

भारतीय मानक

वस्त्रादि – जूतों और बूटों के लिए नायलॉन लेस – विशिष्टि
(पहला पुनरीक्षण)

Indian Standard

TEXTILES — NYLON LACES FOR SHOES AND BOOTS — SPECIFICATION
(First Revision)

ICS 61.060

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भारतीय मानक ब्यूरो

BUREAU OF INDIAN STANDARDS

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FOREWORD

Laces are strings or cords used to secure footwear, such as shoes and boots, by threading through eyelets or hooks. Nylon laces are durable and flexible known for their strength and resistance to wear and tear, nylon laces are ideal for outdoor and work footwear, providing reliable support and longevity. Beyond functionality, laces also serve as a fashion element, available in numerous colors and designs to complement or enhance the look of the footwear.

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Technical Textiles for Clothtech Applications including Narrow Fabrics and Braids Sectional Committee had been approved by the Textile Division Council.

This standard was first published in 1996. This revision has been made in the light of experience gained since its publication and to incorporate the following major changes:

- a) Title of the standard has been modified.
- b) BIS certification marking clause has been modified; and
- c) References to Indian Standard given in Annex A has been updated.

The composition of the Committee responsible for the formulation of this standard is given in 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 : 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***TEXTILES — NYLON LACES FOR SHOES AND BOOTS — SPECIFICATION***(First Revision)***1 SCOPE**

This specification covers the requirement of nylon laces to be used in shoes and boots.

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 agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

3 MATERIALS

3.1 Laces shall be manufactured from bulked nylon 6 or nylon 6.6 multifilament yarn.

3.2 The tips shall be made from transparent cellulose acetate film.

4 MANUFACTURE

4.1 The laces shall be firmly and uniformly braided throughout with equal tension on each end/yarn.

4.2 The laces shall be cut to the required length for shoes and boots as the case may be.

4.3 The tips of the laces shall be 15 mm in length and shall be securely fixed at both the ends so that these do not come off. The tips shall not slip easily even on wetting. Alternatively heat or chemical fusing may be adopted for formation of tips. The nylon laces shall not protrude out of tips at the end.

5 WORKMANSHIP AND FINISH

The laces shall be free from broken filaments. Knots, if any, shall be as small as possible and firm, with the ends neatly trimmed off. The laces shall be evenly dyed, free from stains and streaks when judged by visual inspection.

6 REQUIREMENTS

The laces shall conform to the requirements given in Table 1.

7 PACKING

The laces shall be packed in pairs. The laces shall then be bundled or packed as agreed to between the buyer and the seller. Only laces of same type, length and colour shall be packed together in the same bundle of package.

Table 1 Requirements of Laces
(Clause 6)

SI No.	Characteristic(s)	Requirement(s)		Tolerance(s)	Method of Test, Ref to
		Laces for boot	Laces for shoes		
(1)	(2)	(3)	(4)	(5)	(6)
i)	Length, cm	90.0 ± 2	60.0	± 2	IS 1954
ii)	Flat width, mm	6.0 + 0.5 -0.0	5.0	+ 0.5 -0.0	
iii)	Mass per 10 pairs, g, <i>Min</i>	70.0	45.0	—	Annex B
iv)	Number of plaits per 2.5 cm	30.0 ± 2	30.0	± 2	Annex C
v)	Number of spindles	32.0	32.0	—	Visual
vi)	Breaking load, N, <i>Min</i>	750.0	550.0	—	IS 1969
vii)	pH of aqueous extract	6.5-8.5	6.5-8.5	—	IS 1390
viii)	Colour fastness to : a) Light	4 or better	4 or better	—	IS/ISO 105-B01 or IS/ISO 105-B02
	b) Washing (Test 3)				IS/ISO 105-C10
ix)	Elongation under 5.0 kg load, percent, <i>Max</i>	25.0	25.0	—	IS 1969

8 MARKING

8.1 Each pair of laces shall be bound by paper band bearing the following information:

- a) Manufacturer's name initials or trade-mark,
- b) Material (for example, nylon lace); and
- c) Length in cm.

8.2 Each bundle or package shall have a label securely attached and bearing the following information:

- a) Manufacturer's name, initials or trade-mark,
- b) Material (for example, nylon lace),
- c) Length in cm,
- d) Colour,
- e) Number of pairs; and
- f) Any other information as required by the law in force.

8.3 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 product(s) may be marked with the Standard Mark.

9 SAMPLING AND CRITERIA FOR CONFORMITY

9.1 Sampling

9.1.1 Lot

The quantity of laces of the same size and shade delivered to a buyer against one dispatch note shall constitute a lot.

9.1.2 The conformity of a lot to the requirements of the standard shall be determined on the basis of the tests carried out on the laces selected from the lot.

9.1.3 Unless otherwise agreed to between the buyer and the seller, the number of pairs of laces to be selected at random for inspection shall be in accordance with Table 2.

9.2 Criteria for Conformity

It shall be as follows:

<i>Sl No.</i>	<i>Characteristics</i>	<i>No. of Samples</i>	<i>Criteria for Conformity</i>
(1)	(2)	(3)	(4)

i)	Visual inspection	According to col 3 of Table 2	All sample shall pass.
ii)	Length, width, mass of 10 pairs and number of plaits	According to col 4 of Table 2	The number of non-conforming pair shall not exceed the corresponding number given in col 5 of Table 2
iii)	Breaking load, pH of aqueous extract colour fastness and elongation under 5 kg load.	According to col 6 if Table 2	All test pieces shall meet the requirements specified.

Table 2 Sampling Plan
(Clause 9.1.3)

SI No.	Lot Size, No. of Pairs	Sample Size for Visual Inspection	Sub- Sample for Non - Destructive Tests	Permissible No of Non - Conforming Units	Sub Sample Size for Destructive Tests
(1)	(2)	(3)	(4)	(5)	(6)
i)	Up to 50	8	3	0	3
ii)	51 to 100	13	4	1	3
iii)	101 to 150	20	5	2	4
iv)	105 to 300	32	8	3	5
v)	301 to 500	50	12	5	6
vi)	500 and above	80	20	7	8

ANNEX A

(Clause 2)

LIST OF REFERRED INDIAN STANDARDS

<i>IS No.</i>	<i>Title</i>
IS/ISO 105-C10 : 2006	Textiles – Tests for colour fastness Part C10 Colour fastness to washing with soap or soap and soda (<i>Second Revision</i>)
IS 1390 : 2022	Textiles Determination of pH of aqueous extract (<i>Third Revision</i>)
IS 1954 : 2024 :	Textiles - Fabrics - Determination of width and length (<i>Third Revision</i>)
IS 1969 (Part 2) : 2018	Textiles – Tensile properties of fabrics – Part 2 Determination of maximum force using the grab method (<i>Fourth Revision</i>)
IS/ISO 105-B02 : 2014	Textiles – Tests for colour fastness – Part B02 Colour fastness to artificial light: Xenon arc fading lamp test

ANNEX B
(Clause 6 and *Table 1*)

DETERMINATION OF MASS

Take a set of 10 pairs of laces from the test sample. Condition of the test sample at (65 ± 2) percent relative humidity and (27 ± 2) °C temperature for 24 h and weigh them to an accuracy of 0.5 g.

ANNEX C
(*Clause 6 and Table 1*)

METHOD FOR DETERMINATION OF PLAITS/2.5 cm

C-1 The test specimen shall be conditioned at (65 ± 2) percent relative humidity and (27 ± 2) °C temperature for 48 h. The laces shall be laid down on a smooth flat measuring surface and the counting shall be carried out in a relaxed condition.

C-2 The plaits shall be counted to the nearest 1/2 plait over a distance of 25 mm. five such determinations shall be made at random on the sample under test and then average taken.

ANNEX D

(Foreword)

COMMITTEE COMPOSITION

Technical Textiles for Clothtech Applications including Narrow Fabrics and Braids Sectional
Committee, TXD 39

Organization

Additional Controller CQA (General Stores), DGQA, Ministry of Defence

ICAR - Central Institute for Research on Cotton Technology, Mumbai

Federation of Indian Chambers of Commerce and Industry

Indian Technical Textile Association, Mumbai

M K U Limited, Kanpur

Motilal Dulichand Pvt Ltd, Kanpur

National Textile Corporation, New Delhi

Ordnance Parachute Factory, Kanpur

Office of Textiles Commissioner, Mumbai

SGS Limited, Gurugram

S L Banthia Textiles Industries Pvt Ltd

Shipra International, Kanpur

Sky Industries Ltd, Navi Mumbai

Synthetic and Art Silk Mills Research Association, Mumbai

Thanawala & Co., Mumbai

The Bombay Textile Research, Association, Mumbai

U P Textile Technological Institute, Kanpur

Universal Yarn & Tex Pvt Ltd, Kanpur

BIS Directorate General

Representative(s)

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DR P JAGAJANANTHA
DR T SENTHILKUMAR (*Alternate*)

SHRI ANU HANDA

DR ANUP RAKSHIT
SHRI VIKRAM JAIN (*Alternate*)

SHRI SUMIT KHANDELWAL
SHRI RAJIB PAL (*Alternate*)

SHRI SHAILENDRA NATH MISRA
SHRI SUDHIR SHIVHARE (*Alternate*)

SHRI R K YADAV

SHRI V M BAGADE,
SHRI S KONDAIAH (*Alternate*)

Shri V K kohali
Shri Humayun K

MS ANITHA JEYARAJ
SHRI GAURAV SARASWAT (*Alternate*)

SHRI SANTOSH KUMAR BANTHIA

SHRI ABHISHEK KUMAR AGRAWAL

SHRI KAPIL MEHROTRA
SHRI MICHAEL (*Alternate*)

SHRI SANJAY SAINI
SHRI PREMNATH SURWASE (*Alternate*)

SHRI HEMAL THANAWALA
SHRI VIVAN THANAWALA (*Alternate*)

SHRI SHAIKH RIYAZ AHMED
DR PRASANTA KUMAR PANDA (*Alternate*)

DR PRASHANT VISHNOI

SHRI RAJIV K BHARTIYA

SHRI J. K. GUPTA, SCIENTIST 'E'/DIRECTOR and Head (Textiles)
[Representing Director General (*Ex-officio*)]

Member Secretary

SHRI TANISHQ AWASTHI
SCIENTIST 'B'/ASISTANT DIRECTOR
(Textiles), BIS