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उत्पाद मानुयल

LEATHER SAFETY BOOTS AND SHOES FOR HEAVY METAL INDUSTRIES

IS 1989 (Part 2):1986 के अनुसार

PRODUCT MANUAL

FOR LEATHER SAFETY BOOTS AND SHOES FOR HEAVY METAL INDUSTRIES

ACCORDING TO IS 1989 (Part 2):1986

भारतीय मानक ब्यूरो - विनियम की स्कीम (अनुरूपता मूल्यांकन) के तहत यह उत्पाद मानुयल प्रमाणीकरण के प्रचलन में रीति और पारदर्शिता के सुसंगत सुनिश्चित करने के लिए सभी क्षेत्रीय शाखा कार्यालयों एवं लाइसेंस/प्रमाण पत्र प्राप्त करने के इच्छुक/धारियों द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेंस 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 1989 (Part 2):1986
	शीर्षक Title	:	SPECIFICATION FOR LEATHER SAFETY BOOTS AND SHOES PART 2 FOR HEAVY METAL INDUSTRIES
	संशोधन संख्या No. of Amendments	:	2
2.	नमूनाकरण दिशा निर्देश Sampling Guidelines:		
a)	कच्चा माल Raw material	:	Please refer Annex A
b)	समूहिकरण दिशा निर्देश Grouping guidelines	:	Separate samples shall be drawn for Safety Boots and Safety Shoes. However, boots/shoes of any size may be

			tested to cover entire range of sizes being manufactured, subject to availability of manufacturing and testing facilities. During surveillance, samples of all varieties covered in scope of licence, shall be drawn and tested in rotation.
c)	नमूनेका परिमाण Sample Size	:	Quantity: 2 Pairs of Safety Boots or/and Safety Shoes.
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 :		
	Please refer ANNEX – D		
6.	लाइसेन्स का कार्यक्षेत्र/Scope of the Licence :		
	IS 1989 (Part 2):1986 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 1989 (Part 2):1986with the following scope:		
	Name of the product	Leather Safety Boots and Shoes for Heavy Metal Industries	
	Types	Leather Safety Boots for Heavy Metal Industries Or Leather Safety Shoes for Heavy Metal Industries	
	Sizes	Size designations e.g. Size 8 (UK)	

ANNEX A

RAW MATERIALS

A) Safety Boots:

1. **Upper Leather** - Printed grain leather of any colour conforming to the requirements of IS : 578-1985 as per Cl. 8.1 of IS 1989 (Part 2).
2. **Lining Leather** — Vegetable tanned or combination tanned leather conforming to the following requirements of IS : 3840-1979 as per Cl. 8.2 of IS 1989 (Part 2).
3. **Bottom Material** — Either vegetable tanned sole leather conforming to IS : 579 (Part 1)-1973 or moulded solid rubber soles conforming to Type 1 of IS : 5676-1970 as per Cl. 8.3 of IS 1989 (Part 2).
4. **Steel Toe Cap** — Conforming to Type 1 of IS : 5852-1977 as per Cl. 8.4 of IS 1989 (Part 2).
5. **For Upper Closing Thread**— Cotton thread, matching the colour of the upper leather and conforming to Variety No. 34 of IS : 1720-1978 as per Cl. 8.9.1 of IS 1989 (Part 2).
6. Other materials as per Cl. 8.5, 8.6, 8.7, 8.8, 8.9.2, 8.10, 8.11, 8.12, 8.13, 8.14, 8.15, 8.16, 8.17 and 8.18 of IS 1989 (Part 2).

B) Safety Shoes:

1. **Upper Leather** — Printed grain leather of any colour conforming to the requirements of IS : 578-1985 as per Cl. 14.1 of IS 1989 (Part 2).
2. **Lining Leather** — Vegetable tanned or combination tanned leather conforming to the requirements of IS : 3840-1979 as per Cl. 14.2 of IS 1989 (Part 2).
3. **Bottom Material** — Either vegetable tanned sole leather conforming to IS : 579 (Part 1)-1973 and heels or moulded soled rubber soles and heels conforming to Type 1 of IS : 5676-1970 as per Cl. 14.3 of IS 1989 (Part 2).
4. **Steel Toe Cap** — Conforming Type 1 of IS : 5852-1977 as per Cl. 14.4 of IS 1989 (Part 2).
5. **For Upper Closing Thread**— Cotton thread, matching the colour of the upper leather and conforming to the Variety No, 34 and 30 of IS : 1720- 1978 as per Cl. 14.9.1 of IS 1989 (Part 2).
6. **Laces** — Cotton laces shall conform to the length and breaking load of Variety No. L/60/36 of IS : 4778-1968 as per Cl. 14.14 of IS 1989 (Part 2).

Other materials as per Cl. 14.5, 14.6, 14.7, 14.8, 14.9.2, 14.10, 14.11, 14.12, 14.13, 14.15, 14.16 and 14.17 of IS 1989 (Part 2)

ANNEX B

List of Test Equipment

Major test equipment required to test as per the Indian Standard

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Thickness of various components as per Table 1 of IS 1989 Part 2	Dial Thickness gauge Vernier Caliper
2	Manufacture as per clause 9 and Finish as per clause 10 of IS 1989 Part 2	Scale Stitch counting device Vernier Caliper
3	Mass as per Clause 11 and 17.1 of IS 1989 Part 2	Weighing Balance
4	Performance Test as per Clause 12 of IS 1989 Part 2	Impact Testing Apparatus Vernier Caliper Scale Capsule Jig
5	Steel toe cap as per Clause 8.4, 14.4 of IS 1989 Part 2 read with IS 5852	Impact Testing Apparatus Vernier Caliper Scale Plasticine cylinder
6	Tensile strength of Upper leather as per Clause 8.1, 14.1 of IS 1989 Part 2 read with IS 5914	Conditioning arrangement to maintain $27 \pm 2^{\circ}\text{C}$ and relative humidity 65 ± 2 percent Tensile testing machine Press knives
7	Colour fastness test to dry rubbing Upper leather as per Clause 8.1, 14.1 of IS 1989 Part	Fastness Testing Machine alongwith accessories Felt Pads

	2read with IS 6191	Geometric Grey Scale Geometric Staining Scale
8	Solvent extractable substances of Upper leather Clause 8.1, 14.1 of IS 1989 Part 2 read with IS 582	Desiccator Filter Paper Thimbles or Glass Filter Bells Oven Soxhlet Extraction Apparatus Dichloromethane calcium oxide Petroleum Hydrocarbon Solvent
9	Chromium of Upper leather Clause 8.1, 14.1 of IS 1989 Part 2 read with IS 582	Kjeldahl or Erlenmeyer Flask Conical Flask Iron or nickel crucible Concentrated Sulphuric Acid Perchloric Acid Phosphoric Acid Starch Solution Standard Sodium Thiosulphate Solution Potassium Iodide Solution
10	Tensile strength of Lining Leather as per Clause 8.2, 14.2 of IS 1989 Part 2 read with IS 3840	Conditioning arrangement to maintain $27 \pm 2^{\circ}\text{C}$ and relative humidity 65 ± 2 percent Tensile testing machine Press knives
11	Stitch tear strength of Lining Leather as per Clause 8.2, 14.2 of IS 1989 Part 2 read with IS 3840	Metal Wire Means to Make Holes Testing Machine for measurement of Stitch tear strength
12	Colour fastness test for finished leather (applicable in case of combination tanned leather) of Lining Leather as per Clause	Fastness Testing Machine alongwith accessories Felt Pads

	8.2, 14.2 of IS 1989 Part 2 read with IS 3840	Geometric Grey Scale Geometric Staining Scale
13	Solvent extractable substances of Lining Leather as per Clause 8.2, 14.2 of IS 1989 Part 2 read with IS 3840	Desiccator Filter Paper Thimbles or Glass Filter Bells Oven Soxhlet Extraction Apparatus Dichloromethane Calcium Oxide Petroleum Hydrocarbon Solvent
14	Chromium (as Cr_2O_3) content (applicable in case of combination of tanned leather only) of Lining Leather as per Clause 8.2, 14.2 of IS 1989 Part 2 read with IS 3840	Kjeldahl or Erlenmeyer Flask Conical Flask Iron or nickel crucible Concentrated Sulphuric Acid Perchloric Acid Phosphoric Acid Starch Solution Standard Sodium Thiosulphate Solution Potassium Iodide Solution
15	Hide substance of Lining Leather as per Clause 8.2, 14.2 of IS 1989 Part 2 read with IS 3840	Kjeldahl Flask – Receiver Fuming or Concentrated Sulphuric Acid Catalyst Mixture Phenolphthalein Indicator – Sodium Hydroxide Solution Saturated Solution of Borate-Free Boric Acid Indicator Solution Standard Sulphuric or Hydrochloric Acid

16	Water absorption of Bottom material as per Clause 8.3, 14.3 of IS 1989 Part 2 read with IS 579	Kubelka Apparatus Room at a controlled temperature of $27 \pm 2^{\circ}\text{C}$.
17	Resistance to cracking of Bottom material as per Clause 8.3, 14.3 of IS 1989 Part 2 read with IS 579	Apparatus for measurement of Resistance to cracking Mandrels
18	Total ash of Bottom material as per Clause 8.3, 14.3 of IS 1989 Part 2 read with IS 579	platinum or silica crucible. Desiccator Muffle Furnace Sulphuric Acid Ammonium Nitrate Solution
19	Degree of tannage of Bottom material as per Clause 8.3, 14.3 of IS 1989 Part 2 read with IS 579	Desiccator Oven Weighing Bottles and Dishes Sulphuric Acid Ammonium Nitrate Solution Crucible - platinum or silica crucible. Muffle Furnace Filter Paper Thimbles or Glass Filter Bells Soxhlet Extraction Apparatus Distillation Apparatus Kjeldahl Flask Receiver Dichloromethane Calcium oxide Petroleum Hydrocarbon Solvent

		Fuming or Concentrated Sulphuric Acid Catalyst Mixture – Phenolphthalein Indicator Sodium Hydroxide Solution Saturated Solution of Borate-Free Boric Acid Indicator Solution Standard Sulphuric or Hydrochloric Acid – Evaporating Basin Flask Shaker
20	Tape as per Clause 8.5 of IS 1989 Part 2 read with IS 1895	Scale Tape
21	Eyelets as per Clause 8.7 of IS 1989 Part 2 read with IS 5041	Scale Vernier
22	Rivets as per Clause 8.10 of IS 1989 Part 2	Scale Vernier
23	Heel pin as per Clause 8.12 of IS 1989 Part 2	Scale Vernier
24	Shank as per Clause 8.13 of IS 1989 Part 2 read with IS 10945	Scale Vernier
25	Laces as per Clause 8.14 of IS 1989 Part 2	Scale Tape Tensile testing machine Alkaline hydrosulphite solution Stop Watch Stannous chloride solution Test tube Filter paper

26	Tongue lining as per Clause 8.15 of IS 1989 Part 2	Weighing balance Scale Tape
27	Strengthening piece Clause 8.17 of IS 1989 Part 2	Scale

The above list is indicative only and may not be treated as exhaustive.

ANNEX C

Scheme of Inspection And Testing

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 the Schedule of the Licence, shall be stamped on the underside of each leather boot/shoe provided always that the boot/shoe to which the mark is thus applied, conforms to the requirements of the specification.

3.1 Packing and Marking shall be done as per provisions of the Indian Standard. In addition, BIS licence number and BIS website details (for BIS certification details please visit www.bis.gov.in)

4. CONTROL UNIT –For the purpose of this scheme the control units shall be as follows

4.1. Raw materials – Each consignment of one type /size. In case the materials bear the ISI certificate Mark, further testing will not be necessary

4.2. Leather components – The components of leather for boots/shoes produced in one week.

4.3. Finished leather Boots & shoes – leather boots/ shoes of one type produced in one week.

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 On the basis of test results, design shall be taken regarding conformity of the control unit as a whole to the requirements of the specification.

5.2 Leather boots/shoes shall be manufactured strictly as per Cl. 15 of IS : 1989 (Part 2)-1986 after every operation , each pair shall be inspected and only if found satisfactory shall be taken for further processing.

6. 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.

TABLE 1

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
7, 13	Design	7.1 & 13.1	IS 1989 (Part 2)-1986	S	Five	Each consignment of one type	Samples may be tested at an independent laboratory and test certificates obtained. , only material which show conformity to the relevant Indian Standards shall be utilized in the manufacture of boots /shoes. Each component shall also be visually examined and shall be rejected if defective.
8	Materials	8 & 14	-do-	S		-do-	
8.1 & 14.1	Upper leather	8.1 & 14.1	-do-	S	One	-do-	
8.2, 8.2.1, 14.1 & 14.2.1	Lining leather	8.2, 8.2.1, 14.1 & 14.2.1	-do-	S	One	-do-	
8.3, 8.3.1 & 14.3, 14.3.1	Bottom material	8.3, 8.3.1 & 14.3, 14.3.1	-do-	S	One	-do-	
8.4 & 14.4	Steel Toe cap	8.4 & 14.4	-do-	R	One pair	One week’s production	
8.5 & 14.5	Tape	8.5 & 14.5	-do-	S	One	Each consignment	
8.6 & 14.6	Bottom filing	8.6 & 14.6	-do-	S	One	-do-	
8.7 &	Eyelets	8.7 & 14.7	-do-	S	One piece	-do-	

14.7							
8.8 & 14.8	Toe compound	8.8 & 14.8	-do-	S	One	-do-	
8.9.1 & 8.9.2 ; 11.9.1 & 14.9.2	Threads	8.9.1 & 8.9.2 ; 11.9.1 & 14.9.2	-do-	S	One	-do-	
8.10, 14.10	Rivet	8.10, 14.10	-do-	S	One	-do-	
8.11 & 14.11	Screw wire	8.11 & 14.11	-do-	S	One	Each Consignment	
8.12 & 14.12	Heel pin	8.12 & 14.12	-do-	S	One	-do-	
8.13 & 14.13	Shank	8.13 & 14.13	-do-	S	Five	-do-	
8.14 & 14.14	Laces	8.14 & 14.14	-do-	S	Five	-do-	
8.15 & 14.15	Tongue lining	8.15 & 14.15	-do-	S	One	-do-	
8.16 & 14.16	adhesive	8.16 & 14.16	-do-	S	One	-do-	
8.17	Strengthening piece	8.17	-do-	S	Five	-do-	
8.17 & 14.17	Leather components:	Table 1	IS 1989 (Part 2)-1986				
	i) Vamp			R	Ten	Control unit	In case of failure the individual components comprising the control unit shall be checked
	ii) Quarters			R	Ten	-do-	

	a) unlined b) lined						and only those passing shall be taken for further processing
	iii) Toe cap, outside counter with jug loop and strengthening piece			R	Ten	-do-	
	iv) Loose / half tongue			R	Ten	-do-	
	v) Full sock			R	Ten	-do-	
	vi) Vamp and quarter lining			R	Ten	-do-	
	vii) Insole			R	Ten	-do-	
	viii) Through middle sole a) For boots with leather sole b) for boots and shoes with rubber sole c) for shoes with leather sole			R	Ten	-do-	
	ix) Outer sole			R	Ten	-do-	
	x) Lifts & split lifts			R	Ten	-do-	
	xi) Stiffeners			R	Ten	-do-	
	xii) Top piece			R	Ten	-do-	
9.1 to 9.12 & 15.1 to 15.11	Manufacture	9.1 to 9.12 & 15.1 to 15.11	-do-	R	Every pair		

10.1 to 16.4 & 16.1 to 16.4	Finish	10.1 to 16.4 & 16.1 to 16.4	-do-	R	Every pair		
11.1 to 11.2 & 17.1 to 17.2	Mass	11.1 to 11.2 & 17.1 to 17.2	IS 1989 (Part -2)- 1986	R	Ten	One week's production of one size	
12.1 or 18.14	Performance test	12.1 or 18.14	App. B	R	One pair	Control unit	The boots/ shoes shall be subjected to the impact test and then cut open and examined whenever the component comply with the requirement of IS 1989 (Part 2) -1986

Note-1: Whether test equipment is required or subcontracting 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 obligatory, to which the licensee shall comply with.

ANNEX -D

- **Possible tests in a day –**

The possible tests that can be carried out in a single day during the inspection:

Sl no	Tests	Cl. No.
1	Manufacture	Clause 9, 15
2	Design	Clause 7, 13
3	Dimensional requirements	Table 1
4	Mass	Clause 11, 17
5	Finish	Clause 10, 16
6	Performance test	Clause 12, 18