



उत्पाद मानुयल
पुरुषों और महिलाओं के लिए 'सार्वजनिक
सफाई कार्य के लिए जूते -विशिष्ट
IS 16994:2018 के अनुसार

PRODUCT MANUAL FOR
Footwear for Men and Women for
Municipal Scavenging Work as per IS 16994:2018

भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन (विनियम की स्कीम-I के तहत यह उत्पाद मानुयल प्रमाणीकरणके प्रचलन में रीति और पारदर्शिता के सुसंगत सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेंस धारियों द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेंस/प्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है।

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.	उत्पाद Product	:	IS 16994:2018
	शीर्षक Title	:	Footwear for Men and Women for Municipal Scavenging Work
	संशोधन संख्या No. of amendments	:	NIL
2.	नमूनाकरण दिशा निर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	All material and components of footwear shall conform to the requirements specified at cl.3., cl.7. and cl.8 of IS 16994:2018
b)	समूहिकरण दिशा निर्देश Grouping Guidelines	:	Please refer Annex-A

c)	नमूने का परिमाण Sample Size	:	4 Pairs of Shoes of each variety
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer Annex – B
4.	निरीक्षण व परीक्षण स्कीम Scheme of Inspection and Testing	:	Please refer Annex - C
5.	एक दिन में संभावित परीक्षण Possible tests in a day	:	1) Fittings 2) Dimensional Requirements 3) Interlayer Bond Strength 4) Abrasion of Outsole 5) Flexing of Outsole 6) Impact Resistance 7) Compression Resistance 8) Tensile Strength of Upper 9) Tear Strength of Upper and Lining
6.	लाइसेन्स का कार्यक्षेत्र /Scope of the Licence :		
	IS 16994:2018 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेन्स निम्नलिखित कार्यक्षेत्रके लिए प्रदान किया जाता है Licence is granted to use Standard Mark as per IS 16994:2018 with the following scope:		
	Name of the product	Footwear for Men and Women for Municipal Scavenging Work	
	Class	I, II	
	Type	1 (Shoes), 2(Ankle Boots), 3(Wellington/Gum Boots)	
	Variety	1(For use in dry condition), 2 (For use in wet and slurry condition), 3 (For use in waterlogged and other slurry conditions where ankle height shoes are incapable to protect)	
	Design	A,B,C,D or as agreed to between manufacturer and purchaser	
	Size	33,34,35,36 (Women) 38, 39, 40, 41 (Men)	

BUREAU OF INDIAN STANDARDS

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ANNEXURE A
TO PRODUCT MANUAL FOR
Footwear for Men and Women for Municipal
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GROUPING GUIDELINES

1) As per the Indian Standard, footwear for men and women for municipal scavenging work can be classified as per the following :

Class	Description
I	Footwear made from material other than leather
II	All polymer/elastomer/rubber footwear

2) Further, Municipal Scavenging Footwear can be of one of the following types, designs:-

- a) Type 1- Shoes, Type 2- Ankle Boots, c) Type 3- Wellington/Gum Boots
- b) Design-A,B,C or D or any other design agreed between manufacturer and purchaser
- c) The condition of work can vary as given below:-
 - a) Variety 1 — For use in dry condition
 - b) Variety 2 — For use in wet and slurry condition
 - c) Variety 3 — For use in waterlogged and other slurry conditions where ankle height shoes are incapable to protect.

3) Fittings of footwear shall be as per sizes given below (as per IS 1638):-

Men (Paris Point)	Women (Paris Point)
38	33
39	34
40	35
41	36
42	37
43	39
44	40
45	41
46	42
47	-
48	-

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4) For the purpose of GoL/CSoL, the applicant/licensee should declare the Class, Type, Variety and Size for the Footwear intended to be covered in the licence and accordingly the following grouping guidelines shall be considered:-

Group	Class	Type	Variety	Design	Size	Sample to be tested
1	I or II (if for Both)*	1 or 2 or 3 (if for two or All)**	1 or 2 or 3 (If for two or All)***	A or B or C or D (If two, more or all)****	Up to 36 (Women)/ Up to 42 (Men)	One sample of any size *****
2	I or II (if for Both)*	1 or 2 or 3 (if for two or All)**	1 or 2 or 3 (If for two or All)***	A or B or C or D (If two, more or all)****	Above 36 to 42 (Women)/ Above 42 to 48 (Men)	One sample of any size*****

Notes

1) *If the applicant/Licensee applies for both classes i.e. Class I and Class II, testing to be done for each Class separately

2) **If the applicant/Licensee applies for two or more types, testing to be done for each Type separately

3) ***If the applicant/Licensee applies for two or more varieties, testing to be done for each Variety separately

4) ****If the applicant/Licensee applies for two, more or all designs or any other design agreed between manufacturer and purchaser, testing to be done for each Design separately

4) *****Sample of any size can be taken (either of Men and Women) considering other sizes in the same group. However, manufacturing and testing facilities for each size must be verified.

5) 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 classes, types, varieties and sizes intended to be covered.

6) 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.

ANNEXURE B
TO PRODUCT MANUAL FOR
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LIST OF TEST EQUIPMENT

Major test equipment essentially required to test as per requirements of Indian Standard.

Sl. No.	Tests Used in with Clause Reference	Test Equipment/Chemicals and Identification Numbers (Where applicable)
1.	Protective Toe Cap, cl.7.1	<u>Impact Test</u> Impact apparatus (as per EN 12568) Clamping device Cylinders of moulding clay Vernier caliper <u>Compression Test</u> Compression testing machine (as per EN 12568) Clamping device Cylinders of moulding clay Vernier calliper
2.	Upper, cl.7.3	<u>Tear strength of upper class I</u> Tear Resistance testing apparatus as per ISO 3377-2 for leather Tear Resistance testing apparatus as per ISO 4674-1:2003 method B for coated fabric and textile <u>Water vapour permeability and coefficient of upper (Class I and II)</u> Water vapour permeability apparatus (as per clause 6.6.2 of IS 15298 part 1) Silica gel desiccant Ventilated Oven hermetically sealed vessel Balance .001mm Stopwatch Instrument(capable of measuring to the nearest 0,1 mm the internal diameter of the neck of the jars) Pre-flexing apparatus (as per clause 6.6.2.8 of IS 15298 part 1) Circular metal container (volume 100 cm3) <u>Thickness Class II only</u> Thickness gauge with a flat presser foot of (10 ± 0,1) mm diameter and a load of (1 ± 0,1) N <u>Tensile properties of upper (Class II only)</u> Tensile testing machine (speed 100+-20 mm/min) Press knife

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		Scale Conditioning Chamber Micrometer <u>Hydrolysis of upper (Class II only)</u> Flexing Apparatus as per Annex B of ISO 5423 in refrigerated cabinet -5C Dessicator Oven
3.	Lining, cl.7.4	<u>Tear strength of lining (Class I)</u> Tensile testing machine(with a continuously recording load, speed 100+-20 mm/min) Test piece holder Thickness gauge Press Knife Scale <u>Abrasion resistance of lining (Class I and Class II)</u> Abrasion machine(as per clause 6.12.2.1 of IS 15298 part 1) with Reference abradant Backing for test pieces Fabric punch or press cutter Balance Weight Conditioning chamber <u>Water vapour permeability and coefficient of lining (Class I)</u> Water vapour permeability apparatus (as per clause 6.6.2 of IS 15298 part 1) Silica gel desiccant Ventilated Oven hermetically sealed vessel Balance .001mm Stopwatch Instrument(capable of measuring to the nearest 0,1 mm the internal diameter of the neck of the jars) Pre-flexing apparatus (as per clause 6.6.2.8 of IS 15298 part 1) Circular metal container (volume 100 cm3)
4.	Insole/Insocks, cl.7.5	<u>Thickness of Insole and insock</u> Micrometer <u>Water absorption and desorption of Insole and insock</u> Water absorption and desorption apparatus having Brass roller Platform Clamp Water supply Press Knife Silicone grease Balance Clock cotton gauze <u>Abrasion resistance of Insoles</u> Abrasion resistance apparatus (as per clause 7.3.2.1 of IS 15298 part 1) having

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		Wool pads Abradant fabric Weighing balance <u>Abrasion resistance of Insocks</u> Abrasion machine(as per clause 6.12.2.1 of IS 15298 part 1) with Reference abradant Backing for test pieces Fabric punch or press cutter Balance Weight Conditioning chamber
5.	Counter Stiffener, cl.7.6	Dome Forming Tool Press Solvent Device for Cutting Thin Polyethylene Sheet Material Hydraulic Press Tongs or Similar Apparatus Height Gauge Thickness Gauge Compression Cage Tensile Testing Machine Distilled or Deionised water
6.	Outsole Heel, cl.7.7	Vernier calliper/scale Rigidity test apparatus as per 8.4.1 of IS 15298-1 comprising: Smooth metal hinged plate, clamping device, sensor, Flexing Test Machine as per 8.4.2 of IS 15298-1 Cutting tool, Magnifier, Scale Hardness tester Micrometer Balance Standard reference compounds
7.	Tear Strength of Outsole, cl.7.7.1	Tear Strength Tester in accordance with Method A of ISO 34-1
8.	Abrasion Resistance of Outsole/Heel, cl.7.7.2	Abrasion machine(as per clause 5.1 of IS 3400 P3) Hollow drill/ rotating cutting tool Hardness tester micrometer Balance Standard reference compounds Brush Abrasive sheet
9.	Flexing Resistance of Outsole/Heel, cl.7.7.3	Rigidity test apparatus as per 8.4.1 of IS 15298-1 comprising: Smooth metal hinged plate, clamping device, sensor, Flexing Test Machine as per 8.4.2 of IS 15298-1 Cutting tool, Magnifier, Scale

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10.	Interlayer Bond Strength, cl.7.7.4	Tensile testing machine(with a continuously recording load, speed 100+-20 mm/min) Scale Cutter Knife Right angle
11.	Upper Outsole Bond Strength, cl.7.7.5	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.
12.	Hydrolysis, cl.7.9	Micrometer Oven Dessicator Flexing machine(as per Annex C of ISO 5423) in a refrigerated cabinet Piercing chisel Cutting/buffing machine to reduce the thickness of the test piece Condition chamber
13.	Ageing Test of Whole Footwear, cl.7.10	Ageing Oven
14.	Construction, cl.8	Tensile Test Machine Conditioning Chamber
15.	Height of Upper, cl.8.1	Vernier caliper/ steel scale
16.	Internal Length of Toe Cap, cl.8.2	Paper Scale Vernier Calliper
17.	Volatility and Lead (Pb) Content when PVC is the Polymer, cl.8.4	<u>Volatility</u> Oven Dessicator Conditioning Chamber Dish Analytical Balance Device for Cutting <u>Lead Content(Pb)</u> Nessler Cylinder p-Nitrophenol Indicator solution' Dilute Ammonium Hydroxide Dilute Hydrochloric Acid Hydrogen Sulphide Solution

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		Standard Lead Solution Analytical Balance Whatman Filter Paper No.41 or equivalent General Glasswares
18.	Leak Proof Test of Whole Footwear for Variety 2 and 3 Work, cl.8.6	Water bath Supply of compressed air

Note 1: The above is an indicative list for the purpose of guidance only and may not be treated as exhaustive

ANNEXURE C
TO PRODUCT MANUAL FOR
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SCHEME OF INSPECTION AND TESTING

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 and implement 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. LABELLING, MARKING, PACKING - The Standard Mark as given in schedule of the licence and Licence Number (i.e. CM/L) shall be incorporated on each roll, and the marking and packing shall be done as per the provisions of the Indian Standard, provided always that the product thus marked conform to all the requirements of the specification.

4. CONTROL UNIT - 10000 Pairs or .Fortnight production of the footwear, whichever is earlier, manufactured from the same consignment of the raw material 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.

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

6. TEST CERTIFICATE - For each consignment of BIS Certified material conforming to **IS 16994:2018** there shall be a test certificate which shall contain the Standard Mark, the cast/Control Unit number and the corresponding test results (as given in Annexure-I enclosed)

7. 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. Any rejected material which is potentially re- salable be sheared or cut or deformed in such a manner that it cannot be used for any other purpose except re-melting. A separate record shall be maintained giving information on quantity and cast number/control unit number, as applicable, relating to all such rejections/defective/sub- standard material of the production not conforming to the requirements of the Specification and the method of its disposal. Such material shall in no case be stored together with that conforming to the Specification. The Standard Mark (if already applied) on rejected material should be defaced.

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TABLE 1: LEVELS OF CONTROL

(1)				(2)	(3)		(4)
TEST DETAILS					LEVELS OF CONTROL		REMARKS
Clause	Requirements	Test Method		Test equipment requirement R: required (or) S: Sub-contracting permitted	No. of Samples	Frequency	
		Clause	Reference				
5	Design	Fig 3	IS 15298 (Part 3) IS 15298 (Part 4)	R			Manufacture shall ensure that design of the footwear shall conform to the requirements of the specification or as agreed to between the purchaser
6	Fittings	----	IS 1638	R			Adequate inspection to ensure that the fittings of each footwear conform to the requirements of the specification
7	Materials and its properties						
7.1	Protective Cap	5.3.2.3 5.3.2.4	IS 15298 (Part 3)	S	One	Each Consignment	Applicable for footwear for variety 2 and 3 work No testing is required if the material is ISI marked or accompanied with manufacturer's test certificate indicating conformity to the requirement
7.2	Use of Polymer/Elastomer/Rubber	----	IS 16994	R			Manufacturer shall ensure that suitable polymer/elastomer/Rubber is used as agreed between the manufacturer and purchaser

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7.3	Upper	6.1 6.4 6.3 6.6 6.8 6.10	IS 15298 (Part 1) IS 15298 (Part 3) IS 15298 (Part 4)	R	One	Every 7 th Control Unit	----
7.4	Lining	6.3,6.6, 6.8,6.12	IS 15298 (Part 1) IS 15298 (Part 3) IS 15298 (Part 4)	R	One	Every 7 th Control Unit	----
7.5	Insoles/Insocks	7.1,7.2,7.3, 6.12	IS 15298 (Part 1) IS 15298 (Part 3) IS 15298 (Part 4)	R	One	Every 7 th Control Unit	----
7.6	Counter Stiffener	---	IS 7554	R	One	Every 7 th Control Unit	Wherever provided
7.7	Outsole Heel	---	IS 16994	R	One	Every 7 th Control Unit	----
7.7.1	Tear Strength of Outsole	8.2	IS 15298 (Part 1) IS 16994	R	One	Every 7 th Control Unit	----
7.7.2	Abrasion Resistance of Outsole/Heel	8.3	IS 15298 (Part 1) IS 16994	R	One	Every 7 th Control Unit	----
7.7.3	Flexing Resistance of Outsole Heel	8.4	IS 15298 (Part 1) IS 16994	R	One	Every 7 th Control Unit	----
7.7.4	Interlayer Bond Strength	5.2	IS 15298 (Part 1) IS 16994	R	One	Every 7 th Control Unit	----

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7.7.5	Upper Outsole Bond Strength	5.2	IS 15298 (Part 1) IS 16994	R	One	Every 7 th Control Unit	----
7.8	Insocks	----	IS 16994	R	Adequate inspection to ensure that the Insocks conform to the requirements of the specification		
7.9	Hydrolysis	8.5	IS 15298 (Part 1) IS 15298 (Part 3) IS 15298 (Part 4)	R	One	Every 7 th Control Unit	----
7.10	Ageing Test of Whole Footwear	---	IS 16994	R	One	Every 7 th Control Unit	----
8	Construction	Annex B Annex C	IS 16994	R	One	Each Control Unit	The footwear shall not have any banned chemicals listed in Annex B of the specification
8.1	Height of Upper	----	IS 15298 (Part 3) IS 15298 (Part 4)	R	One	Each Control Unit	----
8.2	Internal Length of Toe Cap	5.3	IS 15298 (Part 3) IS 15298 (Part 1)	S	One	Each Consignment	Applicable for footwear for variety 2 and 3 work No testing is required if the material is ISI marked or accompanied with manufacturer's test certificate indicating conformity to the requirement
8.3	Impact Resistance and Compression Resistance of Protective	5.3.2.3 5.3.2.4	IS 15298 (Part 3)	R	One	Each Control Unit	Applicable for Protective Footwear for variety 2 and 3 work

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	Footwear						
8.4	Volatility and Lead Content (Pb) when PVC is the Polymer	----	IS 16994 IS 12240 (Part 4) IS 12240 (Part 5)	R	One	Every 7 th Control Unit	Applicable in case of Footwear made from PVC
8.5	Restriction of Colour when PVC is Used as Polymer	---	IS 16994	R	Manufacturer shall ensure that no footwear having polymer of PVC shall be made black in colour		
9	Finish of Footwear	---	IS 16994	R	Manufacturer shall ensure that all footwear are of workmanship and packing as agreed to between the purchaser		

Note-1: 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-2: 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.