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मानक

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IS 302-2-23 (2009): Safety of household and similar electrical appliances, Part 2: Particular requirements, Section 23: Appliances for skin or hair care [ETD 32: Electrical Appliances]



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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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भारतीय मानक  
घरेलू और समान विद्युत साधित्रों की सुरक्षा  
भाग 2 विशेष अपेक्षाएँ  
अनुभाग 23 त्वचा अथवा बालों की देखभाल के लिए साधित्र  
( पहला पुनरीक्षण )

*Indian Standard*  
SAFETY OF HOUSEHOLD AND SIMILAR  
ELECTRICAL APPLIANCES  
PART 2 PARTICULAR REQUIREMENTS  
Section 23 Appliances for Skin or Hair Care  
( *First Revision* )

ICS 97.170;13.120

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**BUREAU OF INDIAN STANDARDS**  
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NEW DELHI 110002

## FOREWORD

This Indian Standard (Part 2/Sec 23) (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Electrical Appliances Sectional Committee had been approved by the Electrotechnical Division Council.

This standard was first published in 1993. This revision has been undertaken primarily to align the existing standard with latest International Standard.

This standard covers the safety requirements of appliances for skin or hair care. This standard, however, does not cover the performance requirements which are covered under IS 7154 : 1994 'Mains-operated electric hair-dryers (*first revision*)' for hair dryers only.

It has been assumed in the formulation of this standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

This standard recognizes the International accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice.

If the functions of an appliance are covered by different parts and sections of IS 302, the relevant Part and Section is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

NOTE — Throughout this publication, wherever Part 2 is mentioned, it refers to the relevant Part of IS 302.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

Application of this standard, as far as is reasonable, may be considered to appliances not mentioned in Part 2, and to appliances designed on new principles.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features, which impair the level of safety, covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

This standard is to be read in conjunction with IS 302-1 (2008) '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 (2008), instead of reproducing full text of each clause, clauses of IS 302-1 (2008) which are applicable (which means that relevant provisions of the clause apply) or not applicable and the subclauses or portion thereof which are not applicable are indicated as under:

- a) In case of a clause where it is applicable, the wording used is 'This clause of IS 302-1 (2008) is applicable/not applicable'; and
- b) In case of a subclause or part thereof 'Not applicable'.

Wherever a subclause of IS 302-1 (2008) 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 provision of a subclause of IS 302-1 (2008) has been indicated as under:

Addition – followed by the text of the additional matter.

Clauses/tables which are additional to those of IS 302-1 (2008) are numbered starting from 101 and additional

(Continued on third cover)

(Continued from Second cover)

subclauses 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 (2008) and this standard, the provisions of the latter shall apply.

This standard is based on IEC 60335-2-23 (2005) 'Safety of household and similar electrical appliances — Part 2-23: Particular requirements for appliances for skin or hair care' issued by the International Electrotechnical Commission except for the following modification:

- a) The leakage current value is more stringent as compared to IEC Publication, and
- b) Ambient test conditions are based on National conditions.

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 23 Appliances for Skin or Hair Care

( *First Revision* )

#### 1 SCOPE

This clause of Part 1 is replaced by the following:

This standard deals with the safety of electric appliances for the care of skin or hair of persons or animals and intended for household and similar purposes, their rated voltage being not more than 250 V.

**NOTE 101** — Examples of appliances that are within the scope of this standard are:

- a) curling combs,
- b) curling irons,
- c) curling rollers with separate heaters,
- d) facial saunas,
- e) hairdryers,
- f) hand dryers,
- g) heaters with detachable curlers, and
- h) permanent-wave appliances.

**NOTE 102** — Appliances covered by this standard may incorporate steam-producing or spray-producing devices.

Appliances not intended for normal household use but that nevertheless may be a source of danger to the public, such as appliances intended to be used by laymen in shops, in light industry and on farms, are within the scope of this standard.

**NOTE 103** — Examples are appliances for use in hairdressing salons.

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

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

**NOTE 104** — Attention is drawn to the fact that:

- a) for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary; and
- b) in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour and similar authorities.

**NOTE 105** — This standard does not apply to:

- a) appliances intended exclusively for industrial purposes;
- b) 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);

- c) shavers, hair clippers and similar appliances (IS 302-2-8);
- d) UV and IR radiation appliances;
- e) sauna heating appliances; and
- f) appliances intended for medical purposes.

#### 2 REFERENCES

This clause of Part 1 is applicable except as follows:

##### **Addition**

IS 9457 : 1980 'Safety colours and safety signs'.

#### 3 TERMINOLOGY

This clause of Part 1 is applicable except as follows:

##### **3.1.9 Replacement**

**Normal Operation** — Operation of the appliance under the following conditions:

Helmet-type hairdryers are operated with the axis of the hood inclined at an angle of 60° to the horizontal or the maximum angle allowed by the construction if this is less. A dull black-painted wooden sphere, 200 mm in diameter, is placed in the hood so that its centre coincides with the axis of the hood, the shortest distance between the sphere and the air-outlet grille being 50 mm.

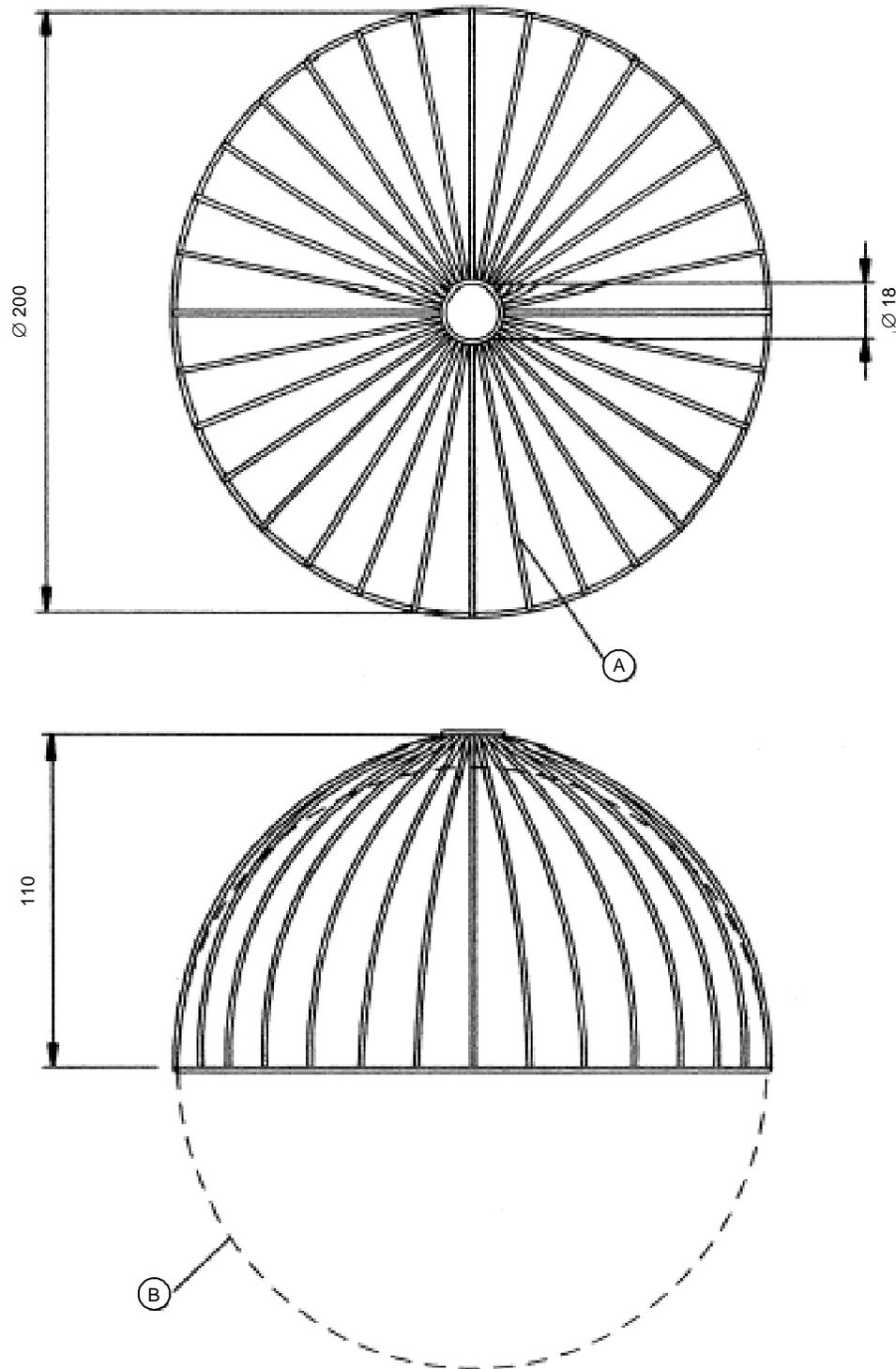
Hairdryers having a flexible hood attachment are operated with the hood attachment placed over the wire frame as shown in Fig. 101, the frame being positioned over the wooden sphere.

**NOTE 101** — Helmet-type hairdryers that are supported by the head are operated as hairdryers having a flexible hood attachment.

Hand-held hairdryers are operated with unrestricted airflow directed downwards.

Permanent-wave appliances are operated in the normal position of use, the curling rollers hanging freely.

Heaters for detachable curlers are operated in the normal position of use together with the curlers.



All dimensions in millimetres.

**Key**

- A = frame consisting of 32 equally spaced wires  $\varnothing 1.5 \text{ mm} \pm 0.5 \text{ mm}$ .
- B = location of the wooden sphere.

FIG. 101 WIRE FRAME

Curling irons, curling combs and similar appliances are operated with their major axis horizontal.

Appliances having steam-producing or spray-producing devices are operated with the container empty or filled, whichever is more unfavourable. However, if the appliance is marked to indicate that it is to be used with the container filled, the container is filled. Water is added, when necessary, to compensate for evaporation.

Hand dryers are operated in the normal position of use with unrestricted airflow.

Facial saunas are operated in the normal position of use and filled with water. Water is added, when necessary, to maintain the steam output.

**3.101 Helmet Type Hairdryer** — Hairdryer having a rigid hood that is placed over the head in normal use.

NOTE — The hood may be supported by a stand or have means for attaching to a support.

**3.102 Heater for Detachable Curlers** — Appliance for heating curling irons or curling rollers that accumulate heat.

**3.103 Swivel Connection** — Means for connecting the supply cord so that the appliance can be rotated continuously without twisting the cord.

## 4 GENERAL REQUIREMENTS

This clause of Part 1 is applicable.

## 5 GENERAL CONDITIONS FOR THE TESTS

This clause of Part 1 is applicable except as follows:

### 5.2 Addition

NOTE 101—The additional test of 25.14 for hand-held appliances is carried out on a separate appliance.

## 6 CLASSIFICATION

This clause of Part 1 is applicable except as follows:

### 6.1 Replacement

Appliances shall be of one of the following classes with respect to protection against electric shock:

- a) Hairdryers, curling irons, curling combs, facial saunas and other steam-producing or spray-producing appliances shall be class II or class III. However, fixed hairdryers intended to be permanently connected to fixed wiring, helmet-type hairdryers for hairdressers and steam-producing or spray-producing appliances for hairdressers may be class I.
- b) Other appliances shall be class I, class II or class III.

Compliance is checked by inspection and by the relevant tests.

### 6.2 Addition

Hand dryers shall be at least IPX1.

Curling rollers of permanent-wave appliances shall be at least IPX4.

## 7 MARKING AND INSTRUCTIONS

This clause of Part 1 is applicable except as follows:

### 7.1 Addition

Portable hairdryers, curling irons and similar appliances shall be marked with symbol given in 7.6 of this standard combined with the prohibition sign of IS 9457, except for the specified colours, or with the substance of the following:

WARNING — Do not use this appliance near water.

NOTE 101— This marking may be on a label that is permanently attached to the appliance.

### 7.6 Addition



Suitable for use in a bath or shower.

### 7.12 Addition

The instructions for portable hairdryers shall include the substance of the following:

- a) When the hairdryer is used in a bathroom, unplug it after use since the proximity of water presents a hazard even when the hairdryer is switched off.
- b) For additional protection, the installation of a residual current device (RCD) having a rated residual operating current not exceeding 30 mA is advisable in the electrical circuit supplying the bathroom. Ask your installer for advice.

The instructions for facial saunas shall state that after use the appliance should be cleaned to avoid the accumulation of grease and other residues.

If symbol at 7.6 is used, together with the prohibition sign, the meaning shall be explained. Instructions shall also state the substance of the following:

WARNING — Do not use this appliance near bathtubs, showers, basins or other vessels containing water.

#### 7.12.1 Addition

The installation instructions for fixed hairdryers intended for use in bathrooms shall include the substance of the following:

This hairdryer shall be fixed out of reach of a person taking a bath or shower.

If the hand-held part of the hairdryer incorporates electrical components, the instructions shall state that the appliance shall be fixed so that the hand-held part, when fully extended, is out of reach of a person taking a bath or shower.

#### 7.14 Addition

The diameter of the circle superimposed on symbol specified in 7.6 shall be at least 10 mm.

Compliance is checked by measurement.

#### 7.101 BIS Certification Marking

The appliances may also be marked with the Standard Mark.

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

### 8 PROTECTION AGAINST ACCESS TO LIVE PARTS

This clause of Part 1 is applicable except as follows:

8.1.3 Not applicable.

### 9 STARTING OF MOTOR-OPERATED APPLIANCES

This clause of Part 1 is not applicable.

### 10 POWER INPUT AND CURRENT

This clause of Part 1 is applicable.

### 11 HEATING

This clause of Part 1 is applicable except as follows:

#### 11.1 Addition

For appliances incorporating a swivel connection, compliance is also checked by the test of 11.101.

#### 11.2 Addition

Appliances intended to be used on a stand or attached to a support are placed to give the most unfavourable results.

#### 11.4 Addition

If the temperature rise limits are exceeded in appliances incorporating motors, transformers or electronic circuits, and the power input is lower than the rated power input, the test is repeated with the appliance supplied at 1.06 times rated voltage.

### 11.6 Replacement

Combined appliances are operated as heating appliances.

### 11.7 Replacement

Appliances without a timer are operated:

- a) for 30 min, for hand-held appliances;
- b) in cycles of 30 s on and 5 s off until steady conditions are established, for hand dryers that are automatically controlled by the presence of the hands; and
- c) until steady conditions are established, for other appliances.

Appliances incorporating a timer are operated in cycles until steady conditions are established. Each cycle consists of the maximum operating time of the timer followed by a rest period of 5 s.

### 11.8 Addition

The temperature rise limits of motors, transformers and components of electronic circuits, including parts directly influenced by them, may be exceeded when the appliance is operated at 1.15 times rated power input.

The temperature rise of the handles of curling irons heated by a heater for detachable curlers incorporating a timer is determined at the end of the first cycle.

11.101 Appliances incorporating a swivel connection are positioned with their major axis horizontal, the supply cord hanging vertically. A pull force of 1 N is applied to the supply cord.

The appliance is supplied at rated voltage, the current being 1.25 times the rated current.

#### NOTES

1 This condition can be obtained by means of a resistor connected in place of the heating element.

The appliance is rotated about its major axis at a rate of approximately 50 rev/min, the direction of rotation being reversed every 20 revolutions. The test is carried out for 1 500 revolutions.

The temperature rise of the sliding contacts shall not exceed 65 K.

2 The temperature rise may be determined by melting particles or colour changing indicators.

### 12 VOID

### 13 LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE

This clause of Part 1 is applicable.

### 14 TRANSIENT OVERVOLTAGES

This clause of Part 1 is applicable.

**15 MOISTURE RESISTANCE**

This clause of Part 1 is applicable.

**16 LEAKAGE CURRENT AND ELECTRIC STRENGTH**

This clause of Part 1 is applicable.

**17 OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS**

This clause of Part 1 is applicable.

**18 ENDURANCE**

This clause of Part 1 is not applicable.

**19 ABNORMAL OPERATION**

This clause of Part 1 is applicable except as follows:

**19.1 Addition**

Hairdryers are also subjected to the tests of **19.101** and **19.102**.

**19.2 Addition**

Restricted heat dissipation is obtained as follows:

- a) Motors are disconnected;
- b) Hand-held hairdryers are placed on the floor of the test corner in any stable position likely to occur; and
- c) Appliances intended to be filled with water are operated empty.

Hairdryers having a flexible hood attachment are also tested with the motor operating, the airflow through the hose being restricted to give the most unfavourable result.

Heaters for detachable curlers are placed on a piece of low-density glass-fibre insulation having a coefficient of thermal insulation of approximately 2.5 m<sup>2</sup>K/W.

**19.7 Addition**

The test is carried out for 5 min except for:

- a) hand-held appliances,
- b) appliances that have to be kept switched on by hand, and
- c) appliances incorporating a timer.

**NOTE 101** — Hand dryers are subjected to the test only when the locked rotor torque is less than the full load torque.

**19.9** Not applicable.

**19.10 Addition**

The test is carried out with the heating elements disconnected or switched off.

**19.101** Hairdryers are operated as specified in **11** except that the motor is supplied separately at its working voltage.

**NOTE** — It may be necessary to compensate for the effect on the heating element of supplying the motor separately.

When steady conditions are established, the voltage applied to the motor is reduced until the running speed of the motor is just sufficient to prevent a thermal cut-out from operating, the voltage applied to the heating elements being maintained at the value used for **11.4**.

The reduced voltage applied to the motor is determined as follows:

The voltage is reduced by 5 percent and the motor is operated under this condition for 5 min. This procedure is repeated until a thermal cut-out operates. The voltage is then increased by 5 percent, this being the reduced voltage to be used for the test.

Under these conditions, the hairdryer is again operated until steady conditions are established.

The hairdryer shall not emit flames or molten metal, temperature rises shall not exceed the values specified in Table 9 and the other criteria of **19.13** do not apply.

**19.102** Portable hair dryers are operated under normal operation at 1.15 times rated power input.

A sheet of polyethylene approximately 200 mm × 200 mm and having a thickness of 50 mm is placed against the air-inlet and moved in any direction in order to reduce the airflow so that the most unfavourable conditions are established.

The test is carried out for 30 min.

The test is repeated with the airflow directed horizontally.

**NOTE** — The most unfavourable conditions are usually obtained by positioning the polyethylene sheet so that the thermal cut-out is prevented from operating.

**20 STABILITY AND MECHANICAL HAZARDS**

This clause of Part 1 is applicable.

**21 MECHANICAL STRENGTH**

This clause of Part 1 is applicable except as follows:

**Addition**

Hand-held appliances are also subjected to the test of **21.101**.

**21.101** The appliance is placed on a horizontal surface positioned 700 mm above a rigidly supported hardwood board and operated while supplied at rated voltage.

It is pulled from the surface by its supply cord and

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allowed to drop freely. The test is carried out five times, the appliance being placed on the horizontal surface in different positions likely to occur.

The appliance shall not be damaged to such an extent that compliance with this standard is impaired. In particular, the requirements of **8** and **29** shall be fulfilled.

### 22 CONSTRUCTION

This clause of Part 1 is applicable except as follows:

#### 22.24 Addition

The heating element shall also be unlikely to come into contact with the skin or hair if it ruptures.

#### 22.32 Addition

Supplementary insulation and reinforced insulation in class II curling irons shall be resistant to aging.

Compliance is checked by the following test.

Samples of insulation not mentioned in Table 3 are suspended in a heating cabinet so that there is at least 10 mm between the samples, and between the samples and the top and bottom of the cabinet. The samples shall be at least 50 mm from the walls of the cabinet. The volume of the samples is not to exceed one-tenth of the capacity of the cabinet.

The cabinet is ventilated by natural convection, with at least three air changes per hour. The temperature of the cabinet is maintained at  $30\text{ K} \pm 1\text{ K}$  in excess of the temperature rise of the part determined during the tests of **19** or at  $70^\circ\text{C} \pm 2^\circ\text{C}$ , whichever is higher.

The samples are kept in the cabinet for 240 h and then at ambient temperature for at least 16 h.

The samples shall show no cracks and shall withstand the electric strength test of **16.3** for supplementary insulation.

**NOTE 101** — Insulation mentioned in Table 3 is considered to be resistant to aging.

#### 22.36 Addition

For class I appliances, other than hand dryers and face dryers, metal parts that could be in contact with skin or hair in normal use shall be separated from live parts by double insulation or reinforced insulation and shall not be earthed.

#### 22.40 Addition

The switch in the off-position shall disconnect electronic circuits, unless compliance with **19** does not depend on the operation of a self-resetting thermal cut-out.

**22.101** Appliances having steam-producing or spray-producing devices shall be constructed so that there is no spillage or unintentional burst of steam or water that is likely to cause a hazard.

Compliance is checked during the test of **11**.

**22.102** Curling rollers of permanent-wave appliances having integral heating elements shall be supplied with safety extra-low voltage not exceeding 24 V.

Compliance is checked by inspection and by the relevant tests.

### 23 INTERNAL WIRING

This clause of Part 1 is applicable except as follows:

#### 23.3 Addition

The number of flexing for conductors that are only flexed when the appliance is stored is 5 000.

### 24 COMPONENTS

This clause of Part 1 is applicable except as follows:

#### 24.1.3 Addition

Switches incorporated in hand dryers are subjected to 50 000 cycles of operation.

#### 24.2 Modification

Helmet-type hairdryers and permanent-wave appliances may incorporate a switch in a flexible cord.

### 25 SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS

This clause of Part 1 is applicable except as follows:

#### 25.5 Addition

Type Z attachment is allowed for:

- a) hand-held appliances,
- b) hairdryers with a flexible hood attachment, and
- c) heaters for detachable curlers having not more than 10 curlers.

#### 25.7 Modification

Light polyvinyl chloride sheathed cords are allowed regardless of the mass of the appliance.

The temperature rise limit of 130 K is allowed as long as the temperature rise decreases to 75 K within 5 min of the appliance being switched off.

#### 25.14 Addition

The force applied to the supply cord of appliances provided with a swivel connection is:

- a) 20 N, for cords having a nominal cross-sectional area exceeding 0.75 mm<sup>2</sup>; and
- b) 10 N, for other cords.

Hand-held appliances are additionally tested while mounted on an apparatus similar to that of Fig. 8 with the supply cord hanging vertically and loaded with a force of 10 N. The oscillating part of the apparatus is moved through an angle of 180° and back to the original position. The number of flexing is 4 000, the rate of flexing being 6 per min.

**NOTE 101** — The appliance is mounted so that the direction of flexing corresponds to that most likely to occur when the supply cord is wound around the appliance for storage.

**NOTE 102** — This test is not carried out on appliances incorporating a swivel connection.

### 25.15 Addition

The swivel connection is not locked during the tests.

**25.101** Swivel connections shall be adequate for normal use of the appliance.

Compliance is checked by the following test.

The appliance is operated under the conditions specified in **11.101**, the number of revolutions being increased to 20 000.

After this test, the swivel connection and the supply cord shall be fit for further use. Live parts shall not have become accessible and the appliance shall withstand the electric strength test of **16.3**.

## 26 TERMINALS FOR EXTERNAL CONDUCTORS

This clause of Part 1 is applicable except as follows:

### 26.10 Addition

Terminals with screw clamping and screwless terminals shall not be used for type X attachments in appliances incorporating a swivel connection.

## 27 PROVISION FOR EARTHING

This clause of Part 1 is applicable.

## 28 SCREWS AND CONNECTIONS

This clause of Part 1 is applicable.

## 29 CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION

This clause of Part 1 is applicable except as follows:

### 29.3 Addition

For curling irons, the distance through insulation between metal parts separated by supplementary insulation may be reduced to 0.6 mm, provided that the distance through basic insulation is at least 1 mm.

## 30 RESISTANCE TO HEAT AND FIRE

This clause of Part 1 is applicable except as follows.

### 30.1 Addition

For hand dryers and hairdryers, the temperature rises occurring during the tests of **19** are not taken into account.

### 30.2 Addition

For heaters for detachable curlers, **30.2.3** is applicable. For other appliances, **30.2.2** is applicable.

**30.101** Helmet-type hairdryers shall be resistant to fire.

Compliance is checked by inspection and by applying the needle-flame test of Annex E to:

- a) parts of non-metallic material enclosing the heating element and other electrical components, and
- b) non-metallic parts within the enclosure.

The needle-flame test is not carried out on material classified as V-0 or V-1 according to IS 11000 (Part 2/ Sec 2), provided that the test sample was no thicker than the relevant part.

## 31 RESISTANCE TO RUSTING

This clause of Part 1 is applicable.

## 32 RADIATION, TOXICITY AND SIMILAR HAZARDS

This clause of Part 1 is applicable.

## 101 TESTS

### 101.1 Type Tests

The tests specified in Table 101 shall constitute the type tests and shall be carried out on a sample selected preferably at random from regular production lot (*see 5.3*). Before commencement of the tests, the irons shall be visually examined and inspected of components, parts and their assembly, constructions, mechanical hazards, marking provision of suitable terminals for supply connections, earthing and the effectiveness screws and connection. The external surface finish shall be even and free from finishing defects.

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

SI No. (1)	Tests (2)	Clause Reference (3)
i)	Protection against access to live parts	<b>8</b>
ii)	Power input and current	<b>10</b>
iii)	Heating	<b>11</b>
iv)	Leakage current and electric strength at operating temperature	<b>13</b>
v)	Transient overvoltages	<b>14</b>
vi)	Moisture resistance	<b>15</b>
vii)	Leakage current and electric strength	<b>16</b>
viii)	Overload protection of transformers and associated circuits	<b>17</b>
ix)	Abnormal operation	<b>19</b>
x)	Stability and mechanical hazards	<b>20</b>
xi)	Mechanical strength	<b>21</b>
xii)	Construction	<b>22</b>
xiii)	Internal wiring	<b>23</b>
xiv)	Components	<b>24</b>
xv)	Supply connection and external flexible cords	<b>25</b>
xvi)	Terminals for external conductors	<b>26</b>
xvii)	Provision for earthing	<b>27</b>
xviii)	Screws and connections	<b>28</b>
xix)	Clearances, creepage distances and solid insulation	<b>29</b>
xx)	Resistance to heat and fire	<b>30</b>
xxi)	Resistance to rusting	<b>31</b>
xxii)	Radiation, toxicity and similar hazards	<b>32</b>

#### 101.1.1 Criteria of Acceptance

Sample shall successfully pass all the type tests for proving conformity with the requirements of the standard. If the sample 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).

#### 101.2 Acceptance Tests

The following shall constitute the acceptance tests:

<i>Test</i> (1)	<i>Clause Reference</i> (2)
a) Protection against access to live parts	<b>8</b>
b) Power input and current	<b>10</b>
c) Heating	<b>11</b>
d) Leakage current and electric strength at operating temperature	<b>13</b>
e) Moisture resistance	<b>15</b>
f) Leakage current and electric strength	<b>16</b>
g) Provision for earthing	<b>27</b>

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

**101.2.1** A recommended sampling procedure for acceptance tests is given in Annex J of IS 302-1.

#### 101.3 Routine Tests

The following shall constitute the routine tests:

<i>Test</i> (1)	<i>Clause Reference</i> (2)
a) Protection against access to live parts	<b>8</b>
b) High voltage	<b>13.3.2</b> of IS 302-1
c) Provision for earthing	<b>27</b>

## ANNEXES

The Annexes of Part 1 are applicable.

## Bureau of Indian Standards

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### Amendments Issued Since Publication

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