# PLUGS AND SOCKET-OUTLETS FOR HOUSEHOLD AND SIMILAR PURPOSES OF RATED VOLTAGE UPTO AND INCLUDING 250 V AND RATED CURRENT UPTO AND INCLUDING 16 A ACCORDING TO IS 1293:2019

***This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.***

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| 1. | **Product** | **:** | IS 1293:2019 |
| | **Title** | **:** | Plugs and Socket-Outlets for household and similar purposes of rated Voltage up to and including 250 V and rated current up to and including 16 A |
| | **No. of amendments** | **:** | - |
| 2. | **Sampling Guidelines** | | |
| a) | **Raw material** | **:** | NA |
| b) | **Grouping Guidelines** | **:** | Please refer Annex - A |
| c) | **Sample Size** | **:** | 10 nos.for Socket Outlets and 15 nos. for Plugs |
| 3. | **List of Test Equipment** | **:** | Please refer Annex - B |
| 4. | **Scheme of Inspection and Testing** | **:** | Please refer Annex - C |
| 5. | **Possible tests in a day** | **:** | Please refer Annex - D |
| 6. | **Scope of the Licence :** | | Please refer Annex - E |
| 7. | **Any other guidelines** | | Please refer Annex - F for guidelines for Outsourcing of Moulded Bodies |

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# ANNEX A

## Grouping Guidelines

1. The following aspects of a Plug or Socket-Outlet shall be taken into consideration for grouping of different varieties for the purpose of GoL/ CSoL:

   a. Current rating (as per Cl 6 of IS 1293)
   b. Voltage rating (as per Cl 6 of IS 1293)
   c. Degree of protection against access to hazardous parts and against harmful ingress of solid foreign objects (as per Cl 7.1.1 of IS 1293)
   d. Degree of protection against harmful ingress of water (as per Cl 7.1.2 of IS 1293)
   e. Provision for earthing (as per Cl 7.1.3 of IS 1293)
   f. Method of connecting the cable (as per Cl 7.1.4 of IS 1293)
   g. Type of terminals (as per Cl 7.1.5 of IS 1293)
   h. Method of application/ mounting of the socket-outlet (as per Cl 7.2.2 of IS 1293)
   i. Intended use, if any (as per Cl 7.2.4 of IS 1293)
   j. Intended Class of appliance (as per Cl 7.3 of IS 1293)
   k. Type of Socket-Outlet (Fixed/ Portable/ Multiple/ Combined/ for Appliances)
   l. Degree of protection against electric shock (as per Cl 7.2.1 of IS 1293)
   m. Existence of shutters (as per Cl 7.2.3 of IS 1293)
   n. Plug pins with insulating sleeves

2. At least one plug and socket outlet of each current rating and combination thereof shall be tested to cover the entire range.

3. If a particular voltage rating is tested, lower ratings may be covered.

4. Additionally, the following relaxations may be permitted when a variety is tested for all the requirements:

   a) If accessories with a particular IP is tested, lower IPs may also be covered.
   b) For the parameters mentioned at 1.1(e) to 1.1(k) above, at least one plug or socket-outlet (as applicable) of each aspect shall be tested to cover the entire range. However, if accessories with screwless terminals for rigid and flexible conductors are tested, accessories with screwless terminals for rigid conductors shall also be covered.
   c) If socket-outlets with increased protection are tested, socket-outlets with normal protection are also covered.
   d) If socket-outlets with shutters are tested, socket-outlets without shutters are also covered.
   e) If plugs having pins with insulating sleeves are tested, plugs having pins without insulating sleeves are also covered.

6. The Firm shall declare the varieties of Plugs or Socket-outlets intended to be covered in the Licence. The Scope of Licence may be restricted based on the manufacturing and testing capabilities of the manufacturer.

7. During the operation of the Licence, BO shall ensure that all the varieties covered in the Licence are tested in rotation to the extent possible.

# ANNEX B

## List Of Test Equipment

***Major test equipment required to test as per the Indian Standard***

| Sl. No. | Test Equipment | Tests used in with Clause Reference |
|---|---|---|
| 1 | Petroleum spirit, water | Marking - 8.8 |
| 2 | Vernier caliper, micrometer, gauges | Dimensions – 9, General |
| 3 | Jointed test finger (test probe B of IS 1401), unjointed test finger (test probe 11 of IS 1401), electrical indicator, push-pull force applicator, arrangement for compression test (Figure 8), Figures 9 and 10: Gauges for checking non-accessibility of live parts, through shutters, and of live parts of socket-outlets with increased protection, Test plug | Protection against electric shock - 10 |
| 4 | Low voltage AC source with Voltmeter and ammeter | Earthing Resistance - 11.5 |
| 5 | Screw driver and spanner with torque meter, weights, Figure 11: Arrangement for checking damage to conductors | Tests on screw terminals-12.2 |
| 6 | Figure 11: Arrangement for checking damage to conductors, AC source, measuring instruments<br>Figure 12: Deflection test apparatus | Tests on screwless terminals Weights-12.3 |
| 7 | Test probe 1 of IS 1401, push-pull force applicator<br>Figure 13: Test setup | Construction of fixed socket-outlets-13.4 |
| 8 | Figure 14: Device for checking the resistance to lateral strain | Lateral strain of socket-outlets-13.14 |
| 9 | Heating cabinet, Test probe 11 of IS 1401, Freezer | Test on membranes- 13.22, 13.23 |
| 10 | Figure 15: Device for testing of non-solid pins, Push-pull force applicator, micrometer | Test of non-solid pins- 14.2 |
| 11 | AC source, measuring instruments, temperature measuring device | Temperature rise test on plugs of plug-in equipment- 14.23.1 |
| 12 | Apparatus for the torque test | Torque test on plugs of plug-in-equipment- 14.23.2 |
| 13 | Heating cabinet, humidity chamber | Ageing test- 16.1 |
| 14 | Figure 16: Test wall in accordance with the requirements of 16.2.1, Test apparatus acc. IS/IEC 60529 | Protection provided by enclosures- 16.2, |
| 15 | Humidity chamber | Humidity treatment- 16.3 |
| 16 | Insulation test equipment (Megger) | Insulation resistance- 17.1 |
| 17 | High voltage test equipment | Electric strength - 17.2 |
| 18 | AC source, measuring instruments, temperature measuring device (thermocouples), test block for flush-mounted accessories, wooden block for surface-type socket-outlets, test plug,<br>Clamping unit for the temperature rise test (Figure 18) | Temperature rise- 19 |

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| 19 | Figure 19: Apparatus for breaking capacity and normal operation, test plug, fixed socket-outlet,<br>AC source, adjustable load (resistors and inductors), measuring instruments, Figure 9: Gauge for checking non-accessibility of live parts, through shutters, after normal operation test<br>Figure 10: Gauge for checking non-accessibility of live parts, through shutters, and of live parts of socket-outlets with increased protection | Breaking capacity - 20<br>Normal operation- 21 |
| 20 | Figure 21: Apparatus for checking the withdrawal force, test-plug, chemical degreaser,<br>Test pin gauge as per Figure 22 | Verification of the maximum withdrawal force- 22.1 |
| 21 | Figure 22: Gauge for the verification of the minimum withdrawal force, | Verification of the minimum withdrawal force- 22.2 |
| 22 | Figure 23: Apparatus for testing the cord retention, Apparatus for the torque test | Test of the cord retention- 23.2 |
| 23 | Figure 24: Apparatus for flexing test, measuring instruments | Flexing test- 23.4 |
| 24 | Pendulum hammer test apparatus, mounting arrangement, Figures 25: Mechanical strength test apparatus, Test probe B of IS 141, Steel wire of Figure 10, | Mechanical Strength- 24.1 |
| 25 | Tumbling barrel as per Figure 26 | Tumbling barrel test- 24.2 |
| 26 | Cylinder of rigid steel sheet, Flat steel sheet | Test on ordinary surface-type socket-outlets- 24.3 |
| 27 | Figure 27: Apparatus for impact test at low temperature, sponge rubber, freezer | Impact test at low temperature- 24.4 |
| 28 | Figure 8: Arrangement for compression test | Impact test at low temperature- 10.1, 24.5 |
| 29 | Cylindrical metal rods<br>Test-spanner with torque meter | Test on screwed glands-24.6 |
| 30 | Figure 28: Apparatus for abrasion test on insulating sleeves of plug pins | Abrasion test – 24.7 |
| 31 | Test-pin, electrical indicator | Test on shutters- 24.8 |
| 32 | Figure 29: Arrangement for mechanical strength test on multiple portable socket-outlets | Test on multiple portable socket-outlets- 24.9 |
| 33 | Figure 30: Arrangement to verify the fixation of pins in the body of the plug, heating cabinet | Test of the fixing of the pins- 24.10 |
| 34 | Cylindrical steel rod | Test on portable socket-outlets with suspension means- 24.11-24.12 |
| 35 | Round head screw | Test on portable socket-outlets with suspension means- 24.13 |

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| 36 | Figure 31: Arrangement for test on covers or cover-plates<br>Figure 32: Gauge for the verification of the outline of covers or cover plates<br>Figure 35: Gauge for verification of grooves, holes and reverse tapers<br>Figure 37: Apparatus for compression test for the verification of resistance to heat | Removal of covers or cover-plates Weights- 24.14-24.19 |
| 37 | Heating cabinet, Test probe B of IS 1401,<br>Figure 38: Ball pressure test apparatus<br>Figure 37: Apparatus for compression test for the verification of resistance to heat | Resistance to heat – 25 |
| 38 | Screw-driver and spanner with torque meter | Screws, current carrying parts and connections- 26 |
| 39 | Calipers. Tolerances gauges | Creepage distances, clearances- 27 |
| 40 | Glow wire test apparatus according to IS 11000 (Pt 2/ Sec 1) | Glow-wire test- 28.1.1 |
| 41 | Figure 39: Apparatus for testing resistance to abnormal heat of insulating sleeves of plug pins | Test of the resistance to heat of pins with insulating sleeves- 28.1.2 |
| 42 | Test apparatus according to IS 2824 | Resistance to tracking- 28.2 |
| 43 | Chemicals (Ammonium Chloride), Humidity cabinet, Heating cabinet | Resistance to rusting- 29 |
| 44 | Figure 40: Apparatus for pressure test at high temperature, Heating cabinet | Pressure test at high temperature- 30.1 |
| 45 | Climatic chamber according to IS 9000 (Pt 5/ Sec 1 & 2) | Static damp heat test- 30.2 |
| 46 | Freezer | Test at low temperature- 30.3 |
| 47 | Figure 41: Impact test apparatus on pins provided with insulating sleeves | Impact test at low temperature- 30.4 |

***The above list is indicative only and may not be treated as exhaustive.***

# ANNEX C

## Scheme Of Inspection And Testing

**1. LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

**1.1** The manufacturer shall prepare a calibration plan for the test equipment.

**2. TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. LABELLING AND MARKING** - As per the requirements of IS 1293:2019. In addition, each product or the packaging of the product shall carry the identification mark in code or otherwise for traceability.

**4. CONTROL UNIT –** Plugs and socket-outlets of same type and rating manufactured in a day shall constitute a control unit.

**5. LEVELS OF CONTROL -** The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**6. REJECTIONS –** Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

## TABLE 1

| (1) | | | | (2) | (3) | |
|---|---|---|---|---|---|---|
| **Test Details** | | | | **Test equipment requirement** R: required (or) S: Sub - contracting permitted | **Levels of Control** | |
| Cl. | Requirement | Test Methods | | | No. of Sample | Frequency |
| | | Clause | Ref | | | |
| 8 | Marking (except 8.8) | 8 | IS 1293 | --- | Each plug/ socket-outlet | |
| 8.8 | Marking | 8.8 | | R | 3 | Each control unit |
| 17.3 | Electric Strength (Flash test) | 17.3 | | R | Each plug/ socket-outlet | |
| 9 | Checking of dimensions | 9 | | R | 3 | Each control unit |
| 10 | Protection against electric shock | 10 | | R | 3 | Every week for each type and rating |
| 11 | Provision for earthing | 11 | | S | 3 | Every 3 months for each type and rating |
| 12 | Terminals | 12 | | S | 3 | Every 3 months for each type and rating |
| 13 | Constructional requirements of fixed socket outlets | 13 | | S | 3 | Every month for each type and rating |
| 14 | Constructional requirements of plugs and portable socket outlets | 14 | | S | 3 | Every month for each type and rating |
| 15 | Interlocked socket outlet | 15 | | S | 3 | Every month for each type and rating |
| 16 | Resistance to ageing, harmful ingress of water, humidity | 16 | | S | 3 | Every 3 months for each type and rating |
| 17 | Insulation resistance and electric strength | 17 | | S | 3 | Every 3 months for each type and rating |
| 18 | Operation of earthing contacts | 18 | | S | 3 | Every 3 months for each type and rating |
| 19 | Temperature rise | 19 | | R | 3 | Every week for each type and rating |
| 20 | Making and breaking capacity | 20 | | S | 3 | Once in a year for each type and rating |
| 21 | Normal operation | 21 | | S | 3 | Every 3 months for each type and rating |
| 22 | Force necessary to withdraw the plug | 22 | | R | 3 | Every week for each type and rating |
| 23 | Flexible cables and their connection | 23 | | S | 3 | Every month for each type and rating |
| 24 | Mechanical Strength | 24 | | S | 3 | Each 3 months for each type and rating |
| 25 | Resistance to heat | 25 | | S | 3 | Every month for each type and rating |
| 26 | Screws, current carrying parts and connections | 26 | | S | 3 | Every month for each type and rating |
| 27 | Creepage distances, clearance and distances through sealing compound | 27 | | S | 3 | Every month for each type and rating |
| 28 | Resistance of insulating material to abnormal heat, fire and tracking | 28 | | S | 3 | Once in a year or whenever there is change in raw material |

| (1) | | | | (2) | (3) | |
|---|---|---|---|---|---|---|
| **Test Details** | | | | **Test equipment requirement** R: required (or) S: Sub - contracting permitted | **Levels of Control** | |
| Cl. | Requirement | Test Methods | | | No. of Sample | Frequency |
| | | Clause | Ref | | | |
| 29 | Resistance to rusting | 29 | | S | 3 | Every 3 months for each type and rating |
| 30 | Additional tests on pins provided with insulating sleeves | 30 | | S | 3 | Every 3 months for each type and rating |

**Note-1**: The number of additional specimens for testing shall be selected as per clause 5 of IS 1293. In case of any failure, the provisions given in clause 5.5 of IS 1293 shall be followed.

**Note-2**: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

**Note-3**: The control unit and levels of control as decided by the Bureau are obligatory, to which the licensee shall comply with.

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## ANNEX D

## Possible Tests in a day

1. Marking – Cl. 8
2. Checking of dimensions – Cl. 9
3. Protection Against Electric Shock - Cl. 10
4. Electric Strength (Flash Test) - Cl. 17.3
5. Temperature Rise - Cl.19
6. Tumbling barrel test – Cl. 24.2
7. Creepage distance and clearances - Cl. 27
8. Glow-wire test- Cl. 28.1.1

## ANNEX E

## Scope of Licence

Licence is granted to use Standard Mark as per IS 1293:2019 with the following scope:

| | |
|---|---|
| **Name of the Product** | |
| **Type (socket-outlet)** | Fixed/ Portable/ Multiple/ Combined/ for Appliances |
| **Rated Current** | |
| **Rated Voltage** | |
| **Nature of supply** | |
| **IP (plugs/socket outlets)** | |
| **Provision for earthing (plugs/socket outlets)** | With/ without earthing contact |
| **Method of connecting cable (plugs/socket outlets)** | Rewirable/ non-rewirable |
| **Type of terminals (plugs/socket outlets)** | Screw-type/ screwless for rigid conductors/ screwless for rigid and flexible conductors |
| **Degree of protection against electric shock (socket-outlets)** | Normal / Increased protection |
| **Method of application/ mounting (socket-outlet)** | Surface/ Flush/ Semi-Flush/ Panel/ Architrave Type |
| **Existence of shutters (socket-outlet)** | With/ without shutters |
| **Intended Use (if any) (socket-outlets)** | |
| **Intended Class of appliance (Plugs)** | Class I/ Class II |
| **Insulating sleeves (Plug)** | Pins with/ without insulating sleeve |

*Scope for Plugs and Socket-outlets may be provided in separate tables in the Licence.*

## ANNEX – F

## Guidelines for Outsourcing of Moulded Bodies

a) Outsourcing of moulding facilities may be permitted with the following organizations (Moulder):

For Domestic Manufacturers

- Any dedicated moulding unit in the conforming/ authorized industrial area and located under the jurisdiction of the same Branch Office.
- Any other unit of the Licensee/ Applicant or their sister concern, which is having a valid BIS licence for the same product under the jurisdiction of the same Branch Office.

For Foreign Manufacturers

- Any dedicated moulding unit in the conforming/ authorized industrial area and located in the same city where the applicant/ licensee is located.

b) The dedicated moulder shall not carry out moulding for units other than the particular Applicant/ Licensee.

c) The Manufacturer shall take the following actions:

- Enter into an agreement with the moulder which shall comprise, interalia, the terms and conditions for moulding including the condition of dedicated moulding, period of agreement etc.
- Declare the Items and Brands for which he intends to outsource moulding.
- Declare the name, ownership details, address, details of the responsible person, phone number, etc. of the moulder.

d) It shall be the responsibility of the licensee (the firm which is outsourcing the moulding activity) to ensure that no finished material is produced or assembled at any place other than the licensed premises and he shall be responsible for any misuse of ISI mark at the moulder's premises. An Undertaking to this effect shall be furnished to BIS.

e) Records of raw material issued date-wise, moulded material received back date-wise and item-wise shall be maintained by the licensee. Similar records shall also be maintained by the moulder.

f) The moulder shall ensure that there is a separate dedicated space for keeping moulded components as well as the raw materials received from the licensee. Colour coding of bins/ separate storage location etc. may be used to ensure easy and quick traceability. Appropriate records are to be maintained at both the units.

g) The licensee shall ensure that there are adequate means of ensuring the quality of incoming outsourced moulded bodies.

h) For applications received with request for outsourcing of moulding facilities, a special inspection of the moulder's premises shall be carried out to adjudge the capability of the moulder in addition to the preliminary inspection at the applicant's premises. Special Inspection Charges and any other charges, as applicable, for this visit shall be collected from the applicant in advance. The process flow chart submitted by the applicant shall clearly indicate the outsourcing of moulded bodies. The recommendations for GoL shall include details on outsourcing of moulding operation by the firm. The details of outsourcing may also be included in the GoL intimation letter.

i) For existing licensees who intend to outsource the moulding facility, the licensee shall submit a fresh process flow chart indicating the outsourcing of moulded bodies. The permission for outsourcing may be given to the licensee after complying with all the procedures including verification visit to the moulder's premises.

j) Whenever there is a change in the moulder, the licensee has to enter into a fresh agreement with the new moulding unit. The permission for outsourcing may be given to the licensee after complying with all the procedures including verification visit to the moulder's premises.

k) During the operation of the licence, records required to be maintained at the licensee end with respect to outsourced moulding shall be verified during surveillance visit at the licensee's premises by BIS Certification Officer.

l) BIS Officer(s) shall have access to the moulder's premises and if at any time the same is denied, permission for outsourcing shall be withdrawn. An undertaking in this respect shall be obtained.

m) For Domestic manufacturers, the visit to moulder's premises may be taken up as a special visit as and when needed. Special Inspection Charges for this visit shall be collected from the licensee after the visit. An undertaking from the licensee regarding payment of such charges shall be obtained.

n) For Foreign manufacturers, BIS shall maintain surveillance over the moulder's premises in addition to the manufacturer's premises. Special inspection charges and all other applicable charges for this visit shall be payable by the licensee.

**Note:**

- The Indian Standard does not impose any restriction on the manner/ method of Marking so long as the Durability clause is complied with. As such, the product may be marked with the Standard Mark, CM/L Number, Manufacturer's Brand and other markings during the process of moulding itself, in which case all the conditions stated above shall apply.
- However, if the Marking on the moulded bodies is done at the Licensee's own premises by other means such as pad printing/ laser marking etc, the moulded component may be treated as any other bought out component/ raw material as these are not marked with the ISI Mark or CM/L Number during the outsourced moulding process. Notwithstanding this, the Applicant/ Licensee shall ensure that there are adequate means of ensuring the quality of the incoming components.