



पूरे रबड़ के गम जुते एवं ऐकल जुते भाग 1 सुरक्षा एवं संरक्षी हेतु

IS 5557 (Part -1): 2024 के अनुसार

PRODUCT MANUAL FOR
All Rubber Gum Boots and Ankle Boots Part 1 Safety and Protective
ACCORDING TO IS 5557 (Part -1): 2024

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 5557(Part 1):2024
	शीर्षक Title	:	All Rubber Gum Boots and Ankle Boots Part 1 Safety and Protective
	संशोधनों की संख्या No. of amendments	:	Nil
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	All rubber gum boots and ankle boots Part 1 safety and protective, shall comply with the requirements specified in clause 8 of IS 5557 (Part 1) 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 see Annex – A

c)	नमूने का परिमाण Sample Quantity	:	4 Pairs (one pair for chemical analysis). Components may be provided if required. 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 (in case of market surveillance, effort may be made to procure the required 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		
	1. Design 2. Sizes and Fittings 3. Construction 4. Lining Material 5. Coated Binding Material 6. Thread For Upper Closing 7. Rubber Components, Hardness (IRHD) 8. Upper a. Tensile strength b. Thickness 9. Outsole/Heel a. Thickness b. Tear Strength c. Abrasion Resistance d. Interlayer Bond strength 10. Insoles a. Thickness b. Abrasion Resistance 11. Resistance to Hot Contact- Outsole/Heel and upper 12. Leak Proof Test 13. Height of Upper 14. Adhesion Test for Rubberized textile upper 15. Upper Outsole Bond Strength 16. Internal Length of Toe Cap 17. Impact Resistance of Safety Footwear		

	18. Compression Resistance of Safety Footwear 19. Banned Chemicals 20. Finish of Boots OPTIONAL REQUIREMENTS 1. Penetration Resistance 2. Electrical Resistance 3. Resistance to Fuel oil 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 ready reference 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 5557 (Part -1) :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 5557 (Part -1) :2024 with the following scope:	
	उत्पाद का नाम Name of the product	ALL RUBBER GUM BOOTS AND ANKLE BOOTS PART 1 SAFETY AND PROTECTIVE
	Type	Type-1 and/or Type-2
	Variety	Variety 1 and/or Variety 2 and/or Variety 3
	Sizes (to be declared)	From ____ to ____
	Optional requirements	Without or with (requirements from the list given below as applicable) 1. Penetration Resistance 2. Antistatic Footwear 3. Flame Resistance Property 4. Electrical Resistance 5. Resistance to acid and alkali 6. Resistance to Fuel oil

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ANNEX A
All Rubber Gum Boots and Ankle Boots Part 1 Safety and Protective
GROUPING GUIDELINES

1. IS 5557(Part 1):2024, All Rubber Gum Boots and Ankle Boots Part 1 Safety and Protective, classifies boots on the basis of design as
 - a Type 1 — Ankle boots; and
 - b Type 2 — Wellington/Gum boots
2. IS also classifies boots based on purpose as
 - a. Variety 1 — Oil and grease resistance;
 - b. Variety 2 — For use in fire and explosive prone areas including mining operations; and
 - c. Variety 3 — For general use (non-oil resistance).
3. IS recommends typical design of boots of Type 1 and Type 2 as per Fig. 1 and Fig. 2 of IS 5557 (Part 2)
4. Fittings of footwear has been given to be as per Table 8 and Table 9 of IS 1638 for women's and men's lasts, respectively
5. Further, IS provides for optional Requirements for
 - a. Penetration Resistance
 - b. Antistatic Footwear
 - c. Flame Resistance Property
 - d. Electrical Resistance
 - e. Resistance to Acid and Alkali
 - f. Resistance to Fuel Oil
6. Considering the above, following grouping guideline is proposed, for GOL or CSOL:
 - i) Boot of each **TYPE** of any size shall be tested to cover the **TYPE** for all sizes in the scope of licence
 - ii) Boot of each **VARIETY** from any **TYPE** of any size shall be tested to cover the **VARIETY** for all **TYPES** and sizes in the scope of Licence.
 - iii) Boot from any **TYPE** and **VARIETY** of any size shall be tested for each of the optional requirements to cover the optional requirement for all the applicable **TYPE**, **VARIETY** and sizes in the scope of Licence.
7. 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
8. 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.

9. 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 – A
LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

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

Sl. No.	Tests used in with Clause Reference	Test Equipment/Chemicals
1	Coated Binding Material , Cl 8.2 (IS 5557 -Part 2 (Annex B))	Tensile Machine as per B-1 of Annex B of IS 5557 (Part 2), conditioning Chamber
2	Thread For Upper Closing , Cl 8.3 (IS 9543)	Testing machine as per Cl 6 of IS 4910 (Part 2), oven
3	Hardness (IRHD) , Cl 8.4.1Table 3 i) (IS 3400 (Part 2))	Air oven as per Cl 4 of IS 3400 (Part 4) : 2012, apparatus as per Cl 5 of IS 3400 (Part 2/Sec 2), thickness gauge, arrangement for standard atmospheric condition
4	Change in hardness after accelerated ageing at 100±20C , Cl 8.4.1Table 3 ii) , IS 3400 (Part 4)	Air oven as per Cl 4 of IS 3400 (Part 4) : 2012, apparatus as per Cl 5 of IS 3400 (Part 2/Sec 2), thickness gauge, arrangement for standard atmospheric condition
5	Upper - Tensile strength , Cl 8.5.1 (IS 15298 (Part 1))	conditioning chamber, arrangement to maintain standard temperature, tensile testing machine,
6	Upper - Thickness , Cl 8.5.2 (IS 15298 (Part 1))	conditioning chamber, thickness gauge
7	Upper - Flexing Resistance , Cl 8.5.3 (IS 15298 (Part 1))	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
8	Upper - Abrasion Resistance, Cl 8.5.4 (IS 15298 (Part 1))	test apparatus defined in the ISO 12947-1:1998 (Martindale Method), Reference abrasant, Fabric punch or press cutter,Weight, thickness gauge, conditioning chamber
9	Outsole/Heel - Thickness , Cl 8.6.1 (IS 15298 P-1)	thickness and angle measuring apparatus,
10	Outsole/Heel - Tear Strength , Cl 8.6.2 (IS 15298 P-1)	apparatus as per ISO 34-1:2015, Method A, Dies, Nick cutter, Testing machine
11	Outsole/Heel - Abrasion Resistance , Cl 8.6.3 (IS 15298 (Part 1))	Abrasion machine as per 5.1 of IS 3400 (Part 3)/ ISO4649, abrasive sheet, Hollow drill, balance, standard reference compounds. Conditioning chamber, arrangement for keeping ambient temperature, standard reference compounds
12	Outsole/Heel - Flexing Resistance , Cl 8.6.4 (IS 15298 (Part 1))	The apparatus described in ISO 17707:2005, Cutting tool, Measuring magnifier,conditioning chamber
13	Outsole/Heel - Interlayer Bond strength , Cl 8.6.5 (IS 15298 (Part 1))	Tensile testing machine with a chart recorder, clamping jaws for tensile tester, razor or sharp knife, steel scale, sample press, humidity chamber,
14	Insocks - Thickness , Cl 8.7.1 (IS 5557 (Part 1))	conditioning chamber, thicknessmeasuring apparatus with graduated eyepiece
15	Insocks - Abrasion Resistance , Cl 8.7.2 (IS 15298 (Part 1))	Finger Abrasion Tester as per cl. 7.3.2.1 IS 15298 part 1, Wool pads, Abradant fabric, Conditioning Chamber, Distilled Water, thickness gauge

16	Resistance to Hot Contact-- Outsole/Heel and upper , Cl 8.8.1 (IS 15298 (Part 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
17	Leak Proof Test , Cl 8.9 (IS 15298 (Part 1))	Water bath, supply of compressed air Pressure sensor, Stopwatch
18	Height of Upper , Cl 8.10, (IS 15298 (Part 1))	vernier calliper, Scale
19	Adhesion Test for Rubberized textile upper , Cl 8.11 (IS 3400 (Part 5))	Vernier calliper, arrangement for standard atmospheric condition
20	Upper Outsole Bond Strength, Cl 8.12 (IS 15298 (Part 1))	Tensile testing machine with a chart recorder, clamping jaws for tensile tester, razor or sharp knife, steel scale, sample press, humidity chamber,
21	Internal Length of Toe Cap, Cl 8.13 (IS 15298 (Part 1))	Steel scale,Dial gauge,
22	Impact Resistance of Safety Footwear, Cl 8.14 (IS 15298 (Part 1))	Impact apparatus, as per ISO 22568-1:2019, Clamping device, Dial gauge, Wax test form
23	Compression Resistance of Safety Footwear, Cl 8.15 (IS 15298 (Part 1))	compression test apparatus as per ISO 22568-1:2019, Modelling Clay Cylinders, Dial Gauge
24	Banned Chemicals, Cl 8.16 (IS 17011)	As per IS 17011
25	Slip Resistance, Cl 8.17 (IS 15298 (Part 1))	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
26	Corrosion Resistant Test for Toe Caps, Cl 8.18 (IS 15298 (Part 1))	Test arrangement as per ISO 22568-1:2019, sodium chloride
27	Penetration Resistance, Cl 9.1 (IS 15298 (Part 1))	apparatus as per ISO 7500-1:2018, class 2, test nail, scale, vernier calliper
28	Antistatic Footwear, Cl 9.2 (IS 15298 (Part 1))	Testing instrument, capable of measuring electrical resistance with SS balls internal electrode and copper external electrode, conductive lacquer, Device for measuring the conductive resistance of the lacquer, distilled water, conditioning chamber for dry and wet conditions, arrangement to maintain standard temperature
29	Flame Resistance Property, Cl 9.3 (IS 15758 (Part 4))	Apparatus as per IS 15758, Timing devices, Filter paper, arrangement to carry out test at standard condition
30	Electrical Resistance, Cl 9.4 (IS 5557 (Part 2))	Arrangement for standard room temperature, conditioning chamber, Test arrangement as per H-2 of IS 5557 (Part 2), water, stainless steel balls, high voltage tester
31	Resistance to acid and alkali , Cl 9.5 (IS 5557 (Part 2))	Test apparatus as per Annex D of IS 557 (Part 2)
32	Resistance to Fuel oil , Cl 9.6 (IS 15298 (Part 1))	2,2,4-trimethylpentane, general purpose reagent, Shore A hardness tester, conditioning chamber, arrangement to maintain standard temperature, vernier calliper scale, balance, distilled water, sinker

ANNEX C

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:
50,000 pairs or Fortnight production (whichever is earlier), of the same classification (Type, variety and with optional requirements), manufactured from the same 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 Schedule of the license shall be incorporated, legibly and indelibly on each boot for each pair of boot provided always that the material so marked conforms to each requirement of the specification.

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

3.2 **Additional Marking requirements:** The following additional information may also be marked on the boot or on its packaging

a) "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.

5 Applicability of SIT for Small and Micro Enterprises (SMEs):

5.2 Compliance to the Scheme of Inspection and Testing is OPTIONAL for Micro, and Small Scale Units with respect to the requirements for Clause 1(Quality Assurance Plan), Clause 2 (Ensuring Compliance through Testing). However, ALL units shall ensure compliance of their products to the requirements of the Indian Standard.

5.3 The requirements of SIT with respect to Clause 3 (Packing and Marking) and Clause 4 (Rejection) shall be followed by all.

TABLE 1
(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		
TEST DETAILS					LEVELS OF CONTROL		
Cl.	Requirement	Test Methods		Test Equipment requirement. R:required (or) S: Sub-Contracting Permitted	No of Samples	Frequency	Remarks
		Clause	Reference standard				
5.0	Design	5.0 & Fig-1&2	IS 5557(Part2)	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		
6.0	Sizes and Fittings	Table 8 & 9	IS 1638	R			
7.0	Construction	-	IS 5557 (Part 1)	R			
8	Materials and properties						
8.1	Lining Material	-	IS 5557 (Part 1)	R	-do-		
8.2	Coated Binding Material						
i)	width	-	IS 1954	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
ii)	Breaking load	-	IS 5557 (Part 2) (Annex B)	R	one	Each consignment	No testing required if consignment of material is received with supplier's/Manufacturer's Test certificate
8.3	Thread For Upper Closing	-	IS 9543	R	one	Each consignment	No testing required if consignment of material is received with supplier's/Manufacturer's Test certificate

8.4	Rubber Components						
8.4.1 Table 3	Physical Requirements of Rubber Components						
i)	Hardness (IRHD)	-	3400 (Part 2)	R	one	Each consignment	No testing required if consignment of material is received with supplier's/Manufacturer's Test certificate
ii)	Change in hardness after accelerated ageing at 100±2°C	-	IS 3400 (Part 4)	R	one	Each consignment	
8.5.2	Upper						
8.5.1	Tensile strength	-	IS 15298 (Part 1)	S	one	Once in a month	No testing required if consignment of material is received with supplier's/Manufacturer's Test certificate
8.5.2	Thickness	-	IS 15298 (Part 1)	R	one	Each consignment	
8.5.3	Flexing Resistance	-	IS 15298 (Part 1)	S	one	Once in a month	
8.5.4	Abrasion Resistance	-	IS 15298 (Part 1)	S	one	Once in a month	
8.6	Outsole/Heel						
8.6.1	Thickness	-	IS 15298 P-1	R	one	Each consignment	No testing required if consignment of material is received with supplier's/Manufacturer's Test certificate
8.6.2	Tear Strength	-	IS 15298 P-1	S	one	Once in a month	
8.6.3	Abrasion Resistance	-	IS 15298 (Part 1)	S	one	Once in a month	
8.6.4	Flexing Resistance	-	IS 15298 (Part 1)	S	one	Once in a month	
8.6.5	Interlayer Bond strength	-	IS 15298 (Part 1)	R	one	Each Control Unit	
8.7	Insocks						
8.7.1	Thickness	-	IS 5557 (Part 1)	R	one	Each Control Unit	

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8.7.2	Abrasion Resistance	-	IS 15298 (Part 1)	S	one	Once in a month	
8.8	Resistance to Hot Contact-						
8.8.1	Outsole/Heel and upper	-	IS 15298 (Part 1)	R	One	Alternate control unit	
8.9	Leak Proof Test	-	IS 15298 (Part 1)	R	One	each control unit	
8.10	Height of Upper	-	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		
8.11	Adhesion Test for Rubberized textile upper	-	IS 3400 (Part 5)	R	One	each control unit	
8.12	Upper Outsole Bond Strength	-	IS 15298 (Part 1)	R	One	each control unit	
8.13	Internal Length of Toe Cap	-	IS 15298 (Part 1)	R	one	Each consignment	No testing required if consignment of material is received with supplier's/Manufacturer's Test certificate and/or is ISI marked
8.14	Impact Resistance of Safety Footwear	-	IS 15298 (Part 1)	R	one	Each Control Unit	
8.15	Compression Resistance of Safety Footwear	-	IS 15298 (Part 1)	R	one	Each Control Unit	
8.16	Banned Chemicals	-	IS 17011	S	one	Once in three months	
8.17	Slip Resistance	-	IS 15298 (Part 1)	S	one	Once in a month	
8.18	Corrosion Resistant Test for Toe Caps	-	IS 15298 (Part 1)	S	one	Once in a month	

9	OPTIONAL REQUIREMENTS						
9.1	Penetration Resistance	-	IS 15298 (Part 1)	R	One	Alternate control unit	
9.2	Antistatic Footwear	-	IS 15298 (Part 1)	R	One	Once in a month	
9.3	Flame Resistance Property	-	IS 15758 (Part 4)	R	One	Once in a month	
9.4	Electrical Resistance	Annex H	IS 5557 (Part 2)	R	One	Once in a month	
9.5	Resistance to acid and alkali	Annex D Annex E Annex F	IS 5557 (Part 2)	R	One	Once in a month	
9.6	Resistance to Fuel oil	-	IS 15298 (Part 1)	R	One	Once in a month	
10.	Finish of Boots	-	IS 5557(Part 2)	R	one	Each Control Unit	