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मानक

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IS 302-2-46 (1993): Safety of household and similar electrical appliances, Part 2: Particular requirements, Section 46: Electric steam cookers [ETD 32: Electrical Appliances]



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भारतीय मानक

घरेलू और समान विद्युत साधनों की सुरक्षा

भाग 2 विशेष अपेक्षाएं

अनुभाग 46 विद्युत भाप कुकर

*Indian Standard*

**SAFETY OF HOUSEHOLD AND SIMILAR  
ELECTRICAL APPLIANCES**

**PART 2 PARTICULAR REQUIREMENTS**

**Section 46 Electric Steam Cookers**

UDC 641.525.06

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**BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002**

## FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Electrical Appliances Sectional Committee had been approved the Electrotechnical Division Council.

This standard covers the general and safety requirements of Electric Steam Cookers. This standard does not cover the performance requirements, which is covered under IS 11879 : 1976 'Specification for electric steam cookers ( *under revision* )'.

This standard is to be read in conjunction with IS 302-1 ( 1979 ) 'Safety of household and similar electrical appliances : Part 1 General requirements'. For the sake of convenience, the clauses of this standard correspond to those of IS 302-1 ( 1979 ), instead of reproducing full text of each clause, clauses of IS 302-1 ( 1979 ) which are applicable ( which means that relevant provision of the clause apply ) or not applicable and the subclauses or portions thereof which are not applicable are indicated as under:

- a) In case of a clause where it is applicable or not applicable, the wording used is 'This clause of IS 302-1 ( 1979 ) is applicable/not applicable'.
- b) In case of sub-clause part thereof 'Not applicable'.

Wherever a subclause of IS 302-1 ( 1979 ) is to be replaced by a new text, it has been indicated as under:

Replacement — followed by the new text.

Any addition to the existing provisions of a sub-clause of IS 302-1 ( 1979 ) has been indicated as under; 'Addition — followed by the text of additional matter'.

Clauses/tables which are additional to those of IS 302-1 ( 1979 ) are numbered starting from 101 and additional sub-clauses are numbered with the main clause number followed by 101, 102, etc, For example, 7.101.

Should however, any deviation exist between IS 302-1 ( 1979 ) and this standard, the provisions of the latter shall apply.

While preparing this standard, assistance has been derived from the following publications issued by the International Electrotechnical Commission:

IEC Pub 335-1 ( 1976 ) Safety of household and similar electrical appliance: Part 1 General requirements

IEC Pub 335-2-46 ( 1986 ) Safety of household and similar electrical appliances: Part 2 Particular requirements for commercial electric steam cookers.

The Indian Standards which are necessary adjuncts to this standard are given in Annex AA.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values ( *revised* )'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard***SAFETY OF HOUSEHOLD AND SIMILAR  
ELECTRICAL APPLIANCES****PART 2 PARTICULAR REQUIREMENTS****Section 46 Electric Steam Cookers****1 SCOPE**

This clause of IS 302-1 (1979) is applicable except as follows:

**1.1 Replacement**

This standard covers general and safety requirements for electrically operated household steam cookers, their rated voltage not exceeding 250 V, ac single phase, or dc.

The electrical part of appliances making use of other forms of energy is also within the scope of this standard and the influence of the non-electrical parts on the electrical parts is taken into consideration.

**1.2 Replacement**

This standard does not apply to:

- steam cookers for industrial purposes;
- continuous process steam cookers for the mass production of food;
- steam cookers with electrode heaters;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas).

For appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary.

**2 TERMINOLOGY**

**2.1** This clause of IS 302-1 (1979) is applicable except as follows:

**2.4 Addition**

The rated input is the sum of the rated inputs of all the individual elements in the appliance which can be on at one time; where there are several such combinations possible that giving the highest input is used in determining the rated input.

**2.17 Addition**

Wherever Class II is used in this standard, it is understood to mean a part of Class II construction.

**2.18 Addition**

Wherever Class III is used in this standard, it is understood to mean a part of Class III construction.

**2.29 Replacement**

Conditions of adequate heat discharge denote:

- that the appliance is operated in accordance with the manufacturer's instructions with all controls intended to be operated by the user adjusted to their maximum setting until reaching operating temperature. Then they are readjusted, if possible, to the lowest setting that maintains that temperature.
- that lids, doors and covers are in position and closed.
- that the cooking compartment of the appliance contains a water load, initially at  $22 \pm 5^\circ \text{C}$ , comprising 0.5 l/kg of the manufacturer's declared maximum food load. The water load is evenly distributed between the shelves or pans.

Since pans may be perforated to allow for circulation of steam, the water load may be contained in suitable containers evenly distributed over the shelves or pans.

*Additional Sub-Clauses*

**2.101** A steam cooker denotes an appliance intended for the cooking of food by means of direct steam contact.

**2.102** Cooking compartment denotes that part of the appliance in which the cooking of food heating process takes place.

**3 GENERAL REQUIREMENT**

This clause of IS 302-1 (1979) is applicable except as follows:

3.1 Para 2 not applicable.

#### 4 GENERAL NOTES ON TESTS

This clause of IS 302-1 ( 1979 ) is applicable except as follows:

##### 4.2 Additional

If the steam cookers are intended to be immersed in water fully or partially for cleaning, three additional samples are required.

4.8, 4.10, 4.13 and 4.14 not applicable.

#### 5 RATING

This clause of IS 302-1 ( 1979 ) is applicable.

#### 6 CLASSIFICATION

This clause of IS 302-1 ( 1979 ) is applicable except as follows:

*Addition:*

- c) According to degree of protection against temperature rise due to installation conditions:
  - appliances intended for installation in isolation;
  - appliances intended for installation in a bank of other appliances.

There are no additional requirements for appliances intended for installation in a bank of other appliances at present.

#### 7 MARKING

This clause of IS 302-1 ( 1979 ) is applicable except as follows:

##### 7.1 Replacement

This steam cooker shall be marked with the following information:

- a) Rated voltage in volts,
- b) Rated input in watts or kilowatts or rated current in amperes,
- c) Rated capacity in litres,
- d) Marking indicating the different switch positions and corresponding rated input in case multi-step switches are used,
- e) Manufacturer's name or trade-mark,
- f) Manufacturer's model or type reference, and
- g) Country of origin.

##### 7.12 Addition

The appliance shall be accompanied by an instruction sheet detailing any special precautions necessary for installation. Operating

instructions and instructions for user maintenance, for example cleaning, shall also be given.

For appliances which are permanently connected to fixed wiring, the instruction sheet shall give information about precautions to be taken during installation with regard to leakage current.

##### *Additional Sub-clauses*

**7.101** For steam cookers not intended to be immersed, the instruction leaflet shall state that the steam cooker must not be immersed.

NOTE — Portable steam cookers are generally considered as appliances intended to be fully or partially immersed in water while cleaning.

**7.102** Steam cookers intended to be partially immersed in the water shall be clearly marked with an identified water line and bear the warning 'DONOT IMMERSE BEYOND WATER LINE'.

The water line indicating the minimum depth of immersion shall be spaced at least 5 cm from any seam or seals that are not capable of withstanding the moisture resistance test given in 15.

**7.103** For appliances other than those of water-tight construction which are intended to be immersed in water while cleaning, the instruction sheet shall state that the connector must be removed before the cooker is cleaned and that the appliance inlet must be dried before the cooker is used again.

**7.104** For cooker intended to be used with a connector incorporating a thermostat the instruction sheet shall state that the cooker must be used only with the appropriate connector.

**7.105** Electric steam cookers may also be marked with the Standard Mark.

#### 8 PROTECTION AGAINST ELECTRIC SHOCK

This clause of IS 302-1 ( 1979 ) is applicable.

8.2, 8.3 and 8.7 not applicable.

#### 9 STARTING OF MOTOR-OPERATING APPLIANCES

This clause of IS 302-1 ( 1979 ) is applicable.

#### 10 INPUT AND CURRENT

This clause of Part 1 is applicable except as

follows:

### 10.1 Addition

For multiple units the total input may be determined by measuring the input of each and separately.

The rated input is the sum of the rated inputs of all the individual elements in the appliances which can be on at one time; where there are several such combinations possible, that giving the highest input is used in determining the rated input.

### 11 TEMPERATURE RISE

This clause of IS 302-1 ( 1979 ) is applicable except as follows:

#### 11.2 Addition

Appliances intended to be fixed to the floor are installed accordingly with the manufacturer's instructions. If no instructions are given, the provision of IS 302-1 ( 1979 ) shall apply.

#### 11.4 Replacement

Appliances are operated in accordance with conditions of adequate heat discharge such that the total input of the appliance is 1.15 times rated input. If it is not possible to switch on all heating elements at the same time, the test is made with each of the combinations that the switch arrangement will allow, the highest load possible with each switching arrangement being in circuit.

If the appliance is provided with a control which limits the total input, the test is made with whichever combination of heating units as may be selected by the control imposes the most severe condition.

11.5, 11.6, 11.9 and 11.10 not applicable.

### 12 OPERATION UNDER OVERLOAD CONDITIONS OF APPLIANCES WITH HEATING ELEMENTS

This clause of IS 302-1 ( 1979 ) is applicable except as follows:

12.3 Not applicable.

### 13 ELECTRICAL INSULATION AND LEAKAGE CURRENT AT OPERATING TEMPERATURE

This clause of IS 302-1 ( 1979 ) is applicable except as follows:

#### *Addition*

Where parts of Class II or Class III construction are included in the appliance, the leakage current of these parts shall not exceed the values given in IS 302-1 ( 1979 ).

### 14 RADIO AND TELEVISION INTERFERENCE SUPPRESSION

This clause of IS 302-1 ( 1979 ) is applicable.

### 15 MOISTURE RESISTANCE

This clause of IS 302-1 ( 1979 ) is applicable except as follows:

15.1 Not applicable.

#### 15.2 Addition

Ordinary and drip-proof appliances are also subjected to the splash test with the apparatus shown in Fig. 11 of IS 302-1 ( 1979 ).

#### 15.4 Replacement

Instead of the periods specified, the following applies:

Appliances are placed in the humidity cabinet for a period of 24 h.

#### *Addition*

If it is not possible to place the whole appliance in the humidity cabinet, parts containing electrical components are tested separately, taking into account the conditions which occur in the appliance.

#### *Additional Sub-clause*

15.101 Appliances intended to be partially or completely immersed in water for cleaning shall have adequate protection against the effects of immersion. Compliance is checked by the following tests, which are made on three additional samples.

The samples are operated with water but without the inside pans, with any thermostat adjusted to the highest setting and at a supply voltages such that the input is 1.15 times rated input, until the thermostat operates for the first time or, for appliances without a thermostat, until the centre of the heated surface attains the temperature as specified for conditions of adequate heat discharge.

The connectors are then withdrawn or the supply otherwise switched off and the samples immediately immersed completely in water having a temperature between 15° C and 35° C, unless they are marked with a line indicating the maximum depth of immersion, in which case they are immersed to the depth indicated. After 1 h of immersion, the samples are removed from the water and dried, care being taken to ensure that all moisture is removed from the insulation in the vicinity of the pins of appliance inlets. The leakage current is then measured as



described in 16.2. For each of the three samples, the leakage current shall not exceed the value specified in 16.2.

The test described above and the measurement of the leakage current are made five times, after which the samples shall withstand an electric strength test as specified in 16.4, the test voltage being, however, reduced to 1 000 V.

The sample showing the largest leakage current after the fifth immersion is dismantled, and inspection shall show that water has not entered the appliance to any appreciable extent and that there is no trace of water on insulation for which creepage distances are specified in 29.1.

The remaining two empty samples are then operated with any thermostat adjusted to the highest setting or, for appliances without a thermostat, so that the centre of the heated surface attains a temperature of 250°C, for 10 days (240 h). During this period, the samples are allowed to cool to approximately room temperature five times at regular intervals. After this period, the connectors of the two samples are withdrawn or the supply otherwise switched off and the samples immediately immersed once more in water for 1 h as described before. They are then dried and the leakage current is measured again as described in 16.2. For each of the two samples, the leakage current shall not exceed the value specified in 16.2. These samples shall then withstand an electrical strength test as specified before, and visual inspection shall show that water has not entered the appliance to any appreciable extent and that there is no trace of water on insulation for which creepage distances are specified in 29.1.

NOTE — When inspecting the appliances for the presence of water, special attention is paid to parts of the appliance in which electrical components are situated.

**15.102** Appliances which are provided with a tap intended for filling or cleaning shall be so designed that the water from the tap cannot come into contact with live parts.

Compliance is checked by the following test:

The means for controlling the incoming water is held fully open for 1 min with the appliance connected to a water supply having the maximum water pressure indicated by the manufacturer. Tiltable and movable parts, including lids, are tilted or placed in the most unfavourable position. Swivelling outlets of water taps are so positioned as to direct water onto those parts which will give the most unfavourable result. Immediately following this treatment, the appliance shall withstand the electric strength test of 16.

## **16 INSULATION RESISTANCE AND ELECTRIC SHOCK STRENGTH ( AFTER HUMIDITY TREATMENT )**

This clause of IS 302-1 ( 1979 ) is applicable except as follows:

**16.3** Not applicable.

## **17 OVERLOAD PROTECTION**

This clause of IS 302-1 ( 1979 ) is applicable.

## **18 ENDURANCE ( Under Consideration )**

## **19 ABNORMAL OPERATION**

This clause of IS 302-1 ( 1979 ) is applicable except as follows:

### **19.1 Replacement**

Appliances shall be so designed that the risk of fire, mechanical damage impairing safety or the protection against electric shock as a result of abnormal or careless operation is obviated as far as is practicable.

Compliance is checked by the tests of 19.2 to 19.4.

If, in any of the tests, a non-self-resetting thermal cut-out operates, a heating element ruptures or if the current is otherwise interrupted before steady conditions are established, the heating period is considered to be ended, but if the interruption is due to the rupture of a heating element or of an intentionally weak part, the relevant test is repeated on a second sample which shall then also comply with the conditions specified in 19.11.

Rupture of a heating element or of an intentionally weak part in the second sample will not in itself entail a rejection.

Fuses, thermal cut-outs, overcurrent releases or the like incorporated into the appliance, may be used to provide the necessary protection.

If more than one of the tests are applicable for the same appliance, these tests are made consecutively.

Provisions of 19.11 apply to all appliances.

### **19.2 Replacement**

Appliances, without water load and with all doors or lids closed, are operated under the conditions specified in 11, the supply voltage, determined prior to the test, being that required to provide an input of 0.85 times the rated input under conditions of adequate heat discharge when steady conditions have been established. This voltage is maintained throughout the test.

If a non-self-resetting thermal cut-out operates, or if a current is otherwise interrupted before steady conditions are established, the operating period is considered to be ended and the test of 19.7 is not made.

If interruption of the current does not occur, the steam cooker is switched off as soon as steady conditions are established, and is allowed to cool down to approximately room temperature. The appliance is then subjected to the test of 19.3.

## 20 STABILITY AND MECHANICAL HAZARDS

This clause of IS 302-1 (1979) is applicable except as follows:

### 20.1 Addition

Covers, lids and accessories are placed in the most unfavourable positions.

For the purpose of this test any spillage of liquid is ignored.

20.2 Not applicable.

## 21 MECHANICAL STRENGTH

This clause of IS 302-1 (1979) is applicable.

21.2 to 21.4 not applicable.

## 22 CONSTRUCTION

This clause of IS 302-1 (1979) is applicable except as follows:

### 22.1 Replacement

Appliances shall be of Class I construction.

Compliance is checked by inspection and by the relevant tests.

22.15, 22.18, 22.20, 22.24, 22.25, 22.29 and 22.32 not applicable.

#### *Additional Sub-clauses*

22.101 Appliances shall be protected in such a manner that moisture and grease will not collect in such a way as to affect creepage distance and clearance values.

Compliance is checked by inspection.

22.102 Thermal cut-outs shall be of the non-self-resetting trip-free type.

Compliance is checked by inspection and manual test.

22.103 For fixed appliances and appliances which are permanently connected to fixed wiring, it shall be possible to gain access to components for servicing without moving the appliance, for example heating elements and controls.

22.104 The heating elements or elements shall be so designed and located that the heating conditions required for cooking can be obtained and local overheating or burning of foodstuffs is avoided. The elements shall be easily accessible for inspection, repair and replacement. It shall not get displaced when the steam cooker is lifted by its carrying handle, if any, or for a broken element to fall out of the steam cooker. Compliance is checked by inspection and manual test.

22.105 A thermostat shall be provided to control the temperature within the steam cooker.

22.106 Switches and controls shall be so located and protected that these are not subjected to mechanical injury, spillage from cooking or collection of grease. Compliance is checked by inspection and by test of 13.3.

22.107 The inner container of the steam cooker shall be made of either aluminium or stainless steel of sufficient thickness so as to make it withstand normal wear and tear.

Compliance is checked by inspection.

## 23 INTERNAL WIRING

This clause of IS 302-1 (1979) is applicable.

### 23.2 Replacement

The wiring and all the components used in the steam cooker shall be constructed and fixed in such a manner that these shall be able to withstand continuously the temperature to which these are exposed when the steam cooker is operated at its maximum temperature. All the wiring and components shall be suitably protected from spillage or overflow from the inner container of the steam cooker.

## 24 COMPONENTS

This clause of IS 302-1 (1979) is applicable except as follows:

24.9 and 24.10 not applicable.

### 24.11 Replacement

Thermal cut-outs shall provide all phase disconnection from the supply.

Compliance is checked by inspection.

## 25 SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CABLES AND CORDS

This clause of IS 302-1 (1979) is applicable except as follows:

#### *Addition*

Appliances shall not be provided with an appliance inlet.

The terminals for permanent connection to fixed wiring may also be suitable for the type X attachment of a power supply cord. In this case, the instruction sheet shall give full particulars of the power supply cord.

Compliance is checked by inspection.

**25.4 Addition**

Type X attachment shall be used for appliances delivered without a cord.

Instead of the types of power supply cord specified, the following applies:

Power supply cords shall be oil resistant sheathed flexible cable not lighter than ordinary polychloroprene or other equivalent synthetic elastomer-sheathed cord [ see IS 9968 ( Part 1 ) : 1988 ].

**25.6 Addition**

The length of the supply cord measured between the entry point into the appliance and the entry point into the plug and cord guard included, shall be not less than 2.0 M, if supplied with plug, or shall be not less than 2.05 if supplied without plug.

**25.10** Not applicable.

**26 TERMINALS FOR EXTERNAL CONDUCTORS**

This clause of IS 302-1 ( 1979 ) is applicable.

**27 PROVISION FOR EARTHING**

This clause of IS 302-1 ( 1979 ) is applicable except as follows:

**27.2 Addition**

Small fixed exposed metal parts, for example name plates and the like, are not required to be in electrical contact with the terminal.

**28 SCREWS AND CONNECTIONS**

This clause of IS 302-1 ( 1979 ) is applicable.

**30 RESISTANCE TO HEAT, FIRE AND TRACKING**

This clause of IS 302-1 ( 1979 ) is applicable.

**31 RESISTANCE TO RUSTING**

This clause of IS 302-1 ( 1979 ) is applicable.

**32 RADIATION HAZARDS**

This clause of IS 302-1 ( 1979 ) is applicable.

**101 TESTS**

**101.1 Type Test**

The tests specified in Table 101 shall constitute the type tests and shall be carried out on two samples of steam cookers of the same type and

rating selected preferably at random from a regular production lot. Before commencement of the tests, the steam cookers shall be visually examined and inspected for obvious visual defects in respect of components, parts and their assembly, construction, mechanical hazards, markings, provision of suitable terminals for supply connections, earthing and the effectiveness of screws and connections. The external surface finish shall be even and free from finishing defects.

NOTE — See also 4.2.

**101.1.1 Criteria of Acceptance**

Both samples shall successfully pass all the type tests for proving conformity with the requirements of the standard. If any of the samples fails in any of the type tests, the testing authority at its discretion, may call for fresh samples not exceeding twice the original number and subject them again to all tests or to the test(s) in which failure(s) had occurred. No failure should be permitted in the repeat test(s).

**Table 101 Schedule of Type Tests**  
( Clause 101.1 )

Sl No.		Clause Reference
i)	Protection against electric shock	8
ii)	Input	10
iii)	Temperature rise	11
iv)	Operation under overload conditions	12
v)	Electrical insulation and leakage current at operating temperature	13
vi)	Radio and television interference suppression	14
vii)	Moisture resistance	15
viii)	Insulation resistance and electric strength ( after humidity treatment )	16
ix)	Overload protection	17
x)	Endurance ( under consideration )	18
xi)	Abnormal operation	19
xii)	Stability and mechanical hazards	20
xiii)	Mechanical strength	21
xiv)	Construction	22
xv)	Internal wiring	23
xvi)	Components	24
xvii)	Cord grip and cord guard	25
xviii)	Terminals for external conductor	26
xix)	Provision for earthing	27
xx)	Screws and connections	28
xxi)	Creepage distance and clearances	29
xxii)	Resistance to heat time and tracking	30
xxiii)	Resistance to rusting	31
xxiv)	Radiation hazards	32

**101.2 Acceptance Tests**

The following shall constitute the acceptance tests:

<i>Test</i>	<i>Clause Reference</i>
a) Protection against electric shock	8
b) Input	10
c) Temperature rise	11
d) Electrical insulation and leakage current at operating temperature	13
e) Moisture resistance	15
f) Insulation resistance and electric strength ( after humidity treatment )	16
g) Provision for earthing	27

NOTE — For the purpose of acceptance tests, the humidity treatment shall be done for 24 hours while conducting the test for moisture resistance (15).

**101.2.1** A recommended sampling procedure for acceptance tests is given in Appendix B of IS 302-1 ( 1979 ).

**101.3 Routine Test** — The following shall constitute the routine tests:

<i>Test</i>	<i>Clause Reference</i>
a) Protection against electric shock	8
b) High voltage	<b>13.3.2</b> of IS 302-1 ( 1979 )
c) Provision for earthing	27

**ANNEX A  
TABLES OF TYPE TEST**

Appendix A of IS 302-1 ( 1979 ) is not applicable.

**ANNEX B  
SAMPLING PROCEDURE FOR ACCEPTANCE TESTS**

Appendix B of IS 302-1 ( 1979 ) is applicable.

**ANNEX C  
ELECTRONIC CIRCUITS**

Appendix C of IS 302-1 ( 1979 ) is applicable if electronic circuits are used.

**ANNEX D  
MEASUREMENT OF TEMPERATURE WITH THERMOMETERS**

Appendix D of IS 302-1 ( 1979 ) is applicable.

**ANNEX E  
ALTERNATIVE TESTS FOR PROTECTED MOTOR UNITS**

Appendix E of IS 302-1 ( 1979 ) is applicable.

**ANNEX F  
IMPACT TEST APPARATUS**

Appendix F of IS 302-1 ( 1979 ) is applicable.

**ANNEX G**

**THERMAL CONTROLS AND OVERLOAD RELEASES**

Appendix G of IS 302-1 ( 1979 ) is applicable.

**ANNEX H**

**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**

Appendix H of IS 302-1 ( 1979 ) is applicable.

**ANNEX J**

**TEST FOR FIRE RESISTING PROPERTIES**

Appendix J of IS 302-1 ( 1979 ) is applicable.

**ANNEX K**

**BNF JET TEST FOR DETERMINATION OF THICKNESS OF  
COPPER AND NICKEL PLATING**

Appendix K of IS 302-1 ( 1979 ) is not applicable.

**ANNEX L**

**APPROXIMATE MEASUREMENT OF THICKNESS OF CHROMIUM  
ON NICKEL, STEEL AND COPPER**

Appendix L of IS 302-1 ( 1979 ) is not applicable.

**ANNEX AA**

<i>IS No.</i>	<i>Title</i>
302-1 ( 1979 )	Safety of household and similar electrical appliances : Part 1 General requirements ( <i>fifth revision</i> )
9968 ( Part 1 ) : 1988	Elastomer insulated cables : Part 1 For working voltages up to and including 1 100 volts ( <i>first revision</i> )

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### Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards Monthly Additions'. Comments on this Indian Standard may be sent to BIS giving the following reference:

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