भारतीय मानक

Indian Standard

IS 5557 (Part 1) : 2024

पूरे रबड़ के गम जूते एवं ऐंकल जूते

भाग 1 सुरक्षा एवं संरक्षी हेतु

(पाँचवा पुनरीक्षण)

All Rubber Gum Boots and Ankle Boots

Part 1 Safety and Protective

(Fifth Revision)

ICS 61.060

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
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July 2024 **Price Group 8**

Footwear Sectional Committee, CHD 19

FOREWORD

This Indian Standard (Part 1) (Fifth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Footwear Sectional Committee had been approved by the Chemical Division Council.

All rubber boots with lining or without lining when produced in conventional assembly and vulcanized, are used to protect feet, ankle and knee against rain/wet conditions and also when used in slurry areas. Rubber knee boots are also known popularly as gum boots. The upper portion of gum boots extends almost to knee height and its sole is designed to prevent slipping.

Such boots are recommended for use in tanneries, food and beverage industries, sewage treatment plant, petrochemical industries, pharmaceutical industries, garbage disposal and related municipal operations, cement and construction work, road building, etc. Such boots are having wide ranging operation including horticulture and agriculture in cold bound areas also. There are even special uses of these boots in petrol pumps and other uses in oily areas where the boots are needed to be oil-resistant.

This standard was first published in 1969. In the original standard following three types of knee boots were specified:

a) *Type* 1 — Non-oil resistant;
b) *Type* 2 — Oil resistant; and
c) *Type* 3 — Fitted with protective steel toe caps.

Type 1 boots were intended for heavy duty purpose in engineering workshop, tanneries, and in construction industries, while Type 2 boots were intended for use where the floor is covered with oil and grease, etc, such as in workshop and garages. Type 3 boots were intended for use in the mining industry where toe protection is needed. This classification remained unchanged during the first revision in 1992.

In the second revision an attempt was made to align this standard with ISO 2023 : 1973 'Rubber lined industrial boots — Specification'. However, during implementation certain difficulties were faced by the Indian industry and based on the feedback the standard was taken up for revision.

In the third revision, the requirements of IS 10665 : 1982 'Safety rubber ankle boots for miners' were incorporated and an attempt was made to sort out the problems faced by the industry in implementation of IS 5557 : 1995. IS 10665 : 1992 was withdrawn and merged with this specification. In the third revision the requirements for industrial boots (with steel toe cap) were excluded as it was felt that the so called industrial boots are often confused with the protective boots and the former cannot substitute the later. The requirement for oil resistance was also included and that of adhesion excluded.

In the fourth revision, industrial protective rubber boots were specified in three varieties, namely, industrial protective rubber boots, knee boots, half knee boots and ankle boots being variety No. 1, 2 and 3 respectively

In this fifth revision, based on the latest technological advancements in this field, the technical committee decided to split the standard into two parts. This Part 1 covers the specifications and requirements for safety and protective rubber boots, whereas Part 2 of IS 5557, covers the specification and requirements for occupational rubber boots.

The composition of the Committee, responsible for the formulation of this standard is given in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

ALL RUBBER GUM BOOTS AND ANKLE BOOTS

PART 1 SAFETY AND PROTECTIVE

(Fifth Revision)

1 SCOPE

This standard prescribes requirements, methods of sampling and tests for industrial and other professional use of rubber boots as Safety and Protective purposes including uses in wet and slurry conditions or in conditions where the wearers are exposed to chemicals, oil/grease, mining and explosion oriented conditions etc.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

3 TERMINOLOGY

For the purpose of this standard, definition given in IS 2050 and the following shall apply.

3.1 Classification — All rubber safety/protective footwear falls into the category of Class II as per IS 15298 (Part 2)/IS15298 (Part 3) respectively.

3.2 Compact Insock — Compact insocks are made of suitable textile coated/laminated with rubber and its blend, having density not less than 0.9 g/cm^3.

3.3 Compact Insole — Compact insoles are made of suitable textile coated/laminated with rubber and its blend having density not less than 0.9 g/cm^3.

3.4 Compact Outsole/Heel — For compact outsole/heel, rubber compound having density not less than 0.9 g/cm^3 shall be used.

3.5 Lining — Material covering the inner surface of the upper. Vamp lining is material covering the inner surface of the forepart of upper.

3.6 Safety Footwear — Footwear incorporating protective features to protect the wearer from injuries that could arise from occupational hazards

NOTE — Items of safety footwear are fitted with toecaps designed to give protection against impact when tested at an energy level of at least 200 J and against compression when tested at a compression load of at least 15 kN.

3.7 Protective Footwear — Footwear incorporating protective features to protect the wearer from injuries that could arise from occupational hazards.

NOTE — Items of protective footwear are fitted with toecaps designed to give protection against impact when tested at an energy level of at least 100 J and against compression when tested at a compression load of at least 10 kN.

3.8 Rubber — Vulcanized elastomers.

3.9 Safety Toe Cap — Built-in footwear component designed to protect the toes of the wearer from impacts of an energy level of at least 200 J and compression at a load of at least 15 kN.

3.9.1 *Internal Metallic Toecap* — Metallic toecap intended to be incorporated underneath the upper of the footwear, to provide protection against mechanical impact and compression.

3.9.2 *External Metallic Toecap* — Metallic toecap intended to be incorporated on top of the footwear upper forepart, to provide protection against mechanical impact and compression.

3.9.3 *Internal Non-metallic Toecap* — Toecap produced from material other than metal and intended to be incorporated underneath the upper of footwear intended to provide protection against mechanical impact and compression.

3.10 Penetration-Resistant Insert — Metallic or non-metallic footwear component placed (or intended to be placed) in the sole complex in order to provide protection against mechanical penetration.

4 TYPE AND VARIETY

4.1 This standard covers the following two types based on design:

a) *Type* 1 — Ankle boots; and
b) *Type* 2 — Wellington/Gum boots.

4.2 This standard covers the following three varieties based on purpose:

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).

5 DESIGN

The boots of Type 1 and Type 2 are recommended to have typical designs as shown in Fig. 1 and Fig. 2 of IS 5557 (Part 2).

6 SIZES AND FITTINGS

Fittings of footwear shall be in conformity to Table 8 and Table 9 of IS 1638 for women's and men's lasts, respectively.

7 CONSTRUCTION

7.1 The footwear shall be manufactured by injection/compression and in conventional assembly, as suitable through the process of vulcanization of rubber compound and can be with or without lining.

7.2 The footwear manufactured in conventional assembly from single texture rubberized fabric and vulcanized, is an unlined footwear.

7.3 The edges of the upper and tongue may be bound with coated binding material with thread meeting requirements as given in Table 2. Type 1 and Type 2 boots may be attached with additional fittings as agreed to between the manufacturer and the purchaser.

7.4 One pair of insocks shall be provided.

8 MATERIAL AND REQUIREMENTS

8.1 Lining Material

Textile lining material shall be used.

8.2 Coated Binding Material

Coated binding materials shall conform to requirements prescribed in Table 1 when tested according to methods prescribed in col (4) of Table 1.

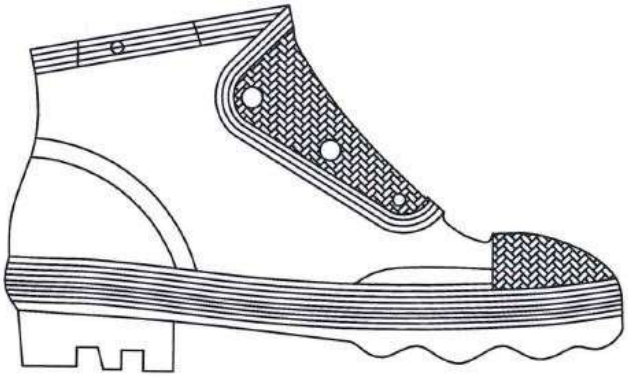

FIG.1 ANKLE BOOTS, TYPE 1

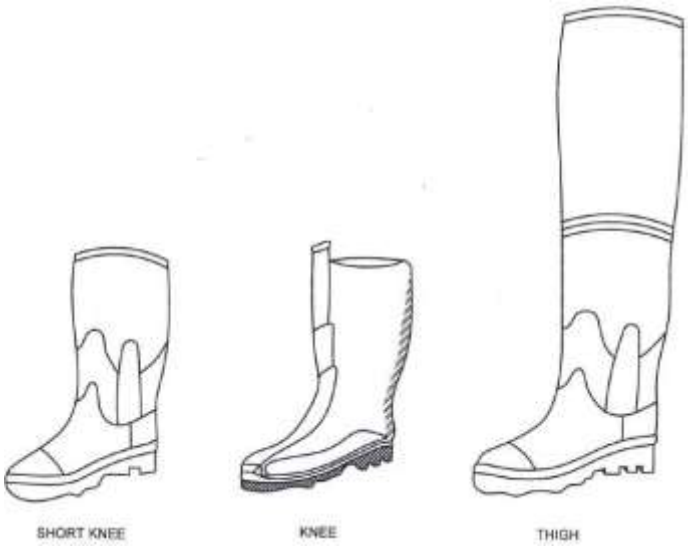

FIG. 2 GUM BOOTS, TYPE 2

Table 1 Requirements of Coated Binding Material

(*Clause* 8.2)

Sl No.	Characteristic	Requirements	Method of test, Ref to
(1)	(2)	(3)	(4)
i)	Width, mm, *Min*	13	IS 1954
ii)	Breaking load, N, *Min* (50 cm grip length test specimen)	360	Annex B of IS 5557 (Part 2)

NOTE — Sample for breaking load test may be provided separately by the manufacturer.

8.3 Thread for Upper Closing

The breaking load and construction of the sewing thread used for upper closing shall be conforming to requirements as prescribed in Table 2. Colour of thread shall be as agreed to between the manufacturer and the purchaser.

8.4 Use of Rubber

Suitable rubber compound of single density/ bi-density, and with or without inserts shall be used.

8.4.1 *Physical Requirements of Rubber Components*

All rubber components shall conform to Table 3 when tested according to prescribed test methods given in col (5) of Table 3.

8.5 Upper

Upper shall be made of rubber compound duly injected or compressed over a lining material. However, upper of conventional assembly and vulcanized footwear are to be made from single texture rubberized textile fabric, and such uppers are unlined.

In case of unlined upper the inner side of the boot having textile shall be subjected to abrasion test in accordance with **8.5.4**.

8.5.1 *Tensile Strength*

When tested in accordance with IS 15298 (Part 1), the breaking force of the rubber upper shall not be less than 180 N.

8.5.2 *Thickness*

When tested according to IS 15298 (Part 1), the rubber upper shall meet the requirement as prescribed in col (3) of Table 4.

8.5.3 *Flexing Resistance*

When tested according to IS 15298 (Part 1), the rubber upper shall meet the requirement as prescribed in col (3) of Table 5.

Table 2 Requirement of Sewing

(*Clauses* 7.3 *and* 8.3)

Sl No.	Components	Material	Method of test, Ref to
(1)	(2)	(3)	(4)
i)	Sewing thread for piping/binding	Sewing polyester thread variety No. 5 (145 dtex × 3) or Any other thread as agreed to between the purchaser and the manufacturer, but breaking strength not less than as specified in **4.1** of IS 9543.	IS 9543

Table 3 Physical Requirements of Rubber Components

(*Clause* 8.4.1)

Sl. No.	Characteristic	Body	Outer Sole Heel	Method of Test, Ref to
(1)	(2)	(3)	(4)	(5)
i)	Hardness, (IRHD)	50 ± 5	60 ± 5	IS 3400 (Part 2)
ii)	Change in hardness after accelerated ageing at 100 ºC ± 2 ºC for 24 h	+ 5 - 2	+ 5 - 2	IS 3400 (Part 4)

Table 4 Minimum Thickness of Upper

(*Clause* 8.5.2)

Sl No.	Type of Material	Minimum Thickness, *mm*
(1)	(2)	(3)
i)	Rubber	1.50
ii)	Polymeric	1.00

Table 5 Flexing Resistance

(*Clause* 8.5.3)

Sl No.	Type of Material	Flexing Resistance
(1)	(2)	(3)
i)	Rubber	No cracking before 125 000 flex cycles
ii)	Polymeric	No cracking before 150 000 flex cycles

8.5.4 *Abrasion Resistance*

When tested in accordance with IS 15298 (Part 1), the lining (only fabric) shall not develop any holes before 25 600 cycles in dry condition and 12 800 cycles in wet condition.

8.6 Outsole

Outsoles shall be made of rubber compound with or without inserts, by process of injection or compression moulding or in rolled sole (for assembled and vulcanized footwear).

8.6.1 *Thickness*

When measured in accordance with IS 15298 (Part 1), thickness of outsole (d_1) and cleat height (d_2) shall be as under:

Outsole forepart

a) d_1, *Min* = 6 mm; and

b) d_2, *Min* = 4 mm.

8.6.2 *Tear Strength*

When tested according to IS 15298 (Part 1), the tear strength of Variety 1 outsoles shall not be less than 5 kN/m, and for all other variety boots, the tear strength shall not be less than 8 kN/m.

8.6.3 *Abrasion Resistance*

When outsoles are tested according to IS 15298 (Part 1), the relative volume loss shall not be greater than 250 mm^3.

8.6.4 *Flexing Resistance*

When outsoles are tested in accordance with IS 15298 (Part 1), the cut growth shall be not greater than 4 mm before 30 000 flex cycles.

8.6.4.1 Spontaneous cracks are acceptable in the following circumstances.

a) Only the center of the tread area shall be assessed for cracking, that is, cracks under the toecap zone shall be ignored;

b) Superficial cracks up to 0.5 mm deep shall be ignored; and

c) Soles shall be deemed to be satisfactory if cracks are no deeper than 1.5 mm, no longer than 4 mm and no more than five in number.

8.6.5 *Inter layer Bond Strength*

When outsoles are tested in accordance with IS 15298 (Part 1), the bond strength between the outer or cleated layer and the adjacent layer shall not be less than 4.0 N/mm unless there is tear at any point of the outsole, in which case the bond strength shall not be less than 3.0 N/mm.

8.7 Insocks

Rubber/elastomer/polymeric material with textile lining shall be used.

8.7.1 *Thickness*

Insocks shall have minimum thickness of 2.0 mm.

8.7.2 *Abrasion Resistance*

When insocks (textile side) are tested in accordance with IS 15298 (Part 1), the wearing surface shall not develop any holes before 25 600 cycles in dry condition and 12 800 cycles in wet condition.

8.8 Resistance to Hot Contact

8.8.1 Outsole/Heel

When tested in accordance with IS 15298 (Part 1), the outsole/heel of Variety 1 and 2 shall not melt and shall not develop any cracks when bent around the mandrel.

8.9 Leak Proof Test

When the whole footwear is tested in accordance with IS 15298 (Part 1), there shall be no leakage of air.

NOTE — For all rubber boots without a closed seat region, the requirement is not applicable.

8.10 Height of Upper

The height of upper for boots of design as per Fig. 1 and Fig. 2 of IS 5557 (Part 2), when tested in accordance with IS 15298 (Part 1), shall conform to requirements as given in Table 6, for design C, D and E and design B respectively.

8.11 Adhesion Test for Rubberized Textile Upper

Representative samples of width 25 mm ± 5 mm are cut out from the whole footwear along the length of the boot. The rubber and fabric plies are separated by breaking the bond. When test on 2 specimens are carried out in accordance with IS 3400 (Part 5), there shall be no separation at a load of 1.5 kg.

8.12 Upper Outsole Bond Strength

When tested in accordance with IS 15298 (Part 1), the bond strength of all varieties shall not be less than 4.0 N/mm, unless there is tearing of the sole, in which case the bond strength shall be not less than 3.0 N/mm.

8.13 Internal Length of Toe Cap

When tested in accordance with IS 15298 (Part 1), the internal toecap length of all varieties shall conform to requirements as given in Table 7.

8.14 Impact Resistance of Safety Footwear

When tested in accordance with IS 15298 (Part 1), the clearance under the toecap at the moment of impact shall conform to requirements as given in Table 8. In addition, the toecap shall not develop any cracks which go through the material, that is, through which light can be seen.

8.15 Compression Resistance of Safety Footwear

When tested in accordance with IS 15298 (Part 1), the clearance under the toecap at a compression load of 15 kN $\pm$ 0.1 kN shall conform to requirements as given in Table 8.

8.16 Banned Chemicals

All varieties shall comply with Table 1 of IS 17011 for critical substances Category 1 and Category 2 as specified under **3.6** of IS 17011.

8.17 Slip Resistance

When tested in accordance with IS 15298 (Part 1), boots resistant to slip on a ceramic tile floor with sodium lauryl sulphate (NaLS) shall conform to requirements as given in Table 9, while boots resistant to slip on a steel floor with glycerine shall conform to requirements as given in Table 10.

Table 6 Height of Upper

(*Clause* 8.10)

Sl No.	Size of Footwear		Height, mm, *Min*		
	France	UK	Design B	Design C	Design D and E
(1)	(2)	(3)	(4)	(5)	(6)
i)	36 and below	up to 31/2	103	162	255
ii)	37 and 38	4 to 5	105	165	260
iii)	39 and 40	51/2 to 61/2	109	172	270
iv)	41 and 42	7 to 8	113	178	280
v)	43 and 44	81/2 to 10	117	185	290
vi)	45 and above	101/2 and above	121	192	300

Table 7 Minimum Internal Length of Toecaps

(*Clause* 8.13)

Sl No.	Size of Footwear		Internal length, mm, *Min*
	France	UK	
(1)	(2)	(3)	(4)
i)	36 and below	up to 31/2	34
ii)	37 and 38	4 to 5	36
iii)	39 and 40	51/2 to 61/2	38
iv)	41 and 42	7 to 8	39
v)	43 and 44	81/2 to 10	40
vi)	45 and above	101/2 and above	42

Table 8 Minimum Clearance Under Toecaps at Impact

(*Clauses* 8.14 *and* 8.15)

Sl No.	Size of Footwear		Minimum Clearance, mm, *Min*
	France	UK	
(1)	(2)	(3)	(4)
i)	36 and below	Up to 31/2	12.5
ii)	37 and 38	4 to 5	13.0
iii)	39 and 40	51/2 to 61/2	13.5
iv)	41 and 42	7 to 8	14.0
v)	43 and 44	81/2 to 10	14.5
vi)	45 and above	101/2 and above	15.0

Table 9 Requirements for Footwear Resistant to Slip on Ceramic Tile Floor with NaLS

(*Clause* 8.17)

Sl No.	Test Conditions	Coefficient of Friction
(1)	(2)	(3)
i)	Condition A (forward heel slip)	≥ 0.28
ii)	Condition B (forward flat slip)	≥ 0.32

Table 10 Slip Resistance on Steel Floor with Glycerine

(*Clause* 8.17)

Sl No.	Test Conditions	Coefficient of Friction
(1)	(2)	(3)
i)	Condition C (forward heel slip)	≥ 0.13
ii)	Condition D (forward flat slip)	≥ 0.18

8.18 Corrosion Resistant Test for Toe Caps

When tested in accordance with IS 15298 (Part 1), the metallic toecap shall exhibit no more than three areas of corrosion, none of which shall measure more than 2 mm in any direction.

9 OPTIONAL REQUIREMENTS

9.1 Penetration Resistance

When footwear having metallic insert is tested in accordance with IS 15298 (Part 1), the force required to penetrate the sole unit shall be not less than 1100 N.

When footwear having non-metallic insert is tested in accordance with IS 15298 (Part 1), using a force of at least 1 100 N, the tip of the test nail shall not penetrate through the test piece. In order to achieve a “pass” result, the tip of the test nail shall not protrude from the test piece. This is to be checked by visual, cinematographic or electrical detection.

9.2 Antistatic Footwear

When tested in accordance with IS 15298 (Part 1), after conditioning in a dry and wet atmosphere, the electrical resistance shall not be less than 100 kΩ and shall not be greater than 1 000 MΩ in each case.

NOTES

1 Boots complying with electrical resistance are not covered under this clause.

2 (a) dry conditions — 20 °C ± 2 °C and (30 ± 5) percent RH (for 7 days)

3 (b) wet conditions — 20 °C ± 2 °C and (85 ± 5) percent RH (for 7 days).

9.3 Flame Resistance Property

When boots having all different material including seams, labels, any closing mechanism as provided with boot, are tested in accordance with IS 15758 (Part 4), the boots shall not either flame or propagate for more than two second (after flame time).

After testing, the boot shall not have beginning of pronounced and deep cracking affecting half of the upper material thickness and ignition and melting of upper affecting more than half of the upper thickness.

9.4 Electrical Resistance

Boots shall comply with a proof voltage test and a with stand voltage test according to its classification as per Annex H of IS 5557 (Part 2) and will bear a mandatory marking of Class O in red and Class OO in beige and should comply with Annex H.

9.5 Resistance to Acid and Alkali

For boots of variety 1, 2, 3 when resistance to acids and alkali is required (requirement for limited contact with chemicals), the boots shall comply with Annex F of IS 5557 (Part 2), when tested in accordance with Annex D of IS 5557 (Part 2).

For boots of variety 1,2,3 when resistance to acids and alkali is required for footwear (requirement for prolonged contact with chemicals), the boots shall comply with Annex G of IS 5557 (Part 2), when tested in accordance with Annex D and E of IS 5557 (Part 2).

Additional chemical resistivity will be as indented by user.

9.6 Resistance to Fuel Oil

When tested in accordance with IS 15298 (Part 1), Variety No. 1 and 2 shall have property of fuel oil resistivity and increase in volume shall not be greater than 12 percent.

If, after testing in accordance with IS 15298 (Part 1), the test piece shrinks by more than 1 percent in volume or increases in hardness by more than 10 Shore A hardness units, a further test piece shall be taken and tested in accordance with the method described in IS 15298 (Part 1) for outsole materials which shrink or become hardened and the cut growth shall not be greater than 6 mm before 150 000 flex cycles.

10 FINISH OF BOOTS

In appearance, general workmanship and in all other aspects with regard to finish of boots, the same should be uniform.

11 PACKING AND MARKING

11.1 Packing

The material may be packed as agreed to between the purchaser and the supplier.

11.2 Marking

Each boot shall be permanently marked with the following:

a) Size;
b) Manufacturer’s name and brand;
c) Year and month of manufacture;
d) Number and year of the standard, based upon which the boots are produced;
e) Classification — Safety or protective;
f) The marking on the outside part of the footwear should be clearly decipherable and durable and its quality should not be spoil;
g) For the colour code, following symbols shall be considered:
    1) Category 0: beige; and
    2) Class 00: red.
h) Any other statutory marking.

All markings shall be made either on the inside of tongue or at the top outer face of the boot so that least damage is done during working.

11.2.1 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

12 INFORMATION TO BE SUPPLIED

Each pair of boot shall be supplied with the following information in Hindi and English:

a) Name and full address of manufacturer;
b) Details of customer care service provider;
c) Instruction for storage and maintenance;
d) Drying procedure for wet boots and proper cleaning of boots;
e) Wherever applicable, declaration to be made stating footwear is not for use in fire hazard and explosion prone areas and in hot contact areas; and
f) Periodical testing and instruction for record keeping for electrical insulating and anti-static boots for users.

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*	*IS No.*	*Title*
IS 1638 : 1969	Specification for sizes and fitting of footwear (*first revision*)	IS 5557 (Part 2) : 2018	All rubber gum boots and ankle boots: Part 2 Occupational purposes
IS 1954 : 1990	Determination of length and width of woven fabrics — Methods (*second revision*)	IS 9543 : 2015	Textiles — Spun polyester sewing threads — Specification (*first revision*)
IS 2050 : 1991	Glossary of terms relating to footwear (*first revision*)	IS 15298	Personal protective equipment
IS 3400	Methods of test for rubber, vulcanized or thermoplastic:	(Part 1) : 2015/ ISO 20344 : 2011	Test methods for footwear (*second revision*)
(Part 2/Sec 2) : 2023/ISO 48-2 : 2018	Determination of hardness, Section 2 Hardness between 10 IRHD and 100 IRHD (*fifth revision*)	(Part 2) : 2016/ ISO 20345 : 2011	Safety footwear (*second revision*)
(Part 4) : 2012/ ISO 188 : 2011	Accelerated ageing and heat resistance (*third revision*)	(Part 3) : 2019/ ISO 20346 : 2014	Protective footwear (*second revision*)
(Part 5) : 2022/ ISO 36 : 2020	Adhesion of rubbers to textile fabrics (*fourth revision*)	IS 15758 (Part 4) : 2020/ISO 15025 : 2016	Textiles — Protective clothing: Part 4 Method of test for limited flame spread (*first revision*)
		IS 17011 : 2018	Chemical requirements for footwear and footwear materials

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Footwear Sectional Committee, CHD 19

Organization	*Representative(s)*
In Personal Capacity, Chennai, (*Flat F1, Bhoopathy Apartment, 10, Ethiraj Street, Palipattu, Chennai – 600113*)	DR B. N. DAS **(*Chairperson*)**
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Bata India Limited, Kolkata	SHRI HITESH KAKKAR SHRI GOVINDARAJU (*Alternate*)
Central Reserve Police Force, New Delhi	SHRI SANJEEV KUMAR SINGH SHRI D. P. UPADHYAY (*Alternate)*
Confederation of Indian Footwear Industries, New Delhi	SHRI RAJ KR GUPTA SHRI V. NOUSHAD (*Alternate*)
Council for Leather Exports, Chennai	SHRI A. FAYAZ AHMAD SHRI D. GOKULAKRISHNAN (*Alternate*)
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Indian Footwear Components Manufacturers Association, Noida	SHRI SHARAD KANT VERMA SHRI SANJAY GUPTA (*Alternate*)
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Liberty Shoes Limited (P.U. Division), Karnal	SHRI S. S. LAHIRI SHRI ADESH GUPTA (*Alternate*)
MSME Technology Development Centre (PPDC), Meerut	SHRI ADITYA PRAKASH SHARMA SHRI TULARAM BHARTI (*Alternate*)
Pinza Footwear, New Delhi	SHRI PREM MEHANI
Prolific Engineers, Noida	SHRI G. P. KEDIA
SGS India Private Limited, Gurugram	SHRI P. VENKATESAN SHRI K. PACHAIYAPPAN (*Alternate)*
Top Lasts, Agra	SHRI ANURAG SHARMA SHRI DEEPAK MANCHANDA (*Alternate*)

Organization	*Representative(s)*
Xo Footwear Private Limited, Delhi	SHRI NALIN GUPTA SHRI MANOJ KUMAR (*Alternate*)
BIS Directorate General	SHRI AJAY KUMAR LAL, SCIENTIST 'F'/SENIOR DIRECTOR AND HEAD (CHEMICAL) [REPRESENTING DIRECTOR GENERAL (*Ex-officio*)]

Member Secretary
MS PREETI PRABHA
SCIENTIST 'C'/DEPUTY DIRECTOR
(CHEMICAL), BIS

Bureau of Indian Standards

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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