



**PRODUCT MANUAL
FOR PERSONAL PROTECTIVE EQUIPMENT PART 2 SAFETY FOOTWEAR
ACCORDING TO IS 15298 (Part 2): 2016/ ISO 20345: 2011**

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.

1.	Product	:	IS 15298 (Part 2): 2016/ ISO 20345: 2011
	Title	:	Personal Protective Equipment Part 2 Safety Footwear
	No. of Amendments	:	02
2.	Sampling Guidelines:		
a)	Raw material	:	Safety footwear shall be made of materials which conform to the requirement of Innocuousness as per Cl 5.3.6 of IS 15298 Part 2: 2016.
b)	Grouping guidelines	:	Please refer Annex –A
c)	Sample Size	:	4 pairs of shoes of each variety (In case samples are sent to a different lab for testing innocuousness of materials, 2 pairs are required to be sent)
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 :	:	Clause 5 Design, 5.3.1 Sole Performance, 5.3.2 Toe Protection, Thickness, Tear strength, Tensile properties, pH value and Chromium VI content of leather components.
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 15298 (Part 2): 2016/ ISO 20345: 2011 with the following scope:		
	Name of the product		Personal Protective Equipment Part 2 Safety Footwear
	Classification		Class I and/or Class II
	Design and Sizes		Please see Annex A

ANNEX-A
PRODUCT MANUAL
FOR PERSONAL PROTECTIVE EQUIPMENT PART 2 SAFETY FOOTWEAR
ACCORDING TO IS 15298 (Part 2): 2016/ ISO 20345: 2011

GROUPING GUIDELINES

1. As per the Indian Standard, footwear can be classified as per the following code designations:

Code Designation	Classification
I	Footwear made from leather and other materials, excluding all-rubber or all-polymeric footwear
II	All-Rubber (i.e. entirely vulcanized) or all-polymeric (i.e. entirely moulded) footwear

2. In addition the above referred parts of IS 15298, cover the following designs and sizes of footwear

- i) Design- A, B, C, D & E
ii) Sizes –

French	English
36 and Below	Upto 3½
37 and 38	4 to 5
39 and 40	5½ to 6½
39 and 40	5½ to 6½
41 and 42	7 to 8
43 and 44	8½ to 10
45 and above	10½ and above

3. To apply for grant of licence and Inclusion, the applicant/licensee should declare the Code Designation and Design for the Protective Footwear and accordingly following Grouping Guideline is to be followed for grant of licence and inclusion

Group	Code Designation	Design	Size English/French	Sample to be Tested
1	Either I or II (If for both)*	Either A or B or C or D or E (If for Two, more or All)**	Upto 5/Upto 38	One sample of any size***
2	Either I or II (If for both)*	Either A or B or C or D or E (If for Two, more or All)**	5½ to 8 / 39 to 42	One sample of any size***
3	Either I or II (If for both)*	Either A or B or C or D or E (If for Two, more or All)**	8½ & above/43 & above	One sample of any size***

Notes:

- a) *** - If the Applicant/Licensee applies for both code designation i.e. I as well as II, Testing to be done for both Designations separately.**
 - b) **** - If the Applicant/Licensee applies for two, more or all designs, testing to be done for each Design separately.**
 - c) ***** - Sample of any size can be taken for considering other sizes in the same group. However, manufacturing and testing facility for each size must be verified.**
4. However, while considering grant of licence/inclusion of additional sizes/designs, it will be ensured that the applicant/licensee has got the complete manufacturing and testing facilities for all the sizes and designs intended to be covered.
5. During operation of the licence, BO will ensure that all the sizes/designs covered in the licence are tested in rotation. The above guidelines may be followed for Grant of Licence as well as inclusion of new variety.

ANNEX-B
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LIST OF TEST EQUIPMENTS
Major test equipment required to test as per the Indian Standard

Sr. No.	Test Equipment	Tests used in with Clause Reference
1	Steel scale, LC 1 mm Vernier calipers	Design, 5.2.2 & 5.2.3 5.7.1, 5.8.1
2	Knife Tensile machine, with a means of continuously recording load, with a jaw separation rate of (100 ± 20) mm/min and a force range of 0 N to 600 N. The machine shall be fitted with either pincers or flat jaws (27.5 ± 2,5) mm wide, capable of firmly gripping the test pieces.	Upper/outsole bond strength, 5.3.1.2 Class I only
3	Steel scale, LC 1 mm Dial gauge, 1 mm Appropriate gauge to measure the internal length, LC 1 mm Impact apparatus as described in EN 12568:2010 with Cylinder, dial gauge, clamping device	Toe protection, 5.3.2.1 to 5.3.2.3 5.2.2.1.1
4	Compression testing machine, as described in EN 12568:2010, 5.1.3.1.1. Cylinder, dial gauge, clamping device as mentioned above.	Compression resistance, 5.3.2.4
5	Mass fraction of 1 % aqueous solution of sodium chloride and polythene cover	Behavior of toecaps, 5.3.2.5

6	Water bath, supply of compressed air	Leak proofness, 5.3.3 Class II only
7	17 \pm 3 stairs stop watch	Specific ergonomic features, 5.3.4
8	Steel Scale LC 1mm Thickness gauge with a flat presser foot of (10 \pm 0,1) mm diameter and a load of (1 \pm 0,1) N	Upper, General, 5.4.1 Thickness, 5.4.2, Class II only
9	Tear strength tester as per ISO 3377-2 for leather; ISO 4674-1:2003, method B, for coated fabric and textile constant rate of transverse of 100 mm/min	Tear strength, 5.4.3, Class I only 5.5.1, 5.6.1, 5.8.2
10	Tensile testing machine For Leather, as per ISO 3376 For Rubber, CRT 100 mm/min \pm 10 mm/min For Polymeric, as per ISO 4643	Tensile properties, 5.4.4
11	Micrometer dial gauge, accurate to within 0,1 mm. Flexing machine	Flexing resistance, 5.4.5 Class II only 5.8.4
12	Jar or bottles, neck approx. 30 mm Holder Fan Silica gel desiccant Weighing balance LC 0.001 g Stop watch Vernier calipers	Water vapour permeability and coefficient, 5.4.6, 5.5.3, 5.7.3 Class I only
13	Arrangement as per ISO 4045	pH value, 5.4.7, 5.5.4, 5.6.2, 5.7.2, Class I only

14	<p>Apparatus as per ISO 5423</p> <p>Arrangement for conditioning the test pieces for 24 h at $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and test in air at $-5^{\circ}\text{C} \pm 2^{\circ}\text{C}$.</p>	Hydrolysis, 5.4.8 Class II only
15	<p>Abrasion machine,</p> <p>Fabric punch or press cutter, to produce a test piece to fit the holder, having a diameter of 38 mm.</p> <p>Weight, of mass $(2,5 \pm 0,5)$ kg and diameter (120 ± 10) mm.</p> <p>Balance, LC 0.001 g.</p> <p>Atmosphere for testing The testing atmosphere shall be $(27 \pm 2)^{\circ}\text{C}$ and $(65 \pm 5) \% \text{RH}$.</p>	Abrasion resistance, 5.5.2 , 5.7.4, 5.8.3
16	Apparatus as per IS 582	Chromium VI content, 5.4.9, 5.5.5, 5.6.3, 5.7.5

The list above is indicative and may not be taken as exhaustive

ANNEX – B

**SCHEME OF INSPECTION AND TESTING
FOR PERSONAL PROTECTIVE EQUIPMENT PART 2 SAFETY FOOTWEAR
ACCORDING TO IS 15298 (Part 2): 2016/ ISO 20345: 2011**

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 equipments.
2. **TEST RECORDS** - The manufacturer shall maintain test records for the tests carried out to establish conformity.
3. **PACKING AND MARKING** -The Standard Mark as given in Schedule of the license shall be stamped on each piece of protective footwear and the outer packaging for each pair of footwear, provided always that the Footwear to which this mark is thus applied conforms to every requirement of the specification. All markings shall be made inside of tongue or at top outer face of the boot so that least damage is done during working.
 - 3.1 Packing shall be done as agreed between purchaser and supplier. In addition, the following details shall be permanently marked on each piece of footwear:
 - a) Size,
 - b) Manufacturer's name and brand,
 - c) Year and month of manufacture,
 - d) Number and year of the standard, based upon which the boots are produced,
 - e) Any other statutory marking.
 - f) BIS Licence No. (CM/L---
 - 3.2 Each pair of boot shall be supplied with the following information in English and any other language:
 - i) Name and full address of manufacturer,
 - ii) Details of customer care service provider,
 - iii) Instruction for storage and maintenance,
 - iv) For instructions on cleaning and drying, see IS 6519,
 - v) Wherever applicable, declaration to be made stating footwear is not for use in fire hazard/explosion
 - vi) prone areas/hot contact/electric resistance purpose,
 - vii) The footwear is not a GREEN footwear and not bio-degradable.
 - viii) BIS Licence No. (CM/L---
 - ix) and BIS website details: "For details of BIS Certification please visit www.bis.gov.in" (These details also to be marked on the box)
4. **CONTROL UNIT**- 10,000 pairs or Fortnight production of the safety footwear, whichever is earlier manufactured from the same consignment of the raw material constitute a control unit.
 - 4.1 On the basis of test result, the decision regarding conformity or otherwise of a control unit to a given requirement shall be made as follows:

4.1.1 No. of sample shall be drawn from each control unit and to be tested for all the requirements as specified in Table 1 of the scheme.

4.1.2 If the sample fails to confirm in any of the requirements laid down in the specification, such, entire control unit represented by the sample shall be considered unfit for the purpose of marking.

5. LEVELS OF CONTROL - The tests, as indicated in Table 1 and at the levels of control specified therein, shall be carried out on the whole production of the factory covered by this scheme and appropriate records and charts maintained in accordance with paragraph 2 above. All the production which conforms to the Indian Standard and covered by the licence shall be marked with the BIS certification Mark.

5.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard mark.

6. REJECTION - 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. A separate record providing the detailed information regarding the rejected control units and mode of their disposal shall be maintained, such material shall in no case be stored together with that conforming to the specification.

TABLE 1 LEVELS OF CONTROL
(Para 5.0 of the Scheme of Testing and Inspection)

TEST DETAILS (1)				Test equipment requirement R:required (or) S: Sub- contracting permitted (2)	LEVELS OF CONTROL			
Clause	Requirement	Test Method			No. of Samples	No. of test pieces from each sample	Frequency	Remarks
		Clause	Reference					
5.2	DESIGN							
5.2.1	General	5.2.1	IS 15298 (Pt 2)	R	1 from each of 3 sizes	1	Each control unit	Applicability will be as defined in Table 2 of IS 15298 (Pt2)
5.2.2	Height of upper	6.2	ISO 20344:2011	R	1 from each of 3 sizes	1	Each control unit	-do-
5.2.3	Seat Region	5.2.3	IS 15298 (Pt 2)	R	All		-do-	-do-
-do-	Design A	-do-	-do-	R	-do-	1	-do-	-do-
-do-	Design B	-do-	-do-	R	-do-	1	-do-	-do-
-do-	Design C	-do-	-do-	R	-do-	1	-do-	-do-
-do-	Design D	-do-	-do-	R	-do-	1	-do-	-do-
-do-	Design E	-do-	-do-	R	-do-	1	-do-	-do-
	WHOLE FOOTWEAR							-do-
5.3.1	Sole Performance :			R				-do-
5.3.1.1	Construction	5.3.1.1	IS 15298 (Pt 2)	R	All		Each control unit	-do-
5.3.1.2	Upper / Outsole bond strength	5.2	ISO 20344:2011	R	1 from each of 3 sizes	1	-do-	-do-
5.3.2	TOE PROTECTION							-do-
5.3.2.1	General	5.3.2.1	IS 15298 (Pt 2)	R	All		Each control unit	-do-
5.3.2.2	Internal Length of Toecaps	5.3	ISO 20344:2011	R	1 pair from each of 3 sizes	1 pair	-do-	-do-

5.3.2.3	Impact Resistance	5.4	-do-	R	1 pair from each of 3 sizes	1 pair	Each Control Unit	-do-
5.3.2.4	Compression Resistance	5.5	-do-	R	-do-	-do-	-do-	-do-
5.3.2.5	Behaviour of Toe caps							-do-
5.3.2.5.1	Corrosion resistance of metallic toe caps	5.6.2	ISO 20344:2011	R	2 from different sizes	1	-do-	-do-
5.3.2.5.2	Non Metallic toe caps	4.3	EN 12568:2010	R	-do-	-do-	-do-	-do-
5.3.3	Leak proofness	5.7	ISO 20344:2011	R	-do-	-do-	-do-	-do-
5.3.4	Specific ergonomic features	5.1	-do-	R	3 pairs from 3 different sizes	1 pair	-do-	-do-
5.3.5	Slip resistance	5.11	-do-	S	-do-	-do-	Once in a month	-do-
5.3.6	Innocuousness	-	IS 17011	S	One consignment from each source (i.e. Supplier) shall be tested once every six months			
5.4	UPPER							-do-
5.4.1	General	5.4.1	IS 15298 (Pt 2)	R	1 from each of 3 sizes	1	Each control unit	-do-
5.4.2	Thickness	6.1	ISO 20344:2011	R	-do-	3	-do-	-do-
5.4.3	Tear strength	6.3	-do-	R	-do-	-do-	-do-	-do-
5.4.4	Tensile properties	6.4.1	-do-	R	-do-	-do-	-do-	-do-
5.4.5	Flexing resistance	6.5	-do-	R	-do-	1	-do-	-do-
5.4.6	Water vapour permeability and co-efficient	6.6 & 6.8	-do-	R	-do-	-do-	-do-	-do-
5.4.7	pH value	6.9	-do-	R	1	2	-do-	-do-
5.4.8	Hydrolysis	6.10	-do-	R	1 from each of 3 sizes	1	-do-	-do-
5.4.9	Chromium VI content	6.11	ISO 17075	R	1	2	-do-	-do-
5.5	LINING (Vamp lining & quarter lining)							-do-
5.5.1	Tear strength	6.3	ISO 20344:2011	R	1 from each of 3 sizes	3	Each control unit	-do-
5.5.2	Abrasion resistance	6.12	-do-	R	3	4	-do-	-do-
5.5.3	Water vapour permeability	6.6, 6.8	-do-	R	1 from each of	1	-do-	-do-

	and co-efficient				3 sizes			
5.5.4	pH value	6.9	-do-	R	1	2	-do-	-do-
5.5.5	Chromium VI content	6.11	ISO 17075	R	1	2	-do-	-do-
5.6	TONGUE							-do-
5.6.1	Tear Strength	6.3	-do-	R	1 from each sizes	3	-do-	-do-
5.6.2	pH Value	6.9	ISO 20344:2011	R	1	2	Each control unit	-do-
5.6.3	Chromium VI content	6.11	ISO 17075	R	-do-	-do-	-do-	-do-
5.7	INSOLE & INSOCK							-do-
5.7.1	Thickness	7.1	ISO 20344:2011	R	3	1	Each control unit	-do-
5.7.2	pH Value	6.9	-do-	R	1	2	-do-	-do-
5.7.3	Water absorption and desorption	7.2	-do-	R	3	1	-do-	-do-
5.7.4	Abrasion Resistance							-do-
5.7.4.1	Insoles	7.3	-do-	R	3	1	-do-	-do-
5.7.4.2	In socks	6.12	-do-	R	3	4	-do-	-do-
5.7.5	Chromium VI content	6.11	ISO 17075	R	1	2	-do-	-do-
5.8	OUTSOLE							-do-
5.8.1	Design	5.8.1	IS 15298 (Pt 3)	R	-do-	1	-do-	-do-
5.8.1.1& Table 17	Outsole thickness	8.1.2	ISO 20344:2011	R	1 from each of 3 sizes	1	Alternate control unit	-do-
5.8.1.2	Cleated Area		-do-	R	1 from each of 3 sizes	1	Alternate control unit	-do-
5.8.1.3	Cleat Height	8.1	-do-	R	1 from each of 3 sizes	1	Alternate control unit	-do-
5.8.2	Tear strength	8.2	-do-	R	-do-	-do-	-do-	-do-
5.8.3	Abrasion resistance	8.3	-do-	R	-do-	-do-	-do-	-do-
5.8.4	Flexing Resistance	8.4	-do-	R	-do-	-do-	-do-	-do-
5.8.5	Hydrolysis	8.5	-do-	R	-do-	-do-	-do-	-do-
5.8.6	Interlayer Bond Strength	5.2	-do-	R	-do-	-do-	-do-	-do-

6	ADDITIONAL REQUIREMENTS FOR SAFETY FOOTWEAR							Applicable as per Table 18
6.2	WHOLE FOOTWEAR							-do-
6.2.1	Penetration Resistance		ISO 20344:2011, EN 12658	R	1 pair from each of 3 sizes	1 pair	Alternate Control Unit	-do-
6.2.2	Electrical Properties							-do-
6.2.2.1	- Conductive footwear	5.10	ISO 20344:2011	R	1 pair from each of 3 sizes	1 pair	Alternate Control Unit	-do-
6.2.2.2	-Antistatic Footwear	5.10	-do-	R	-do-	-do-	-do-	-do-
6.2.2.3	Electrically Insulating Footwear	5.11	EN 50321	R	-do-	-do-	-do-	-do-
6.2.3	Resistance to inimical Environments							-do-
6.2.3.1	Heat Insulation of sole complex	5.12	ISO 20344:2011	R	2 from different sizes	1	-do-	-do-
6.2.3.2	Cold Insulation of sole complex	5.13	-do-	R	-do-	-do-	-do-	-do-
6.2.4	Energy absorption of seat region	5.14	-do-	R	1 pair from each of 3 sizes	1 pair	-do-	-do-
6.2.5	Water resistance	5.15.1 or 5.15.2	-do-	R	3 pairs (minimum 2 different sizes)	-do-	-do-	-do-
6.2.6	Metatarsal Protection	5.16	-do-	R	1 pair from each of 3 sizes	-do-	-do-	-do-
6.2.7	Ankle protection	5.17	-do-	R	-do-	-do-	-do-	-do-
6.2.8	Cut resistance footwear	6.14, 6.2.8.4	-do- IS 15298 (Pt 2)	R	-do-	-do-	-do-	-do-
6.3	UPPER							-do-
6.3	Water penetration and water absorption	6.13	ISO 20344:2011	R	3	1	Alternate Control Unit	-do-
6.4	OUTSOLE							-do-
6.4.1	Resistance to hot contact	8.7	ISO 20344:2011	R	-do-	-do-	-do-	-do-
6.4.2	Resistance to fuel oil	8.6.1	-do-	R	1 from each of 3 sizes-	1	-do-	-do-

Note-1:

- i) Where samples are required from each of three sizes, these shall comprise the largest, the smallest and a middle size of the footwear under test.
- ii) If one or two sizes are only manufactured in any particular control unit, then samples from the available sizes are to be tested.
- iii) If any sample of any size fails, the production of the particular control unit to be treated as fail.
- iv) If it is not possible to obtain a large enough test piece from the footwear, then a sample of the material from which the component has been manufactured may be used instead and this should be noted in the test report.

Note-2: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-3: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification to BO Head.