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उत्पाद मैनुअल

निजी सुरक्षा उपस्कर भाग 2 सुरक्षा फुटवियर

IS 15298 (Part -2)

(ISO 20345: 2021)

**PRODUCT MANUAL FOR
PERSONAL PROTECTIVE EQUIPMENT PART 2 SAFETY FOOTWEAR
ACCORDING TO IS 15298 PART 2: 2024
(ISO 20345: 2021)**

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity 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.

1.	मानक संख्या IS No.	:	IS 15298 (Part 2): 2024
	शीर्षक Title	:	Personal Protective Equipment Part 2 Safety Footwear
	संशोधनों की संख्या No. of amendments	:	0
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Safety footwear shall be made of materials as per Cl 4 and which conform to the requirement of Innocuousness and lead content as per Cl 5.3.6 and 5.3.8, respectively as per IS 15298 Part 2 Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer Annex-A
c)	नमूने का परिमाण Sample Quantity	:	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 separately) Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent

		to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (incase of market surveillance, effort may be made to procure therequired quantity of product sample, as far as possible since raw material sample may not be available in market)
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer to Annex-B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	: Please refer to Annex-C
5.	एक दिन में संभावित परीक्षण Possible tests in a day (on conditioned samples, if applicable)	
	1. Design 2. Whole footwear a. Constructional performance: b. Toe protection (exceptt corrosion resistance) c. Leak proofness d. Specific ergonomic features e. Innocuousness f. Seam Strength g. Lead content 3. Upper 4. Lining 5. Tongue 6. Insole/ Insock/ Seat sock/ Footbed (Thickness) 7. Outsole <u>Additional requirements (as applicable)</u> 8. Whole foot- wear a. Perforation resistance (excluding Behaviour of perforation-resistant inserts) b. Electrical properties c. Resistance to inimical environments: d. Energy absorption of seat region e. Water resistance f. Metatarsal protection g. Ankle protection h. Cut resistance i. Scuff cap abrasion 9. Upper-Water penetration and absorption 10. Outsole a. Resistance to hot contact b. Resistance to fuel oil c. Ladder Grip Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies (OSAs) during factory inspection to provide readyreference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.	
6.	लाइसेंस का दायरा /Scope of the Licence:	

IS 15298 (Part 2) :2024 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेंस निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है “Licence is granted to use Standard Mark as per IS 15298 (Part 2): 2024with the following scope:			
Name of the product		Personal Protective Equipment Part 2 Safety Footwear	
Classification		Class I and/or Class II and/or Hybrid footwear	
Design		A and/or B and/or C and/or D and/or E	
Sizes (to be declared)		From _____ to _____	
Additional Requirements		Without Additional Requirements, or	
		With Additional Requirements (As applicable from the list given below)	
		Whole foot- wear	1. Perforation resistance (metal insert type P)- (P)
			2. Perforation resistance (non-metal insert) a) Type PL (PL) b) Type PS (PS)
			3. Electrical properties a) partially conductive footwear (C) b) antistatic footwear (A)
			4. Resistance to inimical environments a) heat insulation of outsole complex (HI) b) cold insulation of outsole complex (CI)
			5. Energy absorption of seat region (E)
			6. Water resistance (WR)
			7. Metatarsal protection (M)
			8. Ankle protection (AN)
			9. Cut resistance (CR)
			10. Scuff cap abrasion (SC)
			11. Slip resistance - on ceramic tile floor with glycerine (SR)
		Upper	12. Water penetration and absorption (WPA)
		Outsole	13. Resistance to hot contact (HRO)
	14. Resistance to fuel oil (FO)		
15. Ladder Grip (LG)			

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ANNEX-A

GROUPING GUIDELINES

PERSONAL PROTECTIVE EQUIPMENT PART 2 SAFETY FOOTWEAR

1. IS 15298 (Part 2): 2024 for PERSONAL PROTECTIVE EQUIPMENT PART 2 SAFETY FOOTWEAR classifies Safety footwear into following three categories:
 - a) Class I : Footwear made from leather and other materials, excluding all-rubber or all-polymeric footwear
 - b) Class II : All-polymeric (i.e. entirely moulded) including all-rubber (i.e. entirely vulcanized) footwear
 - c) Hybrid footwear
2. The Indian Standard also provides for 5 designs A, B, C, D and E and additional requirements for
 - a) Perforation resistance
 - b) Electrical properties
 - c) Resistance to inimical environments
 - d) Energy absorption of heel region
 - e) Water resistance
 - f) Metatarsal protection
 - g) Ankle protection
 - h) Cut resistance
 - i) Scuff cap abrasion
 - j) Slip resistance - on ceramic tile floor with glycerine
 - k) Water penetration and absorption
 - l) Resistance to hot contact
 - m) Resistance to fuel oil
 - n) Ladder Grip
3. Shoes of each classification to be tested to be covered in the scope of Licence
4. Shoes of each design from each classification of any size shall be tested to cover all the sizes for the design under the classification in the scope of licence
5. Additional requirement to be tested for each classification from any design and any size to be covered in the scope of Licence
5. However, if certain materials have already been tested (and footwear made from these materials already covered in the scope of licence on that basis), new varieties of footwear may be added in the scope of licence without chemical testing of those materials which have already been tested before, provided that there is no change in the type/nature of the material and/or the source of material. In such cases, the manufacturer seeking relaxation from chemical testing for certain materials, shall declare that there is no change in the type/nature and/or the source of the materials already tested
6. Any change in combinations of components of footwear not having effect either on the scope of Licence or which does not elicit any testing of the footwear of that combination as per above grouping guideline, shall be informed to BIS by Licencee.

7. However, while considering grant of licence/inclusion of additional variety, it shall be ensured that the applicant/licensee has got the complete manufacturing and testing facilities for all the sizes and variety intended to be covered.
8. During operation of the licence, BOs shall ensure that all the samples are tested for all applicable requirements on the product, and sizes/varieties covered in the licence are tested in rotation.

ANNEX – B
LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Upper/outsole bond strength, Cl 5.3.1.2; Interlayer bond strength, Cl 5.8.7	Tensile testing machine with a chart recorder, clamping jaws for tensile tester, razor or sharp knife, steel scale, sample press, humidity chamber,
2	Toe protection:: General, Cl 5.3.2.1	as per 4.2 of ISO 22568-1:2019 for Metallic toecaps and as per ISO 22568-2:2019, 4.2 for Metallic toecaps
3	Toe protection:: Corrosion resistance, Cl 5.3.2.4	Test arrangement as per ISO 22568-1:2019, sodium chloride
4	Behaviour of toecaps (thermal and chemical), Cl 5.3.2.5	Impact test apparatus as per ISO 22568-1:2019 and ISO 22568-2:2019
5	Impact resistance, Cl 5.3.2.6	Impact apparatus, as per ISO 22568-1:2019, Modelling Clay Cylinders, Dial Gaug1e
6	Compression resistance, Cl 5.3.2.7	compression test apparatus as per ISO 22568-1:2019, Modelling Clay Cylinders, Dial Gaug1e
7	Leak proofness, Cl 5.3.3	Water bath, supply of compressed air Pressure sensor, Stopwatch
8	Specific ergonomic features, Cl 5.3.4	treadmill, stairs (as per 5.1.2 of ISO 20344:2021); Smooth metal hinged plate, Clamping device, Sensor, conditioning chamber
9	slip resistance: ceramic tile floor with NaLS (without symbol), Cl 5.3.5.2	A slip resistance test machine as per ISO 13287:2019, arrangement to maintain room temperature at 27+2 °C and requirements, Device for measuring the normal force, conditioning chamber, Sodium lauryl sulphate, ceramic tile floor
10	Innocuousness, Cl 5.3.6	As per IS 17011
11	Seam strength Cl 5.3.7	As per ISO 17697
12	Lead content, Cl 5.3.8	Nessler cylinders, P-Nitrophenol indicator Sol, Dil Hydrochloric acid, hydrogen sulphide solution, Standard lead solution, whatman filter paper
13	Tear strength, Cl 5.4.3; Tear strength, Cl 5.5.2; Tear strength, Cl 5.6.2	arrangement to maintain standard temperature, acetone, Analytical balance, Glass vial with screw cap, Ultrasonic water bath, Disposable syringe and membrane filter, Glass vial with septum cap, Gas chromatograph with mass selective detector (GC-MS)/Liquid chromatograph with fluorescence detector (LC-FLD), Capillary column for gas chromatograph, (5 %-phenyl)-methylpolysiloxane phase, non-polar, bonded and cross-linked, low bleed, C18 reverse phase column for liquid chromatograph, methanol,
14	Upper: Tensile properties, Cl 5.4.4	conditioning chamber, arrangement to maintain standard temperature, tensile testing machine,
15	Upper: Flexing resistance, Cl 5.4.5	conditioning chamber, arrangement to maintain standard temperature, Micrometre dial gauge, Flexing machine (for flexing of a rubber upper), micrometer, apparatus for determination of resistance to flexing (ISO 4643:1992, Annex B for polymers (test carried out at $(-5 \pm 2) ^\circ\text{C}$), test chamber
16	Water vapour permeability and coefficient, Cl 5.4.6; Water vapour permeability and coefficient, Cl 5.5.4	arrangement to maintain standard temperature, Micrometre dial gauge, Permeability Appts as per cl 6.6 & 6.7 of IS 15298 (Part-1), Jars or Bottles, Holder, Fan, Silica Gel, Mesh, Conditioning

		Chamber, Oven, Balance, Stop Watch, Vernier Caliper, Flexometer as per Cl. 6.6.2.8 of IS 15298 (Part 1), Circular Metal Container with impermeable material as per Cl 6.7.2.1 of IS 15298 (Part 1), Hygrometer, Thermometer
17	Upper: Resistance to hydrolysis, Cl 5.4.7	conditioning chamber, arrangement to maintain standard temperature, apparatus as per IS 16255/ ISO 5423 : 1992
18	Abrasion resistance, Cl 5.5.3; Insock abrasion 5.7.4.1, Cl 5.7.4.2	test apparatus defined in the ISO 12947-1:1998 (Martindale Method), Reference abradant, Fabric punch or press cutter, Weight, thickness guage, conditioning chamber
19	Thickness, Cl 5.7.1	conditioning chamber, thickness measuring apparatus with graduated eyepiece
20	Water absorption desorption 5.7.3, Cl 5.7.3	conditioning chamber, Water Absorption & Desorption Tester as per 7.2.2 of IS 15298 part 1, Brass Roller, Platform, IS 15298 part 1, Cotton gauge, Water Supply through flow meter, Press, Knife, Balance, Clock, Silicone grease
21	Insole abrasion, Cl 5.7.4.1	Finger Abrasion Tester as per cl. 7.3.2.1 IS 15298 part 1, Wool pads, Abradant fabric, Conditioning Chamber, Distilled Water, thickness guage
22	Design, Cl 5.8.2	thickness measuring apparatus,
23	Cleated area, Cl 5.8.2.2 ; Cleat height, Cl 5.8.2.3 ; Design, Cl 6.4.3.2	thickness and angle measuring apparatus,
24	Tear strength, Cl 5.8.3	apparatus as per ISO 34-1:2015, Method A, Dies, Nick cutter, Testing machine
25	Abrasion resistance, Cl 5.8.4; Mechanical properties, Cl 6.4.3.1	Abrasion machine as per 5.1 of IS 3400 (Part 3)/ ISO 4649, abrasive sheet, Hollow drill, balance, standard reference compounds. Conditioning chamber, arrangement for keeping ambient temperature, standard reference compounds
26	Outsole: Flexing resistance, Cl 5.8.5	The apparatus described in ISO 17707:2005, Cutting tool, Measuring magnifier, conditioning chamber
27	Outsole: Resistance to Hydrolysis, Cl 5.8.6	as per IS 16255/ ISO 5423 : 1992, deionized water
28	Metallic perforation-resistant inserts (Type P), Cl 6.2.1.1.2; Non-metallic perforation-resistant inserts and insoles (Type PL), Cl 6.2.1.1.3; Non-metallic perforation-resistant inserts and insoles (Type PS), Cl 6.2.1.1.4; Stability against ageing and environmental influence of non-metallic perforation resistant inserts, Cl 6.2.1.4.3	apparatus as per ISO 7500-1:2018, class 2, test nail, scale, vernier calliper
29	Dimensions, Cl 6.2.1.3; Internal length, Cl 5.3.2.2; Width of toecap flange, Cl 5.3.2.3	scale, vernier, dial guage
30	Flex resistance of perforation-resistant inserts, Cl 6.2.1.4.1	Conditioning chamber, Flexing apparatus comprising a suitable flexing guide as per Cl 5.2 of ISO 22568-3:2019 (metallic insert) and Cl 5.2 of ISO 22568-4:2021, (non-metallic insert)
31	Corrosion resistance of perforation-resistant metallic inserts: Class I footwear and hybrid mounted footwear, Cl 6.2.1.4.2.1	aqueous solution of sodium chloride, filter paper, scale (as per ISO 22568-3:2019)
32	Corrosion resistance of perforation-resistant metallic inserts: Class II	aqueous solution of sodium chloride (as per 5.6.2.1 ISO 20344 : 2021)

	footwear and hybrid moulded footwear, CI 6.2.1.4.2.2	
33	partially conductive footwear, CI 6.2.2.1; antistatic footwear, CI 6.2.2.2	Testing instrument, capable of measuring electrical resistance with SS balls internal electrode and copper external electrode, conductive laquer, Device for measuring the conductive resistance of the lacquer, distilled water, conditioning cahmber for dry and wet conditions, arrangement to maintain standard temperature
34	heat insulation of outsole complex, CI 6.2.3.1	Sand bath, Thermal transfer medium, Temperature probe, Temperature measuring device, conditioning chamber
35	cold insulation of outsole complex, CI 6.2.3.2	Insulated cold box, Thermal transfer medium, Temperature probe, Temperature measuring device, Copper plate, conditioning chamber
36	Energy absorption of seat region, CI 6.2.4	Test equipment, capable of measuring compressive force up to 6000 N, Test punch as per IS 15298 Part 1, conditioning chamber
37	Water resistance, CI 6.2.5	Horizontal watertight trough, water
38	Impact resistance of metatarsal protective device, CI 6.2.6.2	Impact apparatus, as per ISO 22568-1:2019, Clamping device, Dial gauge, Wax test form
39	Ankle protection, CI 6.2.7	conditioning chamber, vernier calliper, scale, Impact apparatus, Striker, Anvil, Force measurement instrumentation, Templates,
40	Dimensions and construction of protective area, CI 6.2.8.2; Design, CI 5.2; Height of upper, CI 5.2.2; Heel area (design A), CI 5.2.3; Heel area (design B, C, D, E), CI 5.2.3; Construction, CI 5.3.1.1; Height of the area where upper requirements apply (class I), CI 5.4.1.1; Height of the area where upper requirements apply (hybrid), CI 5.4.1.2	vernier calliper, scale
41	Resistance to cutting, CI 6.2.8.3	coupe test equipment as per CI 6.2 of ISO 23388:2018, rubber support, aluminium foil
42	Scuff cap abrasion, CI 6.2.9	conditioning chamber, Abradant, Double-sided adhesive tape, abrasion machine of the type described in ISO 12947-1 as a Martindale Wear,
43	Slip resistance, CI 6.2.10	A slip resistance test machine as per ISO 13287:2019, arrangement to maintain room temperature at 27+2 °C and requirements, Device for measuring the normal force, conditioning chamber, , ceramic tile floor, glycerine
44	Upper-Water penetration and absorption, CI 6.3	The test apparatus defined in ISO 5403-1:2011, Absorbent cloth, Balance, Clock,
45	Resistance to hot contact, CI 6.4.1	apparatus as per 8.9 1 of ISO 20344:2021, Cylindrical copper body, Metal heating block, Heating element, temperature Measuring device, Means of raising and lowering the bit, Self-aligning platform, Hinged support with thermally insulated face, conditioning chamber, aluminium foil
46	Resistance to fuel oil, CI 6.4.2	2,2,4-trimethylpentane, general purpose reagent, Shore A hardness tester, condtioning chamber, arrangement to maintain standard temperature, vernier calliper scale, balance, distilled water, sinker
47	Cleat height in the waist area, CI 6.4.3.3; Heel breast, CI 6.4.3.4	test equipment as per 8.2.4 of ISO 20344:2021

ANNEX B

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: 10,000 pairs or Fortnight production of the safety footwear, whichever is earlier, of the same variety, manufactured from the same consignment of the raw material

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in house as “R” or other tests which can be subcontracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1), where different tests given in the specification shall be carried out in accordance with the method given in the specification. They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 TEST RECORDS- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on each piece of a pair of the Safety footwear and its outer packaging (if applicable) provided always that the footwear so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 Additional Marking requirements: The footwear or its packaging shall also be marked with the following additional requirement

3.2.1 “For BIS certification details please visit www.bis.gov.in”

4. REJECTION - All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. 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
(ONLY FOR GUIDANCE PURPOSE)

TEST DETAILS (1)				Test equipment requirement R: required (or) S: Sub- contracting permitted (2)	LEVELS OF CONTROL (3)		
Clause	Requirement	Test Method			No. of sample	Frequency	Remarks
		Clause	Reference				
5.2	Design						
5.2.2	Height of upper	-	IS 15298 (Part 2)	R	Firm to have adequate in- process controls to check compliance of this parameter given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
5.2.3	Heel area (design A, B, C, D, E))	-	IS 15298 (Part 2)	R			
5.3	Whole footwear						
5.3.1	Constructional performance:						
5.3.1.1	Construction	-	IS 15298 (Part 2)	R	One	each control unit	
5.3.1.2	Upper/outsole bond strength	-	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
5.3.2	Toe protection:						
5.3.2.1	General	-	ISO 22568-1:2019/ISO 22568-2:2019	R	One	each control unit	
5.3.2.2	Internal length	5.3.2.2	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
5.3.2.3	Width of toecap flange	5.3.2.2	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
5.3.2.4	Corrosion resistance	5.6.2.	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
5.3.2.5	Behaviour of toecaps (thermal and chemical)	5.6.2	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
5.3.2.6	Impact resistance	5.4	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
5.3.2.7	Compression resistance	5.5	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
5.3.3	Leak proofness	5.7	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
5.3.4	Specific ergonomic features	5.1, 8.5	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	

5.3.5	Slip resistance						
5.3.5.1	symbol $\emptyset$			R	One		
5.3.5.2	ceramic tile floor with NaLS (without symbol)	5.14	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	once in a month	
5.3.6	Innocuousness	3.6, Table 1	IS 17011	S	One	Each consignment of raw material	
5.3.7	Seam Strength	5.25	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
5.3.8	Lead content	-	IS12240 (Part 5),	S	One	Each consignment of raw material	
5.4	Upper						
5.4.1	General						
5.4.1.1	Height of the area where upper requirements apply (class I)	-	IS 15298 (Part 2)	R	Firm to have adequate in- process controls to check compliance of this parameter given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
5.4.1.2	Height of the area where upper requirements apply (hybrid)	-	IS 15298 (Part 2)	R			
5.4.2	Thickness	6.1	ISO 20344:2021 [IS 15298 (Part 1)]	R			
5.4.3	Tear strength	6.3	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
5.4.4	Tensile properties	6.4	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
5.4.5	Flexing resistance	6.5	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
5.4.6	Water vapour permeability and coefficient	6.6, 6.7 and 6.8	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
5.4.7	Resistance to hydrolysis	6.1	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
5.5	Lining						

5.5.2	Tear strength	6.3	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
5.5.3	Abrasion resistance	6.12	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
5.5.4	Water vapour permeability and coefficient	6.6, 6.7 and 6.8,	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
5.6	Tongue						
5.6.2	Tear strength	6.3	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
5.7	Insole/ Insock/ Seat sock/ Footbed						
5.7.1	Thickness	7.1	ISO 20344:2021 [IS 15298 (Part 1)]	R	Firm to have adequate in- process controls to check compliance of this parameter given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
5.7.2	Water permeability	7.2	ISO 20344:2021 [IS 15298 (Part 1)]	S			
5.7.3	Water absorption desorption	7.2	ISO 20344:2021 [IS 15298 (Part 1)]	S			
5.7.4.1	Insole abrasion	7.2	ISO 20344:2021 [IS 15298 (Part 1)]	S			
5.7.4.2	Insock abrasion	6.12	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
5.8	Outsole						
5.8.2	Design	8.2.3	ISO 20344:2021 [IS 15298 (Part 1)]		Firm to have adequate in- process controls to check compliance of this parameter given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
5.8.2.1	Thickness	8.2.2	ISO 20344:2021 [IS 15298 (Part 1)]	R			
5.8.2.2	Cleated area	8.2.2	ISO 20344:2021 [IS 15298 (Part 1)]	R			
5.8.2.3	Cleat height	8.2.3	ISO 20344:2021 [IS 15298 (Part 1)]	R			
5.8.3	Tear strength	8.3	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
5.8.4	Abrasion resistance	8.4	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
5.8.5	Flexing resistance	8.6	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	

5.8.6	Resistance to Hydrolysis	8.7	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
5.8.7	Interlayer bond strength	5.2	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
Additional requirements for safety footwear							
6.2	Whole foot- wear						
6.2.1	Perforation resistance						
6.2.1.1	Determination of perforation force						
6.2.1.1.2	Metallic perforation-resistant inserts (Type P)	5.9	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	Alternate control unit	
6.2.1.1.3	Non-metallic perforation-resistant inserts and insoles (Type PL)	5.10.4.2.2/3.2	ISO 20344:2021 [IS 15298 (Part 1)]/ISO 22568-4:2021,	R	One	Alternate control unit	
6.2.1.1.4	Non-metallic perforation-resistant inserts and insoles (Type PS)	5.10.4.2.1	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	Alternate control unit	
6.2.1.2	construction						
6.2.1.3	Dimensions	5.8	ISO 20344:2021 [IS 15298 (Part 1)]	R	Firm to have adequate in- process controls to check compliance of this parameter given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
6.2.1.4	Behaviour of perforation-resistant inserts						
6.2.1.4.1	Flex resistance of perforation-resistant inserts	5.12	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	Once in a month	
6.2.1.4.2	Corrosion resistance of perforation-resistant metallic inserts						
6.2.1.4.2.1	Class I footwear and hybrid mounted footwear	5.11.2	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	

6.2.1.4.2.2	Class II footwear and hybrid moulded footwear	5.6.2.1	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
6.2.1.4.3	Stability against ageing and environmental influence of non-metallic perforation resistant inserts	5.11.2	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	Once in a month	
6.2.2	Electrical properties						
6.2.2.1	partially conductive footwear	5.13 5.13.3.2 a)	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	Once in a month	
6.2.2.2	antistatic footwear	5.13, 5.13.3.2 a)	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	Once in a month	
6.2.3	Resistance to inimical environments:						
6.2.3.1	heat insulation of outsole complex	5.15,	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	Alternate control unit	
6.2.3.2	cold insulation of outsole complex	5.16,	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	each control unit	
6.2.4	Energy absorption of seat region	5.17,	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
6.2.5	Water resistance	5.18,	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
6.2.6	Metatarsal protection						
6.2.6.1	Construction			R	One		
6.2.6.2	Impact resistance of metatarsal protective device	5.20, 5.22	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	Alternate control unit	
6.2.7	Ankle protection	5.21, 5.22	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	Alternate control unit	
6.2.8	Cut resistance						
6.2.8.1	Design	-	IS 15298 (Part 2)	R	Firm to have adequate in- process controls to check compliance of this parameter given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
6.2.8.2	Dimensions and construction of protective area	5.23.2	ISO 20344:2021 [IS 15298 (Part 1)]	R			
6.2.8.3	Resistance to cutting	5.23.3	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	Alternate control unit	

6.2.9	Scuff cap abrasion	5.24.2	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	Once in a month	
6.2.10	Slip resistance	5.14,	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
6.3	Upper-Water penetration and absorption	6.13,	ISO 20344:2021 [IS 15298 (Part 1)]	S	One	Once in a month	
6.4	Outsole						
6.4.1	Resistance to hot contact	8.9,	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	Alternate control unit	
6.4.2	Resistance to fuel oil	8.8.2.1, 8.8.2.2	ISO 20344:2021 [IS 15298 (Part 1)]	R	One	Alternate control unit	
6.4.3	Ladder Grip						
6.4.3.1	Mechanical properties	5.8.4	IS 15298 (Part 2)	R	One	Alternate control unit	
6.4.3.2	Design	5.8.2.1, 5.8.2.2 and 5.8.2.3	IS 15298 (Part 2)	R	Firm to have adequate in- process controls to check compliance of this parameter given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
6.4.3.3	Cleat height in the waist area	8.2.4	ISO 20344:2021 [IS 15298 (Part 1)]	R			
6.4.3.4	Heel breast	8.2.4	ISO 20344:2021 [IS 15298 (Part 1)]	R			