

भारतीय मानक

पालीविनायल क्लोराइड के जूते, तेल और वसा प्रतिरोधी –  
विशिष्ट

( पहला पुनरीक्षण )

*Indian Standard*

**POLYVINYL CHLORIDE BOOTS, RESISTANT  
TO OILS AND FATS — SPECIFICATION**

*( First Revision )*

UDC 685.315.4 [ 678.743.22 ] : 620.193.471.2

© BIS 1993

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

## FOREWORD

This Indian Standard 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.

The boots covered under this standard may be manufactured either by single or by double injection moulding process. The boots are extensively worn in oils, fats greases, waxes and other related industries. It is recommended that the boots which come into contact with oils and fats during use should be washed daily and examined for any occurrence of cracks. In case of oils and fats other than those specified, advice of the manufacturer of the footwear should be sought for use of such boots.

This standard was first published in 1992. Subsequently, in order to harmonize this standard with ISO 6112 : 1982 Plastic moulded footwear — Lined or unlined polyvinyl chloride industrial boots with general purpose resistance to oils and fats published by the International Organization for Standardization ( ISO ), Geneva, the concerned Sectional Committee decided to revise this standard.

In this revision, a reference has been made to IS 12254 : 1993 PVC industrial boots — Specification for the general requirements and the earlier has been harmonized with the corresponding international standard; as a result of which this draft standard is now technically equivalent with ISO 6112 : 1982. However the following requirements have been included in this revision in addition to those given in ISO 6112 : 1982:

- a) relative density;
- b) lead content;
- c) leakage resistance; and
- d) performance ( optional ).

The committee responsible for the formulation of this standard is given at Annex D.

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.

*Indian Standard***POLYVINYL CHLORIDE BOOTS, RESISTANT  
TO OILS AND FATS — SPECIFICATION***( First Revision )***1 SCOPE**

This standard prescribes requirements, method of sampling and test for lined and unlined polyvinyl chloride boots to oils, fats, greases, waxes and other related products and resistant of styles like ankle boots with minimum four eyelets at each face, half knee boot, short-knee boot and knee boot for men and women and thigh boot for men.

**2 REFERENCES**

The Indian Standards listed in Annex A are the necessary adjuncts to this standard.

**3 TERMINOLOGY**

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

**4 MATERIALS****4.1 Fabric ( For Lined Boots )**

In the case of lined boots, the fabric shall be knitted and free from visible defects. The breaking strength of the natural/synthetic fabric shall be not less than 150 N in both warp and weft direction when tested in accordance with the method given in IS 1969 : 1985.

**4.2 Eyelets and Laces ( Applicable for Ankle Boots )**

**4.2.1** Brass coated steel or aluminium eyelets of size ( collar diameter ) 10 mm as given in Table 1 of IS 5041 : 1978 shall be used.

**4.2.2** The laces shall conform to the requirements given below when tested in accordance with IS 4778 : 1982:

Length	65 ± 5 cm
Breaking load	23 kg, <i>Min</i>

**4.2.3** The black laces shall also be free from sulphur dyes when tested in accordance with Annex B.

**4.3 Steel Toe Caps**

Protective steel toe caps conforming to type 2 of IS 5852 : 1992 shall be used.

**5 REQUIREMENTS**

**5.1** The boots shall comply with the requirements given in 5 of IS 12254 : 1993.

**5.2** The upper of boots when subjected to oil resistance test in accordance with the method given in C-2 shall not show any evidence of cracks after completion of 1 50 000 flex cycles.

**5.3** The sole of boots shall pass the test for oil resistance when tested in accordance with C-1.

**6 MARKING AND PACKING****6.1 Marking**

The following particulars shall be marked on inside of each boot:

- Indication of the source of manufacture,
- Size No.,
- Batch No.,
- The words 'Oil and Fats Resistance', and
- Month and year of manufacture.

The manufacturer shall also declare the oils and fats from which the boots are supposed to provide protection to the wearer.

**6.2 Packing**

Each boot may be wrapped in tissue paper and packed as agreed to between the purchaser and the manufacturer.

**7 SAMPLING**

The method of drawing representative samples of boots and criteria for conformity shall be as prescribed in IS 6368 : 1971.

## ANNEX A

( Clause 2 )

## LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No.	Title
196 : 1966	Atmospheric conditions for testing ( <i>revised</i> )	5852 : 1992	Protective steel toe caps for footwear industry — Specification
1676 : 1960	Oleic acid, technical		
1969 : 1985	Method of determination of breaking wool and elongation at break of wooven textile fabrics ( <i>second revision</i> )	6368 : 1971	Method for sampling of rubber and rubber combination footwear
2050 : 1991	Glossary of terms relating to footwear ( <i>first revision</i> )	12240	Methods of test for polyvinyl chloride boots:
4778 : 1982	Specification for cotton laces for footwear ( <i>first revision</i> )	( Part 7 ) : 1988	Flexing test, resistant to cut growth of soling material
5041 : 1979	Specification for footwear and stationery eyelets ( <i>first revision</i> )	( Part 8 ) : 1988	Resistance to flexing for polyvinyl chloride upper material
		12254 : 1993	PVC industrial boots — Specification ( <i>first revision</i> )

## ANNEX B

( Clause 4.2.3 )

## METHOD OF TEST FOR FREEDOM FROM SULPHUR DYES

## 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, sulphur 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 dyes.

## ANNEX C

( Clauses 5.2 and 5.3 )

## METHOD OF TEST FOR RESISTANCE TO OILS AND FATS

## C-1 OIL RESISTANCE OF SOLE

## C-1.1 Procedure

Two test pieces, 25 mm wide and 150 mm long, shall be taken from sole of the boots and reduced to an overall thickness of 7 mm, inclusive of a maximum of 3 mm of sole pattern, by cutting and very light buffing/snuffing on both sides of the test pieces. The test pieces shall then be immersed in oleic acid ( *see* IS 1676 : 1960 ) for a period of 120 h continuously at  $27 \pm 2$  °C and  $65 \pm 5$  percent relative humidity ( *see* IS 196 : 1966 ). After immersion, the test pieces shall be wiped dry with a dry cloth or tissue paper and tested for resistance to cut growth by the method given in IS 12240 ( Part 7 ) : 1988.

## C-1.2 Expression of Result

The minimum number of 1 50 000 flex cycles

shall not show more than 300 percent cut growth.

## C-2 Oil Resistance of Upper

Two square test pieces of  $64 \pm 2$  mm side length shall be taken from the upper part of the polyvinyl chloride boots. The lining of the boot ( in case of lined boot ) shall be removed from the test pieces by splitting it off using a leather splitting machine or by careful use of a suitable solvent, such as methyl ethyl ketone or by light buffing/snuffing. The test pieces shall then be immersed in oleic acid ( *see* IS 1676 : 1960 ) for a period of 120 h continuously at  $27 \pm 2$  °C and  $65 \pm 5$  percent relative humidity ( *see* IS 196 : 1966 ). After immersion, the test pieces shall be wiped dry with a dry cloth or tissue paper and tested for resistance to flexing by the method given in IS 12240 ( Part 8 ) : 1988.

**ANNEX D**  
( *Foreword* )

**COMMITTEE COMPOSITION**

Footwear Sectional Committee, CHD 019

<i>Chairman</i>	<i>Representing</i>
SHRI S. K. BHADRA	Bata India Limited, Calcutta
<i>Members</i>	
SHRI KRISHANU CHATTERJEE ( <i>Alternate to</i> Shri S. K. Bhadra )	
SHRI JANE ALAM	Council for Leather Exports, Kanpur
SHRI M. P. BAJPAI	Tannery & Footwear Corporation of India Ltd, Kanpur
SHRI K. K. HAJELA ( <i>Alternate</i> )	
SHRI A. BANDYOPADHYAY	Ministry of Defence ( R&D ), Kanpur
SHRI B. B. DAS ( <i>Alternate</i> )	
SHRI P. L. BANERJEE	Glace Kid India Pvt Ltd, Calcutta
SHRI S. BANERJEE ( <i>Alternate</i> )	
SHRI S. BANERJEE	Madura Coats Limited, Madurai
SHRI K. S. RAMA RAO ( <i>Alternate</i> )	
SHRI R. S. BALASUBRAMANIAN	Export Inspection Council for India, Madras
SHRI A. K. BASU ( <i>Alternate</i> )	
SHRI J. BASAK	Bihar Rubber Company, Ranchi
SHRI J. CHAKRABORTI	Standing Committee for Safety in Steel Industry, Durgapur
SHRI SHIB KUMAR ( <i>Alternate</i> )	
SHRI B. N. DAS	Central Leather Research Institute, Madras
SHRI B. DUTTA	Bengal Waterproof Ltd, Calcutta
SHRI D. DASS ( <i>Alternate</i> )	
SHRI S. GUHA	Indian Leather Technologists Association, Calcutta
SHRI S. R. SAHA ( <i>Alternate</i> )	
SHRI ADRASH GUPTA	Liberty Footwear Co, Karnal
SHRI GAUTAM GUPTA	Ministry of Defence ( DGQA ), New Delhi
SHRI G. C. KANAUJIYA ( <i>Alternate</i> )	
SHRI R. S. GHOSH	Directorate General of Technical Development, New Delhi
SHRI D. RAY ( <i>Alternate</i> )	
SHRI J. N. JOHARI	Directorate General of Mines Safety, Dhanbad
SHRI A. K. RUDRA ( <i>Alternate</i> )	
SHRI C. KOTESWAR RAO	Bharat Leather Corporation Ltd, Agra
SHRI V. M. ASHDIR ( <i>Alternate</i> )	
SHRI V. MEHROTRA	Tata Export Ltd, Dewas
SHRI R. SUBRAMANIAM ( <i>Alternate</i> )	
SHRI SUBHASH MEHTA	Sports Equipment Pvt Ltd, New Delhi
SHRI M. N. MATHUR ( <i>Alternate</i> )	
SHRI U. S. PAUL	Footfoam, Calcutta
DR R. PANDA	National Engineering Industries, Calcutta
SHRI G. S. LAKHOTIA ( <i>Alternate</i> )	
SHRI C. S. V. RAMANA	Leather Industries Development Corpn of Andhra Pradesh Ltd, Hyderabad
SHRI G. GOPALAKRISHNA ( <i>Alternate</i> )	
SHRI V. L. SHAMVEEL AHMED	Farida Shoe Co, Madras
SHRI D. K. SETH	Office of the Development Commissioner ( SSI ), New Delhi
SHRI N. N. DEBNATH ( <i>Alternate</i> )	
SHRI S. S. SHUKLA	Steel Authority of India Ltd, Ranchi
SHRI A. P. AGGARWAL ( <i>Alternate</i> )	
SHRI M. P. VISHWANATHAN	Corona Shoe Co, Bombay
REPRESENTATIVE	Indian Rubber Institute, Calcutta
DR R. K. SINGH,	Director General, BIS ( <i>Ex-officio Member</i> )
Director ( Chem )	

*Member Secretary*

SHRI P. MUKHOPADHYAY  
Joint Director ( Chemical ), BIS

( *Continued on page 4* )

( Continued from page 3 )

Industrial Safety and Special Purposes Footwear Subcommittee, CHD 019 : 04

*Convener*

SHRI M. K. MALHOTRA

*Members*

SHRI M. U. FULEKAR ( *Alternate to*  
Shri M. K. Malhotra )  
SHRI R. S. AGARWAL  
SHRI N. K. ASHAR  
SHRI P. N. ARORA  
SHRI BHARAT BHUSHAN ( *Alternate* )  
SHRI BALBIR SINGH  
SHRI R. C. CHOPRA ( *Alternate* )  
SHRI B. DUTTA  
SHRI D. DAS ( *Alternate* )  
SHRI C. KOTESWARA RAO  
SHRI S. K. BASU ( *Alternate* )  
SHRI J. C. NAKRA  
DR R. PANDA  
SHRI G. S. LAKHOTIA ( *Alternate* )  
SHRI U. S. PAUL  
SHRI M. RAFFIULLAH  
SHRI V. N. DIXIT ( *Alternate* )  
SHRI Y. K. SHARMA  
SHRI BHASKAR BHATTACHARYA ( *Alternate* )  
SHRI S. S. SHUKLA  
SHRI A. P. AGGARWAL ( *Alternate* )  
SHRI ANIL TANEJA  
SHRIMATI KAVITA TANEJA ( *Alternate* )  
SHRI RAJIV WASAN  
SHRI RAMAN WASAN ( *Alternate* )

*Representing*

Directorate General of Factory Advice Services & Labour  
Institute, Bombay

Bata India Limited, Calcutta  
TELCO, Pune  
Skolast India Pvt Ltd, Kanpur  
Hindustan Copper Ltd, Calcutta  
Bengal Water-Proof Ltd, Calcutta  
Bharat Leather Corporation Ltd, Agra  
Oil and Natural Gas Commission, Dehra Dun  
National Engineering Industries Ltd, Calcutta  
Footform, Calcutta  
Tannery & Footwear Corporation of India Ltd, Kanpur  
Directorate General of Mines Safety, Dhanbad  
Steel Authority of India Ltd, Ranchi  
Safewear Rubber Works, Nagpur  
Agra Tannery, Agra

**Standard Mark**

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 Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or produceres may be obtained from the Bureau of Indian Standards.

## Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

### Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS

### Revision 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 latest issue of 'BIS Handbook' and 'Standards Monthly Additions'. Comments on this Indian Standard may be sent to BIS giving the following reference:

Doc : No. CHD 19 ( 0529 )

### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

## BUREAU OF INDIAN STANDARDS

### Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002  
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha  
( Common to all Offices )

### Regional Offices :

	Telephone
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	{ 331 01 31 331 13 75
Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola CALCUTTA 700054	{ 37 84 99, 37 85 61 37 86 26, 37 86 62
Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036	{ 53 38 43, 53 16 40 53 23 84
Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113	{ 235 02 16, 235 04 42 235 15 19, 235 23 15
Western : Manakalaya, E9 MIDC, Marol, Andheri ( East ) BOMBAY 400093	{ 632 92 95, 632 78 58 632 78, 91, 632 78 92
Branch : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE FARIDABAD. GHAZIABAD, GUWAHATI. HYDERABAD. JAIPUR. KANPUR LUCKNOW. PATNA. THIRUVANANTHAPURAM.	



**AMENDMENT NO. 1 AUGUST 1994**  
**TO**  
**IS 13038 : 1993 POLYVINYL CHLORIDE BOOTS,**  
**RESISTANT TO OILS AND FATS — SPECIFICATION**  
*( First Revision )*

*(Foreword, para 3)* — Substitute the following for the existing:

‘This standard was first published in 1992. Subsequently the concerned technical committee decided to revise this standard in order to harmonize the same with ISO 6112 : 1982 ‘Plastic moulded footwear — Lined or unlined polyvinyl chloride industrial boots with general purpose resistance to oils and fats’, published by the International Organization for Standardization (ISO), Geneva.’

*(Foreword, para 4)* — Substitute the following for the existing:

‘In this revision, reference has been made to IS 12254 : 1993 ‘Polyvinyl chloride industrial boots — Specification (*first revision*)’ for the general requirement. IS 12254 : 1993 has already been harmonized with the relevant International Standard as a result of which this standard is now technically equivalent with ISO 6112 : 1982. The requirements, namely, relative density, lead content, leakage resistance and performance have been introduced in this revision through IS 12254 : 1993.’

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

‘This standard prescribes requirements, methods of sampling and test for lined and unlined polyvinyl chloride boots resistant to oils, fats, greases, waxes and other related products, of styles like ankle boots with minimum 4 eyelets at each face, half knee boot, shot knee boot, knee boot for men and women and thigh boot for men.’

*(Page 1, clause 3)* — Substitute the following for the existing:

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

*[Page 1, clause 6.1(d)]* — Substitute the word ‘Resistant’ for ‘Resistance’.

*(Page 2, Annex A, col 1, lines 4 and 5)* — Substitute ‘Methods’ for ‘Method’ and ‘Load’ for ‘wool’.

(Line 12) — Substitute '1978' for 1979'.

(Page 2, clause C-1.2) —Substitute the following for the existing:

'The minimum number of 1 50 000 flex cycles shall not show any sign of crack after the completion of the test.'

(Page 2, clause C-2, Title) — Substitute the following for the existing:

**'Oil Resistance of Upper'**

(CHD 019)

---

Reprography Unit, BIS, New Delhi, India