



उत्पाद मैनुअल
ढले हुए प्लास्टिक जूते -सामान्य औद्योगिक उपयोग के
लिए लाइन या बिना लाइन अस्तर पॉल्युरीथेन जूते-विशिष्ट
IS 16645:2018 के अनुसार

PRODUCT MANUAL FOR
Moulded Plastics Footwear -Lined or Unlined Polyurethane
Boots for General Industrial Use-Specification as per IS
16645:2018

भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम 2018 की स्कीम-I के तहत यह उत्पाद मैनुअल प्रमाणीकरण की संचालन रीति में सुसंगतता और पारदर्शिता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेंसधारियों 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 16645:2018
	शीर्षक Title	:	Moulded Plastics Footwear -Lined or Unlined Polyurethane Boots for General Industrial Use-Specification
	संशोधन संख्या No. of amendments	:	0
2.	नमूनाकरण दिशानिर्देश Sampling Guidelines	:	
a)	कच्चा माल	:	No specific raw material requirement

	Raw material		
b)	समूहिकरणदिशानिर्देश Grouping Guidelines	:	Sample of each type (fabric lined or unlined) and each style (ankle boot to full thigh height) of boot of any size shall be drawn to cover all types ,styles and sizes of boots in the licence.
c)	नमूनेकापरिमाण Sample Size	:	2 Boots
3.	परीक्षणउपकरणोकीसूची List of Test Equipment	:	Please refer Annex – A
4.	निरीक्षणवपरीक्षणस्कीम Scheme of Inspection and Testing	:	Please refer Annex – B
5.	एक दिन में संभावित परीक्षण Possible tests in a day	:	<u>On pre-conditioned samples</u> Design Requirements, cl.4 Tensile Properties, cl.5.3 Hardness, cl.5.4 Cold flex temperature of the upper, cl.5.5 Split Tear Strength, cl.5.7
6.	लाइसेन्स का कार्यक्षेत्र /Scope of the Licence:		
	IS 16645:2018 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेन्स निम्नलिखित कार्य क्षेत्र के लिए प्रदान किया जाता है Licence is granted to use Standard Mark as per IS 16654:2018 with the following scope:		
	Name of the product	Moulded Plastics Footwear -Lined or Unlined Polyurethane Boots for General Industrial Use-Specification	
	Type	Fabric Lined, Unlined	
	Style	Ankle, Half Knee, Short Knee.....	
	Size		

BUREAU OF INDIAN STANDARDS

Manak Bhawan, 9, Bahadur Shah Zafar Marg, New Delhi – 110002

ANNEX A
TO PRODUCT MANUAL FOR
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LIST OF TESTS EQUIPMENT

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

Sr.No.	Test Used in With Clause Reference	Test Equipment
1	Design Requirements, cl.4.	Thickness dial guage, Thickness dial gauge using pressure of 2kPa, Graduated eyepiece, Graduated rule with scale marks, Travelling Microscope, Sample Preparation/Cutting Equipment
2	Resistance to flexing of boot upper, cl.5.2	Flexing Apparatus, V-shaped clamps, Sample Preparation/Cutting Equipment, Conditioning Chamber, Refrigerator
3	Tensile Properties, cl.5.3	Dies and cutters, Thickness gauge, Cone gauge, Tensile-testing machine, Conditioning Chamber
4	Hardness, cl.5.4	Profile Projector, Measuring Microscope, Durometer, Vertical Plunger, Means for applying a contact force and an additional indenting force to the plunger, Means for measuring the increase in depth of indentation of the plunger caused by the indenting force, Flat Annular Foot, Chamber for the test piece, Conditioning Chamber
5	Cold Flex Temperature of the Upper, cl.5.5	Torsion Testing Machine, Different Weights, Dewar flask or thermal chamber, Thermometer, Timer, Heat-transfer medium, Micrometer, Conditioning Chamber
6	Resistance of soiling to cut growth(flexing test), cl.5.6	Flexing Machine (Satra Ross Type), Refrigerated Cabinet, Piercing Chisel, Sample Preparation/Cutting Equipment, Conditioning Chamber, Magnifying Eyepiece, Scale, Mandrels
7	Split Tear Strength, cl.5.7	Tensile Testing Machine, Conditioning Chamber, Sample Preparation/Cutting Equipment, Knife
8	Resistance to Hydrolysis, cl.5.8	Methyl Ethyle Ketone or Leather Splitting Machine, Buffing Machine, Sample Preparation/Cutting Equipment,

Note: The above is an indicative list for the purpose of guidance only.

ANNEX B
TO PRODUCT MANUAL FOR
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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 and implement 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 & MARKING** – The Standard Mark as given in the Schedule of the license and Licence Number (i.e., CM/L.....) shall be incorporated on the product , and the marking shall be done as per the provisions of the Indian Standard, provided always that the product thus marked conforms to all the requirement of the specification.
4. **CONTROL UNIT** – All finished boots of the same type and style produced within 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.
 - 5.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.
6. **REJECTIONS** – Disposal of non-conforming product shall be done in such a way to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1: LEVELS OF CONTROL
(para 5 of Scheme of Inspection and Testing)

(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				
4	Design Requirements	4.1, 4.2, 4.3 Annex F	IS 16645	R	One	Each Control Unit	----
5	Physical Properties						
5.2	Resistance to flexing of boot upper	Annex B	IS 16645	R	One	Once in a week	----
5.3	Tensile Properties	---	IS 3400 (Part 1)	R	One	Once in a week	-----
5.4	Hardness	----	IS 3400 (Part 2/Sec 3)	R	One	Once in a week	-----
5.5.	Cold Flex temperature of the Upper	----	ISO 458 (Part 1)	R	One	Once in a week	-----

5.6	Resistance of soiling to cut growth	Annex C	IS 16645	R	One	Once in a week	----
5.7	Split tear strength	Annex D	IS 16645	R	One	Once in a week	---
5.8	Resistance to hydrolysis	Annex E	IS 16645	R	One	Once in a week	----

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: The control unit and levels of control as decided by the Bureau are recommendatory and the licensee can submit his own levels of control which can be followed consequent to approval of Head BO.