルタ結線接地側極に置き換える。	日本の三相電源はデルタ結線なので，N極はない。	P

Requirement	Verdict

JIS C 9335-1:2003　家庭用及びこれに類する電気機器の安全性　第1部：一般要求事項					IEC 60335-1:2001 Household and similar electrical appliances-Safety-Part1:General requirements			
(I)JIS の規定		(II)国際規格番号	(III)国際規格の規定		(IV)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線又は実線の側線		(V)JIS と国際規格との技術的差異の理由及び今後の対策	
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容		
附属書A	ルーチン試験	IEC60335-1	附属書A	JIS に同じ	IDT			P
附属書B	充電式電池を電源とする機器	IEC60335-1	附属書B	JIS に同じ ただし，電池収納部に二重絶縁を要求	MOD/追加	8.2 電池収納部の絶縁をクラス０機器については基礎絶縁とする。	クラス０機器の定義によって，電池収納部も基礎絶縁が妥当。	N/A
附属書C	モータの劣化試験	IEC60335-1	附属書C	JIS に同じ	IDT			N/A
附属書D	保護装置付きモータに対する代替要求事項	IEC60335-1	附属書D	JIS に同じ	IDT			N/A
附属書E	ニードルフレーム試験	IEC60335-1	附属書E	JIS に同じ	IDT			P
附属書F	キャパシタ	IEC60335-1	附属書F	JIS に同じ	IDT			N/A
附属書G	安全絶縁変圧器	IEC60335-1	附属書G	JIS に同じ	IDT			P
附属書H	スイッチ	IEC60335-1	附属書H	JIS に同じ	IDT			N/A
附属書I	機器の定格電圧に適さない基礎絶縁をもつモータ	IEC60335-1	附属書I	JIS に同じ	IDT			N/A
附属書J	コーティングされたプリント基板	IEC60335-1	附属書J	JIS に同じ	IDT			N/A
附属書K	過電圧カテゴリ	IEC60335-1	附属書K	JIS に同じ	IDT			P
附属書L	空間距離及び沿面距離の測定についての指針	IEC60335-1	附属書L	JIS に同じ	IDT			P

Requirement	Verdict

JIS C 9335-1:2003　家庭用及びこれに類する電気機器の安全性　第1部：一般要求事項					IEC 60335-1:2001 Household and similar electrical appliances-Safety-Part1:General requirements			
(I)JIS の規定		(II)国際規格番号	(III)国際規格の規定		(IV)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線又は実線の側線		(V)JIS と国際規格との技術的差異の理由及び今後の対策	
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容		
附属書M	汚損度	IEC60335-1	附属書M	JIS に同じ	IDT			P
附属書N	耐トラッキング試験	IEC60335-1	附属書N	JIS に同じ	IDT			P
附属書O	30.の試験の選択及び順序	IEC60335-1	附属書O	JIS に同じ	IDT			P
附属書1	感熱線の試験方法	―	―	なし	MOD/追加	感熱線の試験方法を追加した。	日本独特の製品のため，安全規定が必要。輸出需要が多くなれば，IEC への提案要。	N/A

JIS と国際規格との対応の程度の全体評価　MOD

備考1．項目ごとの評価欄の記号の意味は，次のとおりである。

―IDT……技術的差異がない。

―MOD/追加……国際規格にない規定項目又は規定内容を追加している。

―MOD/変更……国際規格の規定内容を変更している。

備考2．JIS と国際規格との対応の程度の全体評価欄の記号の意味は，次のとおりである。

―IDT……国際規格と一致している。

―MOD……国際規格を修正している。

―NEQ……技術的内容及び構成において，国際規格と同等でない。

-End of Test Report-

Attachment 3: Comparison table between JIS C 9335-2-21:2005 and IEC 60335-2-21:2002

Requirement	verdict

附属書 1（参考）JIS と対応する国際規格との対比表

この附属書（参考）は，本体及び附属書（規定）に関連する事柄を補足するもので，規定の一部ではない。

JIS C 9335-2-21：2005 家庭用及びこれに類する電気機器の安全性－第 2-21 部：貯湯式電気温水器の個別要求事項			IEC 60335-2-21 2002 Household and similar electrical appliances - Safety - Part 2-21: Particular requirements for strage water heaters				
(I)JIS の規定		(Ⅱ)国際規格番号	(Ⅲ)国際規格の規定		(Ⅳ)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線		(Ⅴ)JIS と国際規格との技術的差異の理由及び今後の対策
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容	
1.適用範囲	定格電圧は単相の場合 250 V 以下，その他の場合は 480 V 以下の電気温水器。	**IEC 60335-2-21**	**1.**	**JIS** に同じ。	一致	－	P
2. 引用規格	本文で引用される規格 **JIS C 9335-1**	**IEC 60335-2-21**	**2.**	**JIS** に同じ。	一致	－	P
3. 定義	定格，絶縁の種類，感電に対する保護クラス，機器の種類，保護手段など	**IEC 60335-2-21**	**3.**	**JIS** に同じ。	一致	－	P
4. 一般要求事項	安全の原則	**IEC 60335-2-21**	**4.**	**JIS** に同じ。	一致	－	P
5. 試験のための一般条件	サンプル数，試験順序，設置条件，周囲温度，試験電圧など	**IEC 60335-2-21**	**5.**	**JIS** に同じ。	一致	－	P
6. 分類	**6.1** 感電に対する保護分類について，クラス 0I 以上を要求	**IEC 60335-2-21**	**6.**	**6.1** 感電に対する保護分類について，クラス I 以上を要求。	**6.1** 追加	**6.1** パート 1 の採用	**6.1** 日本の配電事情による	P
7. 表示及び取扱説明	**7.12.1** 密閉形温水器の圧力逃し弁に接続する排水パイプ(ホッパ)を示す	**IEC 60335-2-21**	**7.**	**7.12.1** 密閉形温水器の圧力逃し弁に接続する排水パイプ(ホッパ)を示されていない	**7.12.1** 追加	**7.12.1** 明確化	**7.12.1** 日本独自の機器	P

Requirement	verdict

JIS C 9335-2-21 : 2005 家庭用及びこれに類する電気機器の安全性－第 2-21 部：貯湯式電気温水器の個別要求事項			IEC 60335-2-21 2002 Household and similar electrical appliances - Safety - Part 2-21: Particular requirements for strage water heaters				
(I)JIS の規定		(Ⅱ)国際規格番号	(Ⅲ)国際規格の規定		(Ⅳ)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線		(Ⅴ)JIS と国際規格との技術的差異の理由及び今後の対策
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容	
8. 充電部への接近に対する保護	試験指，テストピン及びテストプローブによる検査	**IEC 60335-2-21**	**8.**	**JIS** に同じ。	一致	－	P
9. モータ駆動機器の始動	適用しない	**IEC 60335-2-21**	**9.**	**JIS** に同じ。	一致	－	P
10. 入力及び電流	定格入力又は定格電流の表示値と測定値との許容差	**IEC 60335-2-21**	**10.**	**JIS** に同じ。	一致	－	P
11. 温度上昇	運転条件，試験時間，温度測定箇所を規定	**IEC 60335-2-21**	**11.**	**JIS** に同じ。	一致	－	P
12.欠如	規定なし	**IEC 60335-2-21**	**12.**	**JIS** に同じ。	一致	－	P
13.動作温度での漏えい電流及び耐電圧	運転状態における漏えい電流及び耐電圧試験	**IEC 60335-2-21**	**13.**	**JIS** に同じ。	一致	－	P
14. 過渡過電圧	空間距離の既定値を満たさない箇所に対するインパルス試験による代替え試験	**IEC 60335-2-21**	**14.**	**JIS** に同じ。	一致	－	P
15.耐湿性	溢水試験，耐湿試験及び温度プローブの絶縁	**IEC 60335-2-21**	**15.**	**JIS** に同じ。	一致	－	P
16. 漏えい	耐湿試験後の絶縁性の評	**IEC**	**16.**	**JIS** に同じ。	一致	－	

Requirement	verdict

JIS C 9335-2-21 : 2005 家庭用及びこれに類する電気機器の安全性－第 2-21 部：貯湯式電気温水器の個別要求事項					IEC 60335-2-21 2002 Household and similar electrical appliances - Safety - Part 2-21: Particular requirements for strage water heaters		
(Ⅰ)JIS の規定		(Ⅱ)国際規格番号	(Ⅲ)国際規格の規定		(Ⅳ)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線		(Ⅴ)JIS と国際規格との技術的差異の理由及び今後の対策
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容	
電流及び耐電圧	価及び高圧電源用変圧器の絶縁性能	**60335-2-21**					
17. 変圧器及びその関連回路の過負荷保護	高圧電源用変圧器を除く，変圧器が過負荷又は短絡状態を模擬した温度試験	**IEC 60335-2-21**	**17.**	**JIS** に同じ。	一致	－	
18. 耐久性	適用しない。	**IEC 60335-2-21**	**18.**	**JIS** に同じ。	一致	－	
19. 異常運転	容器の水の有無による運転 電熱機器の不適切な放熱，自動温度調節器の短絡，モータ駆動機器の拘束，三相欠相，電子部品の短絡開放など	**IEC 60335-2-21**	**19.**	**JIS** に同じ。	一致	－	
20. 安定性及び機械的危険	機器の安定性及び可動部への接近に対する保護	**IEC 60335-2-21**	**20.**	**JIS** に同じ。	一致	－	
21. 機械的強度	外郭の機械的強度	**IEC 60335-2-21**	**21.**	**JIS** に同じ。	一致	－	
22. 構造	**22.102** 労働基準安全法でいう定格圧力が 0.1MPa 以下の簡易ボイラーは，0.3MPa に耐えなければならない	**IEC 60335-2-21**	**22.**	**22.102** 密閉形温水器及び低圧形温水器は定格圧力の 2 倍	**22.102** **22.106** 変更	**22.102** 水道法施行令準拠 **22.106** 日本独自の事情	**22.102** 日本の法律による **22.106** IEC に提案し，承認済

verdict
P
P
N/A
P
P
P
P

Requirement	verdict

JIS C 9335-2-21 : 2005 家庭用及びこれに類する電気機器の安全性－第 2-21 部：貯湯式電気温水器の個別要求事項			IEC 60335-2-21 2002 Household and similar electrical appliances - Safety - Part 2-21: Particular requirements for strage water heaters				
(Ⅰ)JIS の規定		(Ⅱ)国際規格番号	(Ⅲ)国際規格の規定		(Ⅳ)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線		(Ⅴ)JIS と国際規格との技術的差異の理由及び今後の対策
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容	
	22.106 電源が単相で漏電遮断器を使用する場合は，単極遮断機能の装備でもよい			**22.106** 密閉形温水器は，全極遮断機能を装備する			
23. 内部配線	内部配線の屈曲，耐電圧など	**IEC 60335-2-21**	**23.**	**JIS** に同じ。	一致	－	P
24.部品	**24102** 密閉形温水器の温度過昇防止装置の動作温度の水温が、110℃	**IEC 60335-2-21**	**24.**	**24102** 密閉形温水器の温度過昇防止装置の動作温度の水温が、130℃	変更	規定温度が違う	IEC での審議結果 P
25. 電源接続及び外部可とうコード	電源電線の適用規格，断面積，折曲げ試験，コード止めなど	**IEC 60335-2-21**	**25.**	**JIS** に同じ。	一致	－	P
26. 外部導体用端子	端子ねじの緩み防止，端子ねじの大きさなど	**IEC 60335-2-21**	**26.**	**JIS** に同じ。	一致	－	P
27. 接地接続の手段	接地線の緩み防止，耐腐食性，接地導通試験など	**IEC 60335-2-21**	**27.**	**JIS** に同じ。	一致	－	P
28. ねじ及び接続	ねじの耐久性，種類，緩み止めなど	**IEC 60335-2-21**	**28.**	**JIS** に同じ。	一致	－	P
29. 空間距離，沿面距離及び固体絶縁	空間距離，沿面距離，固体絶縁の厚さ	**IEC 60335-2-21**	**29.**	**JIS** に同じ。	一致	－	P
30. 耐熱性及び耐火性	ボールプレッシャ試験，グローワイヤ試験，ニードルフレーム試験	**IEC 60335-2-21**	**30.**	**JIS** に同じ。	一致	－	P

Requirement	verdict

JIS C 9335-2-21 : 2005 家庭用及びこれに類する電気機器の安全性－第 2-21 部：貯湯式電気温水器の個別要求事項					IEC 60335-2-21 2002 Household and similar electrical appliances - Safety - Part 2-21: Particular requirements for strage water heaters		
(I)JIS の規定		(Ⅱ)国際規格番号	(Ⅲ)国際規格の規定		(Ⅳ)JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線		(Ⅴ)JIS と国際規格との技術的差異の理由及び今後の対策
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容	
31.耐腐食性	腐食に対する保護対策	**IEC 60335-2-21**	**31.**	**JIS** に同じ。	一致	－	
32.放射線，毒性その他これに類する危険性	オゾンに関する要求事項	**IEC 60335-2-21**	**32.**	**JIS** に同じ。	一致	－	
附属書	**附属書 A.101** 圧力試験で，減圧弁を通しての給水について規定	**IEC 60335-2-21**	**附属書**	**附属書 A.101** 圧力試験で，減圧弁を通しての給水については規定しない	追加	水道法施行令準拠	日本の法律による
参考規格	**JIS C 9335-1** による。	**IEC 60335-2-21**	**参考規格**	**JIS** に同じ。	一致	－	

JIS と国際規格との対応の程度の全体評価　MOD

備考1. 項目ごとの評価欄の記号の意味は，次のとおりである。
－ 一致 …… 技術的差異がない。
－ 追加 …… 国際規格にない規定項目又は規定内容を追加している。
－ 変更 …… 国際規格の規定内容を変更している。
2. **JIS** と国際規格との対応の程度の全体評価欄の記号の意味は，次のとおりである。
－ MOD …… 国際規格を修正している。

P

P

P

-End of Test Report-

Attachment 3: Comparison table between JIS C 9335-2-24:2005 and IEC 60335-2-24:2002

Requirement	verdict

附属書 1（参考）JIS と対応する国際規格との対比表

JIS C 9335-2-24：2005 家庭用及びこれに類する電気機器の安全性－第 2-24 部：冷却用機器，アイスクリーム機器及び製氷機の個別要求事項					IEC 60335-2-24：2002, Household and similar electrical appliances－Safety－Part 2-24: Particular requirements for refrigerating appliances, ice-cream appliances and ice makers		
（Ⅰ）JIS の規定		（Ⅱ）国際規格番号	（Ⅲ）国際規格の規定		（Ⅳ）JIS と国際規格との技術的差異の項目ごとの評価及びその内容 表示箇所：本体及び附属書 表示方法：点線の下線又は側線		（Ⅴ）JIS と国際規格との技術的差異の理由及び今後の対策
項目番号	内容		項目番号	内容	項目ごとの評価	技術的差異の内容	
1.適用範囲	定格電圧が単相 250 V 以下，その他 480 V 以下の家庭用の冷却用機器，アイスクリーム機器及び製氷機	**IEC 60335-2-24**	**1.**	**JIS** に同じ。	一致	－	－
2.引用規格							
3.定義	冷却用機器，製氷機，アイスクリーム機器の通常動作，用語の定義などの定義	**IEC 60335-2-24**	**3.**	**JIS** に同じ。	一致	－	－
4.一般要求事項	安全の原則 可燃性冷媒の着火の危険性に言及	**IEC 60335-2-24**	**4.**	**JIS** に同じ。	一致	－	－
5.試験のための一般条件	サンプル数，試験順序，設置条件，周囲温度，試験電圧など	**IEC 60335-2-24**	**5.**	**JIS** に同じ。	一致	－	－
6.分類	感電に対する保護分類，有害な水の浸入に対する保護分類	**IEC 60335-2-24**	**6.**	**6.1** 機器は，感電に対する保護に関し，次のクラスのいずれか一つでなければならない。クラス 0，クラス 0I，クラス I，クラス II，クラス III	変更	**6.1** ただし，6.1 は，この規格による。機器は，クラス 0I，クラス I，クラス II，クラス III でなければならない。ただし，可搬形のペルチェ素子利用は，クラス 0 であってもよい。	可搬形のペルチェ素子利用機器をクラス 0 に規定した。

verdict
P
P
P
P
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N/A

Requirement								verdict
						適否は，目視検査及び関連試験によって判定する。		
7.表示及び取扱説明	銘板表示，取扱説明書に記載する内容及び表示の消えにくさ。	**IEC 60335-2-24**	**7.**	可燃性冷媒を用いる機器は，**ISO 3864** にある **B.3.2** の警告標識を表示しなければならない。	追加	可燃性冷媒を用いる機器は，**ISO 3864** にある **B.3.2** の警告標識を表示しなければならない。 なお，圧縮式の機器本体（キャビネット）及び取扱説明書に表示する場合に限り，刻印又は記号と下地のコントラストが明白な警告表示も可とする。	現状の日本における表示方法に合わせた。	P
8.充電部への接近に対する保護	試験指，テストピン及びテストプローブによる検査	**IEC 60335-2-24**	**8.**	**JIS** に同じ。	一致	—	—	P
9.モータ駆動機器の始動	適用しない。	**IEC 60335-2-24**	**9.**	**JIS** に同じ。	一致	—	—	P
10.入力及び電流	定格入力又は定格電流の標示値と測定値との許容差	**IEC 60335-2-24**	**10.**	**JIS** に同じ。	一致	—	—	P
11.温度上昇	通常使用状態における許容温度	**IEC 60335-2-24**	**11.**	**JIS** に同じ。	一致	—	—	P
12.欠如	規定なし	**IEC 60335-2-24**	**12.**	**JIS** に同じ。	一致	—	—	N/A
13.動作温度での漏えい電流及び耐電圧	運転状態における漏えい電流及び耐電圧試験	**IEC 60335-2-24**	**13.**	**13.2** —クラス 0I 機器 …… 0.75 mA —クラス I の冷却用機器 …… 種々のタイプの据置形のクラス I 機器に関して規定された値 —その他のクラス I 機器 …… 1.5 mA	追加	**13.2** —クラス 0I 機器……0.75 mA —据置形クラス I の冷却用機器…… 種々のタイプの据置形のクラス I 機器に関して規定された値 —その他（冷却用機器以外及び可搬形）のクラス I 機器……1.5 mA	“Other”を明確化するため，追加した。	P
14.過渡過電圧	空間距離の既定値を満たさない箇所に対するインパルス試験による代替え試験	**IEC 60335-2-24**	**14.**	**JIS** に同じ。	一致	—	—	N/A

Requirement								verdict
15.耐湿性	IPX 試験，いっ(溢)水試験及び耐湿試験	IEC 60335-2-24	15.	JIS に同じ。	一致	—	—	P
16. 漏えい電流及び耐電圧	耐湿試験後の絶縁性の評価	IEC 60335-2-24	16.	16.2 －クラス 0I 機器 …… 0.75 mA －クラス I の冷却用機器… 種々のタイプの据置形のクラス I 機器に関して規定された値 －その他のクラス I 機器… …… 1.5 mA	追加	16.2 －クラス 0I 機器……0.75 mA －据置形クラス I の冷却用機器…… 種々のタイプの据置形のクラス I 機器に関して規定された値 －その他(冷却用機器以外及び可搬形)のクラス I 機器……1.5 mA	“Other”を明確化するため，追加した。	P
17. 変圧器及びその関連回路の過負荷保護	変圧器が過負荷又は短絡状態を模擬した温度試験	IEC 60335-2-24	17.	JIS に同じ。	一致	—	—	P
18.耐久性	適用しない。	IEC 60335-2-24	18.	JIS に同じ。	一致	—	—	N/A
19. 異常運転	電熱装置の不適切な放熱，シーズヒータの短絡，モータ駆動機器の拘束，三相欠相，電子部品の短絡開放など	IEC 60335-2-24	19.	JIS に同じ。	一致	—	—	P
20. 安定性及び機械的危険	機器の安定性及び扉を開けたときの安定性	IEC 60335-2-24	20.	JIS に同じ。	一致	—	—	P
21. 機械的強度	外郭の機械的強度，キャンプ又はこれに類する機器の落下試験・振動試験，ランプの機械的強度など	IEC 60335-2-24	21.	JIS に同じ。	一致	—	—	P

C 9335-2-24：2005 2

C 9335-2-24：2005 2

Requirement								verdict
22.構造	自動温度調節器の蒸発器への接触防止，可燃性冷媒を用いた圧縮式機器の保護冷却システムの耐圧試験，製氷機の水圧に耐える構造，モータ温度保護装置の試験，電池駆動機器の絶縁などの構造一般	**IEC 60335-2-24**	**22.**	**22.101** 適否は，目視検査によって判定しなければならない。疑わしきものにあっては，E14，B15 のランプホルダに対しては 0.15 Nm，E27，B22 のランプホルダに対しては 0.25 Nm のトルクを加えなければならない。	追加	**22.101** 適否は，目視検査によって判定しなければならない。疑わしきものにあっては，E12，E14，E17，B15 のランプホルダに対しては 0.15 Nm，E26，B22 のランプホルダに対しては 0.25 Nm のトルクを加えなければならない。	**22.101** 日本で一般的に使われているランプホルダのタイプを追加した。	N/A
				22.102 **備考** 電気接続部は，ジョイント部とみなさない。 **22.105** 電池駆動可能な機器の主電源の電池回路は，充電部から二重絶縁か又は強化絶縁で絶縁されていなければならない。 **22.106** 冷却システムに可燃性冷媒を用いる圧縮式形機器の冷媒量は，各々独立した冷媒回路において冷媒量が 150 g 以下でなければならない。		**22.102** **備考 1.** 電気接続部は，ジョイント部とみなさない。 2. 水没するおそれがない霜取り用及び気中加湿用ガラス管ヒータには，この項は該当しないのでこの試験を適用しない。 **22.105** 電池駆動可能な機器の主電源の電池回路は，充電部から二重絶縁か又は強化絶縁(クラス 0 機器については基礎絶縁)で絶縁されていなければならない。 **22.106** 冷却システムに可燃性冷媒を用いる圧縮式形機器の冷媒量は，各々独立した冷媒回路において冷媒量が 150 g 以下でなければならない。ただし，保護冷却システム構造以外の定格内容積が 800 L 以下の冷蔵庫であって，底面が床から 50 mm 未満の高さにあるもの，又は庫内に霜取用のガラス管ヒータをもつものにあっては，100 g 以下でなければならない。	**22.102** 断熱材に直接接触しないガラス管ヒータは，この項には該当しないことを明確にした。 **22.105** クラス 0 機器については，基礎絶縁だけのため。 **22.106** 保護冷却システム構造をもたない，また，霜取用にガラス管ヒータを用いる家庭用の冷蔵庫については，冷媒量を 100 g 以下に規定し，冷媒漏えい時の危険性をより少なくした。	N/A N/A N/A

C 9335-2-24 : 2005 2

Requirement	verdict
	N/A

				22.108 照明は，グループ IIA のガス又は用いている冷媒で少なくとも **IEC 60079-15** の **16.**に適合することを確認しなければならない。		**22.108** 照明は，グループ IIA のガス又は用いている冷媒で少なくとも **IEC 60079-15** の **16.**に適合することを確認しなければならない。 **備考** 省令一項の別表第四に適合するランプホルダであってもよい。この場合，密閉遮断装置の最大定格は定格 100 V の機器にあっては 300 V 及び 33 A，定格 200 V の機器にあっては 600 V 及び 17 A とする。 ランプ(口金)は，次のトルクでランプホルダに完全に差し込まなければならない。 —E12：1.0±0.1 N･m —E17：1.0±0.1 N･m —E26：1.5±0.1 N･m それから，ランプ(口金)は，15 ° まで回して部分的に戻し，その後ランプ(口金)を取り外すのに必要な最小トルクは，次の値以上でなければならない。 —E12：0.3 N･m —E17：0.3 N･m —E26：0.5 N･m	**22.108** 日本で通常用いられているランプホルダを IEC のものと整合，密閉遮断装置の最大定格及び差込み･取外しの最小トルクを規定した。 ランプホルダについては，日本の既存の緩和規定による。	2 C 9335-2-24：2005 2 C 9335-2-24：2005

Requirement								Verdict
				22.110 漏えいした可燃性冷媒にさらされるものの表面の温度は，**表 102** に規定されている冷媒の発火点温度から 100 K を減じた温度を超えてはならない。		**22.110** 漏えいした可燃性冷媒にさらされるものの表面の温度は，**表 102** に規定されている冷媒の発火点温度から 100 K を減じた温度を超えてはならない。ただし，ヒータ線部分が密閉されていないガラス管ヒータであって，**附属書 CC** に示す着火試験手順によって，定格電圧の 150 %を印加したとき，用いる冷媒の化学的な濃度に設定した可燃性雰囲気において着火しない場合には，ガラス管ヒータの最外郭表面をその表面温度とする。	**22.110** ガラス管ヒータの表面温度測定の定義を明確にした。	N/A
23. 内部配線	内部配線の屈曲，耐電圧など	**IEC 60335-2-24**	**23.**	**JIS** に同じ。	一致	—	—	P
24.部品	スイッチ，自動温度調節器，温度過昇防止装置，始動リレー，モータ温度保護装置などの部品の適用規格	**IEC 60335-2-24**	**24.**	**JIS** に同じ。	一致	—	—	P
25. 電源接続及び外部可とうコード	電源電線の適用規格，断面積，折曲げ試験，コード止めなど	**IEC 60335-2-24**	**25.**	**JIS** に同じ。	一致	—	—	P
26. 外部導体用端子	端子ねじの緩み防止，端子ねじの大きさなど	**IEC 60335-2-24**	**26.**	**JIS** に同じ。	一致	—	—	P
27. 接地接続の手段	接地線の緩み防止，耐腐食性，接地導通試験など	**IEC 60335-2-24**	**27.**	**JIS** に同じ。	一致	—	—	P
28. ねじ及び接続	ねじの耐久性，種類，緩み止めなど	**IEC 60335-2-24**	**28.**	**JIS** に同じ。	一致	—	—	P

2 C 9335-2-24 : 2005

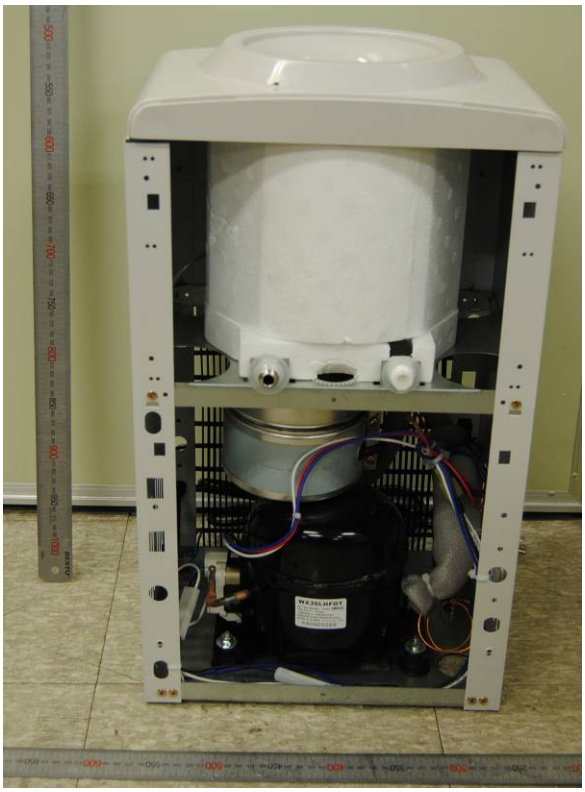
2 C 9335-2-24 : 2005

Requirement								Verdict
29. 空間距離，沿面距離及び固体絶縁	空間距離，沿面距離及び固体絶縁の厚さ	**IEC 60335-2-24 (IEC 60335-1)**	**29.**	**29.3** 固体絶縁は，付加絶縁については 1 mm 及び強化絶縁については 2 mm の最小厚さがなければならない。 **備考 1.** 厚さは固体絶縁だけを通すということを意味しない。絶縁は，一つ以上の空気層を追加した固体材料からなってもよい。 この要求事項は，次については適用しない。 －付加絶縁の場合には，2 層以上からなっており，その各層が **16.3** に規定した耐電圧試験に耐えるもの。 －強化絶縁の場合には，3 層以上からなっており，そのうちの任意の 2 層を重ねたものが **16.3** に規定した耐電圧試験に耐えるもの。	追加	**29.3** 定格電圧が 150 V 以下の冷蔵庫の内箱は，熱可塑性樹脂に限り，**16.**及び **21.** を満足する場合は，この項に適合しているものとみなす。	**29.3** 内箱は，通常外箱に比べ，ストレスを受けにくいことを考慮した。	2 C 9335-2-24 : 2005	P
30. 耐熱性及び耐火性	ボールプレッシャ試験，グローワイヤ試験，ニードルフレーム試験	**IEC 60335-2-24**	**30.**	**JIS** に同じ。	一致	－	－		P
図	本体で引用される図	**IEC 60335-2-24**	図	**JIS** に同じ。	一致	－	－		P
附属書 AA	ファンモータの回転子拘束試験	**IEC 60335-2-24**	**附属書 AA**	**JIS** に同じ。	一致	－	－		N/A
附属書 BB	着霜の方法	**IEC 60335-2-24**	**附属書 BB**	**JIS** に同じ。	一致	－	－		N/A
附属書 CC	着火試験	**IEC 60335-2-24**	－	－	追加	**CC1.** 着火試験装置 **CC1.1** 試験チャンバ **CC1.2** ガス濃度計 **CC2.** 試験方法 **CC2.1** 着火試験	ガラス管ヒータの表面温度の試験方法を規定。冷気強制循環方式の冷蔵庫であって，除霜装置がガラス管ヒータの場合に適用。	2 C 9335-2-24 : 2005	N/A

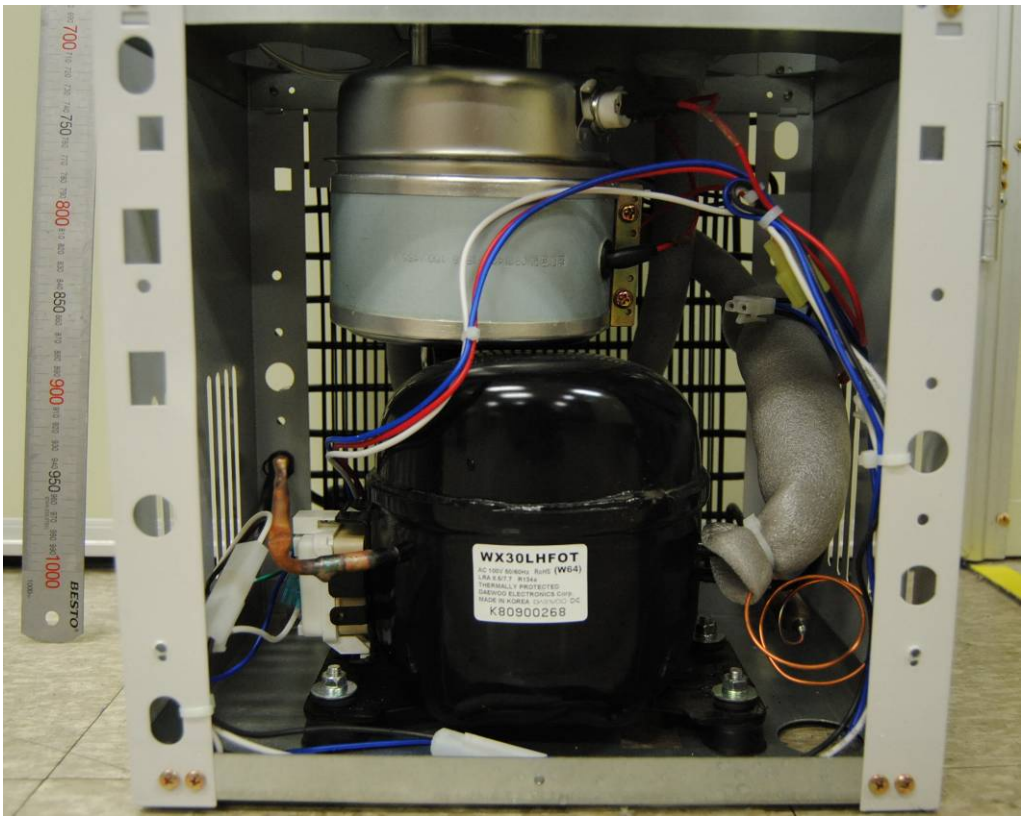
-End of Test Report-

Model: W2-300S

Model: W2-300S



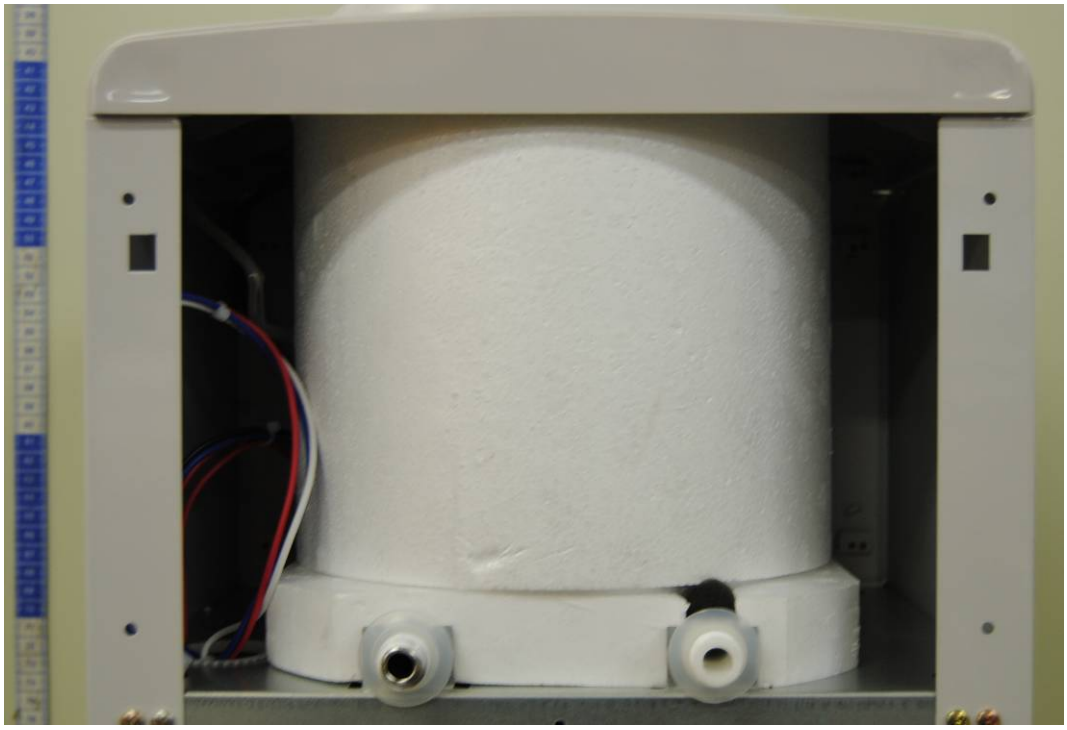
Model: W2-300S

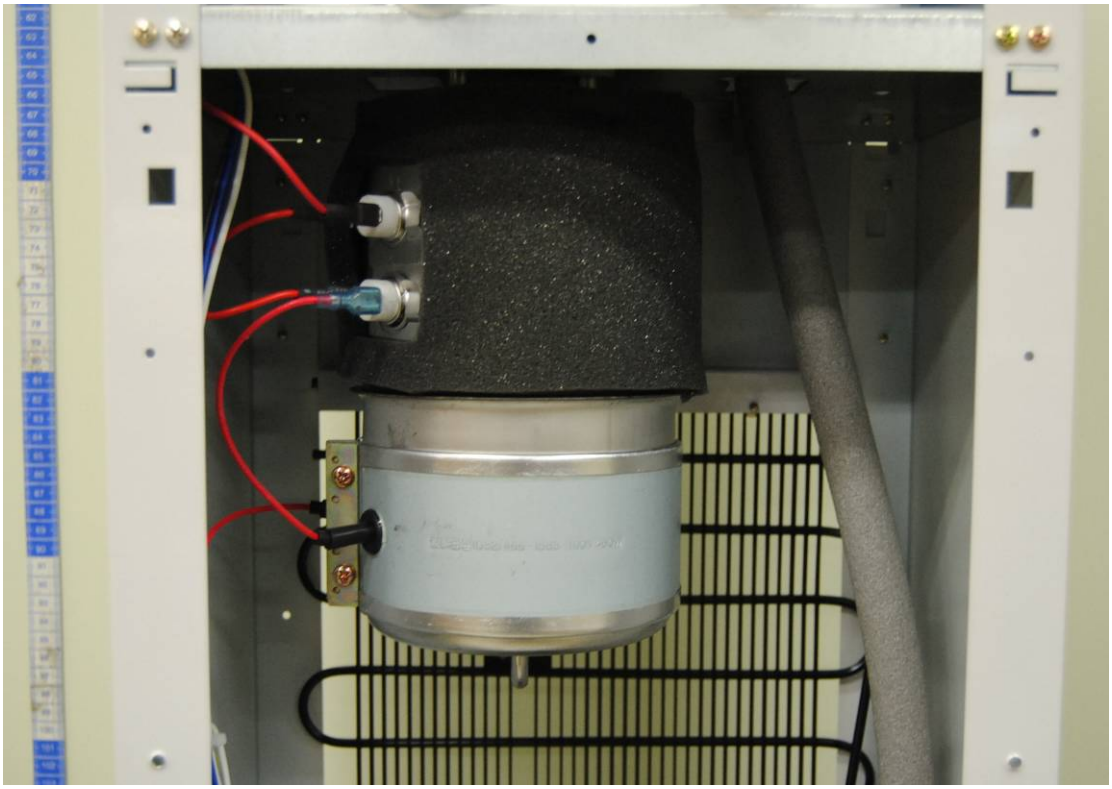


Model: W2-310-2

Model: W2-310-2

Model: W2-310-2





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