IS 3735 : 1996
(Reaffirmed 2013)
(Reaffirmed 2016)
(Reaffirmed 2021)

भारतीय मानक

रबड़ तले के कैनवस जूते — विशिष्टि

(दूसरा पुनरीक्षण)

Indian Standard

CANVAS SHOES, RUBBER SOLE — SPECIFICATION

(Second Revision)

ICS 61.060;83.140

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

March 1996 **Price Group 4**

Footwear Sectional Committee, CHD 019

FOREWORD

This Indian Standard (Second 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.

Canvas shoes are extensively used in games and sports, physical training and other general purposes. These are also known as PT shoes.

This standard was originally published in 1966 and subsequently revised during 1984. Considering the technological developments and in the light of experience gained, the Committee decided to revise the standard.

In this revision, the following new requirements have been included in this standard:

a) Adhesion test,
b) Consolidation test, and
c) Mass.

Requirements of tensile strength, elongation at break and compression set of soles have also been included to ensure better performance of rubber soles and heels. In order to ensure robustness of soles and heels on prolonged storing even under rigorous conditions, the requirement for ageing at 70 ±. 1°C for 168 h has been introduced in this standard.

In view of the fact that a lot of new raw materials and grinderies for shoes have been developed and are extensively used in the industry, the Committee decided to give more stress on the performance requirements of shoes rather than prescribing requirements for each and every Component and grindery.

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

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 : 1960 Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

AMENDMENT NO. 4 OCTOBER 2004
TO
IS 3735 : 1996 CANVAS SHOES, RUBBER SOLE — SPECIFICATION
(Second Revision)

[*Page* 2, *clause* **4.1.3.2**. S*l No,* (i), *col* 4] — Insert ' or IS 686 : 1985'.

(*Page* 3 , *Table* 4, *Sl No.* (vii) (*see also Amendments No. 1 and* 3)] — Delete.

[*Page* 4, *Table* 6, *Sl No.* (v) (see also Amendment No. I and 3)] — Delete and renumber the subsequent Sl Nos.

(CHD 19)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 3 SEPTEMBER 2003
TO
IS 3735 : 1996 CANVAS SHOES RUBBER SOLE — SPECIFICATION

(Second Revision)

(*Page* 1, *clause* **4.1.1,** *line* 1) — Substitute the following for the exising:

The upper shall consist of over layer of cotton, manmade or blended conforming'

[*Page* 1, *clause* **4.1.2** (*see also Amendment No,* 1)] — Substitute the following for the existing text:

'Cotton, manmade or blended shall be used as binding material.'

(*Page* 1, *Table* 1, *title*) — Substitute the following for the existing:

'**Table 1 Requirements for Over Layer and Inner Layer Fabric**'

(*Page* 2, *clause* **4.1.3.1**) — Substitute the following for the existing:

4.13.1 Sewing thread cotton, manmade or blended shall be used for stitching of upper. For cotton variety thread shall conform to variety No. 28 of IS 1720. Polyester variety thread shall conform to variety No. 9 of IS 9543.

Any other suitable thread shall have breaking load not less than above referred requirement of specification.

Sewing thread cotton, manmade or blended shall be used for binding of upper. For cotton variety thread shall conform to variety No. 32 of IS 1720. Polyester variety thread shall conform to variety No. 5 of IS 9543.

Any other suitable thread shall have breaking load not less than above referred requirement of specification.'

(*Page* 2, *clause* **4.1.4**) — Substitute the following for the existing:

'**4.1.4** *Eyelets*

Brass, steel or aluminium eyelets of 7.5 mm diameter and wall thickness 0.30 to 0.35 mm shall be used.'

Amend No. 3 to IS 3735 : 1996

(*Page* 2, *clause* **4.1.6.3**) — Delete.

[*Page* 2, *Table* 3 (*see also Amendment No.* 1)] — Delete and renumber the subsequent tables.

(*Page* 3, *clause* **4.3.2**) — Substitute the following for the existing:

'4.3.2 Back of the upper shall be reinforced with a strip of upper material when there is a seam.'

(*Page* 4, *clause* **4.3.3,** *line* 8) — Substitute the following for the exitsing:

'dyed binding material or matching to the colour'.

(*Page* 4, *clause* **4.3.6**) — Substitute the following for the existing:

'4.3.6 The shoes shall be free from folds, wrinkles, blisters, embedded foreign matters and excessive surface markings. In appearance, general workmanship, the sample will be similar to approved sample of the buyer. Any other aspect, not defined, and as arises out of the requirement of the buyer, the same will be construed as required for incorporation in this standard, in conformity to approved sample.'

(CHD 19)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 2 AUGUST 2001
TO
IS 3735 : 1996 CANVAS SHOES RUBBER SOLE — SPECIFICATION

(Second Revision)

[*Page* 2, *clause* **4.1.6**, *Note* 1] — Insert the following at the end:

'However in case it is not possible to cut the test pieces from the made up boots then **4.1.5.3** of IS 13695 : 1993 shall be followed.'

[*Page* 3, *Table* 4, *col* 4, *Sl No,*(v) (*see also Amendment No,* 1)] — Substitute '10.5' *for* '105'.

(*Page* 4, *clause* **4.4**) — Substitute the following for the existing clause:

'4.4 Adhesion Test

From the upper foxing portion where it is adhered to the canvas cut a strip of 8.0 ± 0.5 mm width along with the length of the sole at the waist portion and of sufficient length to permit separation over a length of at least 75 mm. Carry out the test on two test pieces (one from each odd) at the rate of traverse of 100 ± 10 mm per minute in accordance with IS 3400 (Part 5) : 1986 or the Static Dead Load Method as given in Annex C. The individual adhesion value noted/recorded shall not be less than 8N (0.8 kgf) for each of the test pieces

NOTE — Manual recording may also be done in absence of the machine with auto recording devices.'

(*Page* 4, *clause* **4.5**) — Substitute the following for the existing clause:

'4.5 Consolidation Test

From the quarter, cut a strip of 25.0 ± 0.5 mm width along the leagth of the boot and of sufficient length to permit separation over a length of 75 mm. Carry out the test on two test pieces (one from each odd) at the rate of traverse of 100± 10 mm per minute in accordance with IS 3400 (Part 5): 1986 or Static Dead Load Method as given in Annex C. The individual adhesion value for consolidation test shall not be less than 30N (3.0 kgf) for each of the teat piecea (*see Note* under **4.4**).'

(*Page* 6, Annex B) — Insert the following Annex C after Annex B and renumber Annex C as Annex D:

'ANNEX C
(*Clauses* 4.4 *and* 4.5)

C-1 STATIC DEAD LOAD METHOD

C-1.1 Apparatus

The apparatus required for the adhesion test by the static mass method consists of a supporting frame, testing clamps, mandrels, calibrated weights, and weight carriers. The supporting frame shall be of such design that clamps for strip specimens hang on it vertically and mandrels for rings specimens are supported on it horizontally. The frame shall have sufficient height to permit the weight carrier to be suspended from the test specimens by means of clamps and shall hang freely during the progress of the test, provision shall also be made to support the mandrels so that they revolve freely with minimum friction. Suitable apparatus is shown in Fig. 2.

C-1.2 Calibration of Apparatus

Calibrate the weights annually.

C-1.3 Cutting Tool

Maintain the cutting tool carefully so that the edge is sharp enough to avoid leaving ragged edges and pulling outside threads from the fabric.

C-2 Procedure

C-2.1 Strip Test Piece (see Fig. 2)

Separate the parts of the strip to be tested by hand at one end of the strip specimen and at a sufficient distance to permit the jaws of the testing clamp to be attached. Suspend the strip on the spike of the vertical frame or board and attach the ply to be separated, to the grip. Attach the loaded scale pan to the grip through a light spring. The total mass of the grip, spring, loaded scale pan and attachments shall be taken as the applied load. Obtain either the load required to cause separation of 25 mm/min graphically by selecting various loads or for a known or specified load, determine the rate of separation. Repeat the procedure on the separate plies from the face ply to the centre ply. Test the second specimen conunendng with the back ply and proceeding again to the centre ply.

NOTE — Precautions Shall be taken during the test to preveat side threads from pulling out and interfering with the test result. Where this occurs excessively due to the threads not being parallel to the edge of the strip, the test piece shall be discarded and a fresh one prepared.

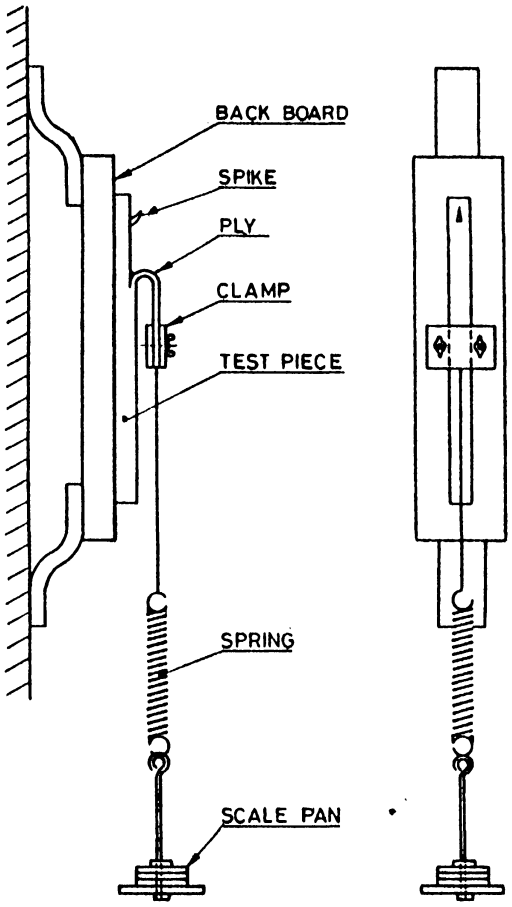

FIG. 2 APPARATUS FOR STATIC LOAD METHOD ON STRIP TEST PIECE

C-2.2 Expression of Results

Express the result as average force in kilo newtons per metre width required to cause a separation of the plies at 25 mm/min or obtain the rate of separation at a known or specified load.

C-3 REPORT

The report shall include the following:

a) Adhesion value, that is median, range, statistical minimum, observed minimum, observed maximum;

b) The type of specimen and thickness of specimen;

c) All observations and recorded data on which the results are based;

d) Date of manufacture or vulcanization of rubber; if known;

e) Date of test;

f) Statement of the method used (Dead load/ Static mass or dynamic on constant traverse); and

g) Temperature of the test and its duration, and temperature and relative humidity of conditioning/

(CHD 19)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 1 SEPTEMBER 1999 TO IS 3735 :1996 CANVAS SHOES, RUBBER SOLE — SPECIFICATION

(Second Revision)

(*Page* 1, *clause* **4.1.2**) — Substitute the following for the existing text

'Cotton tape dyed/scoured shall be used as binding material.'

(*Page* 1, *clause* **4.1.2.1**) — Substitute the following for the existing text.

'Coloured cotton tapes shall have fastness to day light of rating as and if agreed to between the purchaser and the supplier when tested in accordance with IS 686 : 1985. The black tapes shall be free from sulphur dyes when tested in accordance with Annex B.'

(*Page* 2, *Table* 2) — Delete Table 2 and renumber the subsequent tables.

[*Page* 3, *Table* 4 (*renumbered Table* 3), *col* 3, *Sl No.* (ii)]— Insert' — '.

[*Page* 3, Table 4 (*renumbered Table* 3), *col* 2, *Sl No.* (v)] — Substitute 'MPa' *for* 'N'.

(*Page* 4, *clause* **4.3.3,** *line* 3) — Substitute 'dyed' *for* 'white'.

(CHD 19)

Reprography Unit, BIS, New Delhi, India

Indian Standard

CANVAS SHOES, RUBBER SOLE — SPECIFICATION

(Second Revision)

1 SCOPE

This standard prescribes requirements and methods of sampling and test for canvas shoes having rubber sole and heel, required for general use, games, sports and physical training.

2 REFERENCES

The Indian 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 revisions, and parties to agreements based on this Indian Standard are encouraged to investigate the possibility of applying the most recent editions of the Indian Standards listed in Annex A.

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 2050 : 1991 shall apply.

4 REQUIREMENTS

4.1 Material

4.1.1 ***Upper***

The upper shall consist of cotton canvas conforming to the requirements given in Sl No. (i) of Table 1 as an overlayer and cotton drill conforming to the requirements given in Sl No. (ii) of Table 1, as an inner layer or lining. The two fabrics shall be firmly adhered together with rubber compound. The shade of canvas upper used shall be white or brown or any other shade as agreed to between the purchaser and the supplier.

4.1.1.1 *Colour fastness*

The dyed fabrics prescribed in **4.1.1** shall be fast to daylight and mechanical washing. Fastness to daylight shall be of rating 4 or better, when tested in accordance with IS 686 : 1985 or IS 2454: 1985. However in case of dispute the method prescribed in IS 686 : 1985 shall be considered as referee method.

4.1.1.2 Fastness to mechanical washing (mild) shall be of ???rating 4 or better, when tested in accordance with IS 764 : 1979.

4.1.2 *Binding Material*

Cotton tape *NEWAR* used as binding material shall conform to the requirements prescribed in col 3 of Table 2, when tested in accordance with the methods referred to in col 4 of the table.

4.1.2.1 The colour of the tape shall also match the shade of the upper. Coloured cotton tapes shall have

Table 1 Requirements for Canvas and Cotton **Drill**

(Clause 4.1.1)

Sl No.	**Materials**	**Characterstic**	**Requirement**	**Method of Test Ref to IS No.**
(1)	(2)	(3)	(4)	(5)
i)	Canvas	Breaking load in N, *Min*		
		a) Warp	1000	1969 : 1985
		b) Weft	900	
		c) Ends/dm	250 ± 5	1963 : 1981
		d) Picks/dm	180 ±13	
ii)	Drill	Breaking load in N, *Min*		
		a) Warp	1000	1969 : 1985
		b) Weft	550	
		c) Ends/dm	390 ± 10	115 ± 5 1963 : 1981
		d) Picks/dm		

Table 2 Requirements for Cotton Tape
Newar
(*Clause* **4.1.2**)

Sl No.	Characteristic	Requirement	Method of Test, Ref to IS No.
(1)	(2)	(3)	(4)
i)	Width, mm, *Min*	13	1954 : 1990
ii)	Breaking load on 50 cm long test piece, N, *Min*	360	1969 : 1985

fastness to day light of rating 3 or better when tested in accordance with IS 686 : 1985 or IS 2454 : 1985. However in case of dispute the method prescribed in IS 686 : 1985 shall be considered as referee method. It shall also have fastness to mechanical washing of rating 3 or better when tested in accordance with IS 764 : 1979. In case black tapes are used the same shall be free from sulpher dyes when tested in accordance with Anmex B.

4.1.3 *Thread for Upper Closing*

4.1.3.1 The breaking load and censtruction of sewing threads shall be conforming to Table 3 for Varieties. No. 8 and 29.

4.1.3.2 The colour of the threads shall be as agreed to between the purchaser and the supplier. The dyed threads shall conform to the following requirements:

Sl No.	*Agency*	*Rating*	*Method of Test, Ref to IS No.*
i)	Light	5 or better	2454 : 1985
ii)	Washing	4 or better	765 : 1979
iii)	Perspiration	4 or better	971 : 1966

4.1.4 *Eyelets*

Brass, steel or aluminium eyelets of size (collar diameter) 7.5 mm and wall thickness 0.35 mm *Min* shall be used.

4.1.5 *Laces*

The shoes shall be provided with fabric braided laces either matching the shade of the upper or black or as agreed to between the purchaser and the supplier. The length of the lace shall be 60 ± 3 cm and shall have the breaking strength of not less than 250 N when tested between 18 cm grips in accordance with IS 1969 : 1985, the rate of traverse of power actuated grip being 300 mm/min. In case the laces are black, the same shall pass the test for freedom from sulpher dyes when tested in accordance with Annex B. The two ends of the lace shall be provided with suitable metal or plastic tips.

4.1.6 *Rubber Components*

The rubber components shall conform to the requirements given in Table 4, when tested from finished boots.

NOTES

1 While cutting the test pieces from the made-up shoes, adequate care shall be taken so that minimum fraying at the edges are occurred.

2 Reading from 30 to 95 IRHD are approximately the same as those of the Shore durometer, Type A.

4.1.6.1 The pattern and design of rubber soles shall be as agreed to between the purchaser and the supplier.

4.1.6.2 *Ageing*

The shoes shall be also aged at 70 ± 1°C for 168 h, on completion of which the test pieces taken from the shoes shall conform to the physical requirements prescribed in col 4 of Table 5. None of the rubber components of the shoes shall show any sign of tackiness or crack developed after ageing, when examined visually.

4.1.6.3 *Thickness of components*

Individual components of the shoes shall comply with the thickness and material requirements prescribed in Table 6.

4.2 Shape and Design

4.2.1 The shoes shall be made according to design and pattern as agreed to between the purchaser and the supplier. Size and fittings of the shoes shall be in accordance with IS 1638 : 1969 unless otherwise specified by the purchaser.

Table 3 Requirements for Sweing Threads
(*Clause* 4.1.3.1)

Sl No.	Variety No.	Construction	Single Thread Breaking Load, Newtons (kg), *Min*	Method or Test, Ref to IS No.
(1)	(2)	(3)	(4)	(5)
i)	8	3 ply (3 strands, each single)	27.0 (2.75)	1670 : 1991
ii)	29	6 cord (3 strands, each 2 fold)	21.1 (2.15)	1670 : 1991

Table 4 Physical Requirements for Rubber Components

(*Clause* 4.1.6)

Sl No.	Characterstic	Foxing and Toe-cap	Outer Sole and Heel	Method of Test, Ref to IS No.
(1)	(2)	(3)	(4)	(5)
i)	Relative density, *Max*	1.4	1.2	3400 (Part 9) : 1978
ii)	Hardness, IRHD		60 ± 5	3400 (Part 2) : 1980
iii)	Flexing resistance, number of cycles			3400 (Part 16) : 1974
	a) Initial crack, *Min*	—	60 000	
	b) Cut growth at the end of 150 000 cycles, percent, *Max*		600	
iv)	Change in initial hardness after accelerated ageing for 24 h at 100 ± 1°C		+ 5 - 2	3400 (Part 4) : 1987 3400 (Part 2) : 1980
v)	Tensile strength in N, *Min*		105	3400 (Part 1) : 1987
vi)	Elongation at break, in percent, *Min*	—	250	3400 (Part 1) : 1987
vii)	Compression set, in percent. *Max*	—	20	3400 (Part 10) : 1977

Table 5 Change in Physical Requirements for Rubber Soles after Ageing

(*Clause* 4.1.6.2)

Sl No.	Characteristics	Change in Percent of Original Value	Method of Test, Ref to IS No.
(1)	(2)	(3)	(4)
i)	Tensile strength	+ 5 - 25	3400 (Part 1): 1987
ii)	Elongation at break	+ 5 - 25	3400 (Part 1): 1987

4.2.2 The recommended design of canvas shoes is shown in Fig. 1.

4.3 Construction

4.3.1 The upper shall be stitched on a lock stitch machine and the number of stitches shall be 30 to 40 per dm.

4.3.2 The back seam shall be reinforced with a strip of canvas upper material.

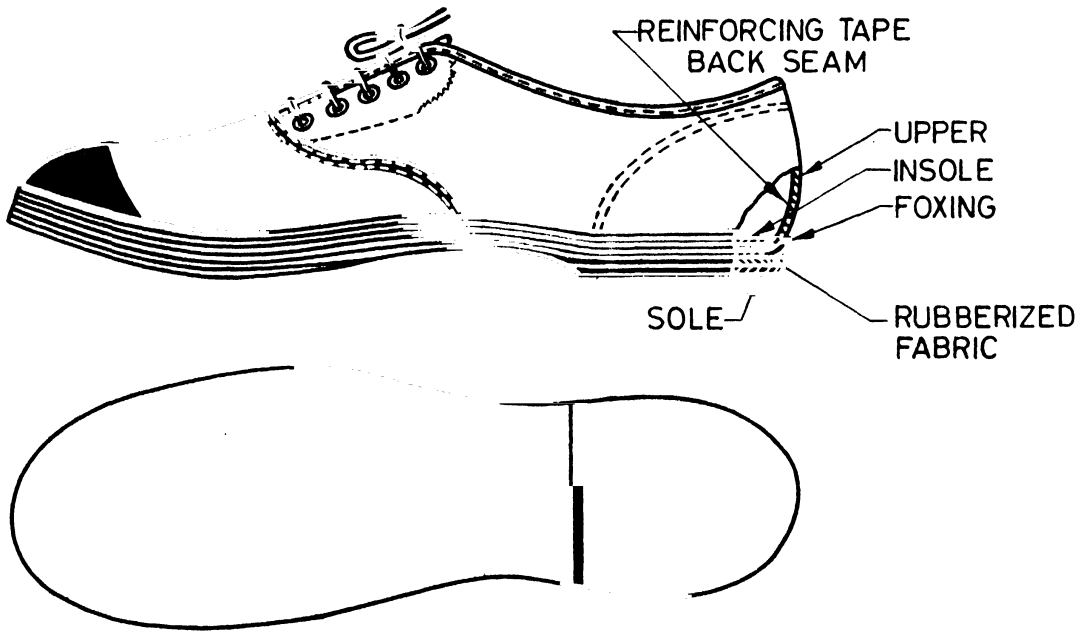

FIG. 1 CANVAS SHOES, RUBBER SOLE

Table 6 Requirements for Individual Components of Canvas Shoes, Rubber Sole
(*Clause* 4.1.6.3)

Sl No.	Component	Material	Thickness, *Min*, mm
(1)	(2)	(3)	(4)
i)	Sole : Forepart : a) with cleat b) without cleat	Rubber	 6.0 3.0
ii)	Heel	Rubber	8.0
iii)	Outermost rubber toe cap	Rubber	1.3
iv)	Foxing	Rubber	2.0
v)	Circular piece[1)]	Rubber	1.3
vi)	Detachable insole[1)]	Sponge rubber covered with twill	As agreed to between the purchaser and the supplier
vii)	Inner sole	Suitable mix of rubber with cotton flock on cotton drill	2.0
viii)	Counter	do	1.3
ix)	Bottom filling	Suitable mix of rubber with cotton flock or any other suitable material	1.1
x)	Stiffener	Rubberized fabric	1.3
xi)	Toe puff	do	0.8

[1)]These components may be provided to the shoes if required by the purchaser.

4.3.3 The counter shall be stitched at the back, set from bottom of lining and bound flat on top edge with white/scoured binding material cut in bias and formed as a tape. The number of stitches shall be 30 to 40 per decimetre. The counter binding shall meet the binding of the upper at the centre top edge of the heel. The edges of quarter shall be bound with dyed cotton binding material or matching to the colour of the upper, cut in bias and formed as a tape.

4.3.4 The vantp shall be strengthened with a rubber toe-cap (*see* Fig. 1).

4.3.5 Five pairs of eyelets shall be fitted in each shoe. The eyelets shall be properly clenched without any distortion. It shall properly match the colour of the upper canvas, or as agreed to between the purchaser and the supplier.

4.3.6 The shoes shall be free from folds, wrinkles in the upper, blisters, embedded foreign matters and excessive surface markings. In appearance, general workmanship, finish and all other respects, not defined in the standard, the shoes shall be similar to the sample approved by the purchaser, if any.

4.3.7 The soles shall be of even substance and of one layer only.

4.3.8 A rubber foxing shall be fixed all round the sole and heel. The colour shall be as agreed to between the purchaser and the supplier. The foxing, not less than 18 mm wide, shall not extend beyond the edges of the sole at the bottom.

4.4 Adhesion Test

From the upper-foxing portion where it is adhered to the canvas, parallel to the waist of sole, cut a strip of length 100 mm and width 8 mm. Separate out the plies initially by breaking the bond to a length of about 75 mm. Carry out the test on two specimens in accordance with IS 3400 (Part 5) : 1986. There shall be no further separation within 1 minute at a load of 1 kg for each of the two specimens.

4.5 Consolidation Test

Representative samples of width 25.0 ± 0.5 mm cut out from the quarter along the length of the shoe and tested at a rate of separation of 100 nun/min in

accordance with IS 3400 (Part 5) : 1986 shall have an adhesion of not less than 3.0 kg.

4.6 Mass

The mass of one pair of finished shoes of size 8 shall not exceed 750 g with an increase or decrease of 25 g for each bigger or smaller size respectively.

5 PACKING AND MARKING

5.1 Packing

The shoes may be wrapped in tissue paper and packed in cardboard cartons. Cardboard cartons may further be packed in wooden cases in upright position. Each package may contain shoes of same size only.

5.2 Marking

The size of the shoes shall be legibly stamped on the waist of the insole face cover. The manufacturer's name or recognized trade-mark, if any, together with the year of supply and month and year of manufacture shall also be legibly stamped at the waist of the insole cover,

5.2.1 ***BIS Certification Marking***

The product may also be marked with the Standard Mark.

5.2.1.1 The use of the Standard Mark is governed by the provisions of *the Bureau of Indian Standards Act,* 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 SAMPLING AND CRITERIA OF CONFORMITY

For the purpose of ascertaining the conformity of shoes in a consignment to this specification the scale of sampling and criteria for conformity shall be as prescribed in IS 6368 : 1971.

ANNEX A
(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
686 : 1985	Methods for determination of colour fastness of textile materials to daylight *(first revision)*
764 : 1979	Method for determination of colour fastness of textile materials to mechanical washing. Test 3 *(second revision)*
765 : 1979	Method for determination of colour fastness of textile materials to mechanical washing, Test 4 *(second revision)*
971 : 1983	Method of determination of colour fastness of textile materials to perspiration (*first revision*)
1638 : 1969	Sizes and fittings of footwear *(first revision)*
1670 : 1991	Textile-yarn — Determination of breaking load, elongation at break of single strand *(second revision)*
1954 : 1990	Methods for determination of length and width of fabrics *(second revision)*
1963 : 1981	Methods for determination of threads per unit length in woven fabrics *(second revision)*
1969 : 1985	Methods for determination of breaking load and elongation at break of woven textile fabrics *(second revision)*
2050: 1991	Glossary of terms relating to footwear *(first revision)*
2454 : 1985	Method for determination of colour fastness of textile materials to artificial light (xenon lamp) *(first revision)*
3400	Methods of test for vulcanized rubbers.
(Part 1): 1987	Tensile stress-strain properties *(second revision)*
(Part 2): 1980	Hardness *(first revision)*
(Part 4): 1987	Accelerated ageing *(second revision)*
(Part 5): 1986	Adhesion of rubbers to textile fabrics *(second revision)*

IS No.	Title	IS No.	Title
(Part 9) : 1978	Density (*first revision*)		rubber by the use of the ross flexing machine
(Part 10) : 1977	Compression set at constant strain (*first revision*)	6368 : 1971	Method of sampling of rubber and rubber combination footwear
(Part 16) : 1974	Measurement of cut growth of		

ANNEX B
(*Clause* 4.1.5)

METHOD FOR DETECTION OF SULPHER DYES IN BLACK COLOURED LACES

B-1 PROCEDURE

B-1.1 Boil the laces in alkaline hydrosulphite solution for one minute. If the shade is reduced to pale brown or yellow colour and on oxidation restored to the original colour, sulpher dyes shall be suspected to be present.

B-1.2 For confirmation, boil the laces in acid stannous chloride solution in a test tube covered with a piece of filter paper moistened with lead acetate. A blackish/brown stain with metallic lustre confirms the presence of supplier dyes.

ANNEX C
(*Foreword*)

COMMITTEE COMPOSITION

Footwear Sectional Committee, CHD 019

	Representing
Chairman	
AIR COMMODORE V. B. BATRA	Directorate General Quality Assurance, Ministry of Defence, Government of India, New Delhi
Members	
SHRI A. P. AGGARWAL	Steel Authority of India Ltd, Ranchi
SHRI V. M. ASHDHIR	Bharat Leather Corporation Ltd, Agra
SHRI M. P. BAJPAI SHRI K. K. HAJELA (*Alternate*)	Tannery and Footwear Corporation of India Ltd, Kanpur
SHRI A. BANDYOPADHYAY SHRI B. B. DAS (*Alternate*)	Ministry of Defence (R&D), Kanpur
SHRI S. BANERJEE SHRI K. S. RAMA RAO (*Alternate*)	Madura Coats Limited, Madurai
SHRI J. BASAK	Bihar Rubber Company, Ranchi
SHRI J. CHAKRABORTI SHRI SHIB KUMAR (*Alternate*)	Standing Committee for Safety in Steel Industry, Durgapur
SHRI KARAN CHAND SHRI H. H. SIDDIQUI (*Alternate*)	Export Inspection Council of India, Madras
SHRI K. CHATTERJEE	Bata India Limited, Calcutta
SHRI B. N. DAS SHRI G. MD. SADIQ (*Alternate*)	Central Leather Research Institute, Madras
SHRI B. DUTTA SHRI D. DAS (*Alternate*)	Bengal Waterproof Ltd, Calcutta
SHRI ADARSH GUPTA	Liberty Footwear Co, Kamal
SHRI GAUTAM GUPTA SHRI G. C. KANAUJIYA (*Alternate*)	Ministry of Defence (DGQA), New Delhi
SHRI B. N. MONDAL SHRI SATYABRATA CHANDRA (*Alternate*)	Indian Leather Technologists Association, Calcutta
DR R. PANDA SHRI G. S. LAKHOTIA (*Alternate*)	National Engineering Industries Ltd, Calcutta

(*Continued on page 7*)

(*Continued from page 6*)

Members	*Representing*
SHRI U. S. PAUL REPRESENTATIVE	Footform, Calcutta Indian Rubber Institute, Calcutta
SHRI A. SEHGAL SHRI K. CHATURBEDI (*Alternate*)	Tata Export Ltd, Dewas
SHRI D. K. SETH SHRI N. N. DEBNATH (*Alternate*)	Office of the Development Commissioner (SSI), New Delhi
SHRI Y. K. SHARMA SHRI B. BHATTACHARYA (*Alternate*)	Directorate General of Mines Safety, Dhanbad
SHRI S. K. WADHWA SHRI K. K. MAHESHWARI (*Alternate*)	Directorate General of Technical Development, New Delhi
SHRI ANJAN KAR, Director (Chem)	Director General, BIS (*Ex-officio Member*)

Member Secretary

SHRI P. MUKHOPADHYAY
Joint Director (Chem), BIS

Non-Leather General Purpose Footwear Subcommittee

Convener

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Headquarters :

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Telephones : 323 01 31, 323 83 75, 323 94 02

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