भारतीय मानक

Indian Standard

IS 8085 (Part 22) : 2024
ISO 10750 : 2015

फुटवियर की परीक्षण पद्धतियाँ
भाग 22 अंत स्टॉप की अनुलग्नक शक्ति

Methods of Test for Footwear
Part 22 Attachment Strength of end Stops

ICS 61.060

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May 2024 **Price Group 7**

Footwear Sectional Committee, CHD 19

NATIONAL FOREWORD

This Indian Standard (Part 22) which is identical to ISO 10750 : 2015 ‘Footwear — Test method for slide fasteners — Attachment strength of end stops’ issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Footwear Sectional Committee and approval of the Chemical Division Council.

This Indian Standard published as a part of IS 8085 under the general title ‘Methods of test for footwear’. This part is an adoption of ISO 10750 : 2015 which describes a method intended to determine the attachment strength of the top and bottom stops of a slide fastener. The method is applicable to all types of slide fastener for footwear.

This Indian Standard is published in several parts. The other parts in this series are:

Part 1 Dimensions, fitting, adhesion test, peel test, heat resistance test and ageing test

Part 2 Footwear performance test, stiffness test for shanks, lastometer test for cracking of uppers; and performance test for upper fabrics, coated fabrics, sock lining and other lining materials

Part 3 Upper sole adhesion

Part 4 Resistance to crack initiation and growth — Belt flex method

Part 5 Longitudinal stiffness of shanks

Part 6 Abrasion resistance of uppers, linings and insocks

Part 7 Deformability of upper

Part 8 Delamination resistance of uppers

Part 9 Tear strength of uppers linings and insocks

Part 10 Heel attachment for whole shoe

Part 11 Attachment strength of straps, trims and accessories

Part 12 Tensile performance of elastic materials

Part 13 Seam strength for uppers, lining and insocks

Part 14 Water vapour permeability and absorption for uppers and lining

Part 15 Washability in a domestic washing machine for whole shoe

Part 16 Flexing durability for whole shoe

Part 17 Abrasion resistance for accessories shoe laces

Part 18 Peel strength before and after repeated closing for accessories touch

Part 19 Shear strength before and after repeated closing for accessories touch and close fasteners

Part 20 Flex Resistance for uppers and lining

Part 21 Strength of slide fastener pullers

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Indian Standard

METHODS OF TEST FOR FOOTWEAR

PART 22 ATTACHMENT STRENGTH OF END STOPS

1 Scope

This International Standard describes a method intended to determine the attachment strength of the top and bottom stops of a slide fastener. The method is applicable to all types of slide fastener for footwear.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7500-1, *Metallic materials — Tensile testing — Part 2: Verification of the force measuring system of the tensile testing machines*

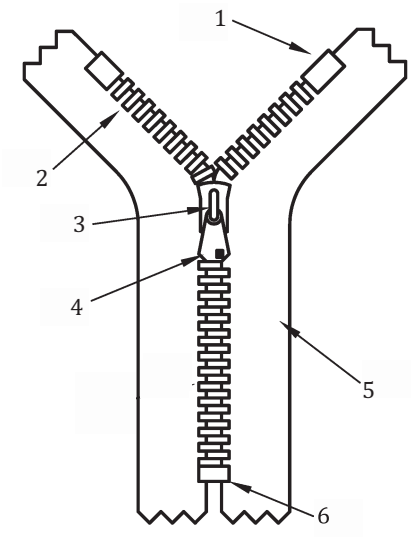
ISO 18454, *Footwear — Standard atmospheres for conditioning and testing of footwear and components for footwear*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 19952 and the following apply.

3.1
slide fastener
means of securing two flexible materials consisting of interlockable teeth, each attached to one of the opposing edges of two tapes, and movable slider that spans the interlocking teeth which when moved in one direction causes the teeth of one tape to interlock with the teeth of the other tape and when the slider is moved in the opposite direction causes the teeth to disengage

Note 1 to entry: See Figure 1.



Key

1 top stop
2 slider
3 tape
4 teeth
5 puller
6 bottom stop

Figure 1 — Slide fastener

3.2
tape
fabric panels to support other teeth of the slide fastener

3.3
slider
means of drawing the two interlocking teeth together or apart as it traverses the length of the teeth

3.4
puller
piece of plastic or metal attached to the slider as a means of manual grip for the user to operate

3.5
teeth
individual component of the slide fastener or continuous plastic spiral which interlocks with an opposing element

3.6
end stop/top stop
terminal components of the teeth to prevent the slider from disengaging from the teeth and tape

3.7
stringer
textile tape with an attached row of teeth designed to interact with a row attached to another tape

4 Principle

4.1 General

This International Standard describes the following methods.

4.2 Method 1 — Top stop attachment strength

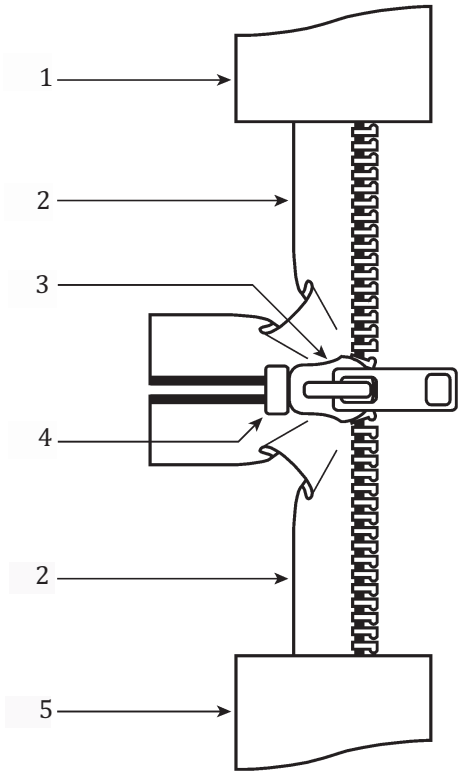
The slider of a closed fastener is clamped in one jaw of a tensile testing machine and the bottom end of the fastener is clamped in the other jaw. The jaws are then moved apart and the force required to pull the top stops off the fastener is measured.

4.3 Method 2 — Bottom stop attachment strength (Slider-stringer method)

The slider of an open fastener is clamped in one jaw of a tensile testing machine and the two free stringer ends are clamped in the other jaw. The jaws are then moved apart and the force required to pull the bottom stops off the fastener is measured.

4.4 Method 3 — Bottom stop attachment strength (Stringer-stringer method)

The free stringer ends of an open fastener are fitted into the two jaws of a tensile testing machine. The jaws are then moved apart and the force required to pull the bottom stop off is measured.



Key

1 upper clamp
2 stringer
3 slider body
4 bottom stop
5 lower clamp

Figure 2 — Zip closed end test (Method 3)

5 Apparatus and materials

5.1 A tensile testing machine with the following.

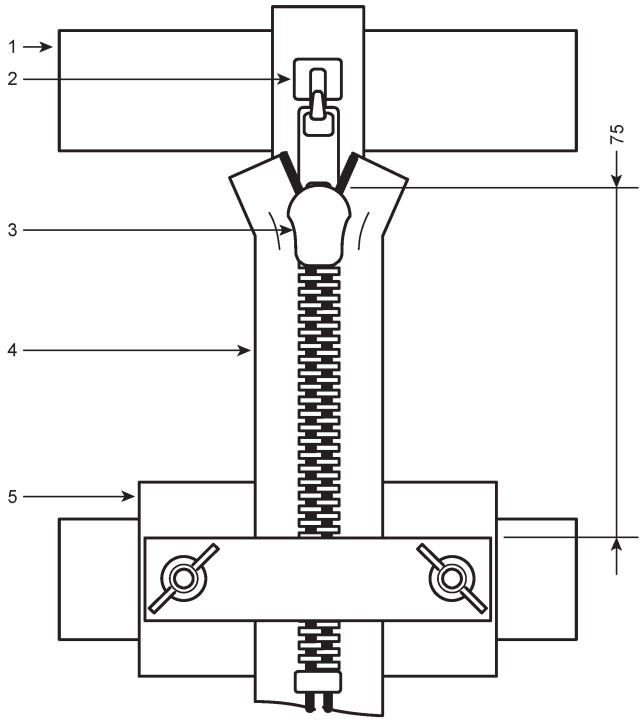
5.1.1 A jaw separation rate of (100 ± 10) mm/min.

5.1.2 The capability of measuring forces up to 1 kN to an accuracy of 2 % as specified by Class 2 in ISO 7500-1.

5.1.3 The facility to record either the maximum force obtained during the test, or the force throughout the test.

5.2 For method 1 and method 2, a small hook attachment which will fit into the upper jaw of the tensile testing machine (5.1). The thickness of the hook should be small enough to fit through the hole in the puller of the test fasteners. A hook made from wire of diameter (1,6 ± 0,2) mm is suitable. The arrangements of these two tests are illustrated in Figure 2 and Figure 3.

Dimensions in millimetres

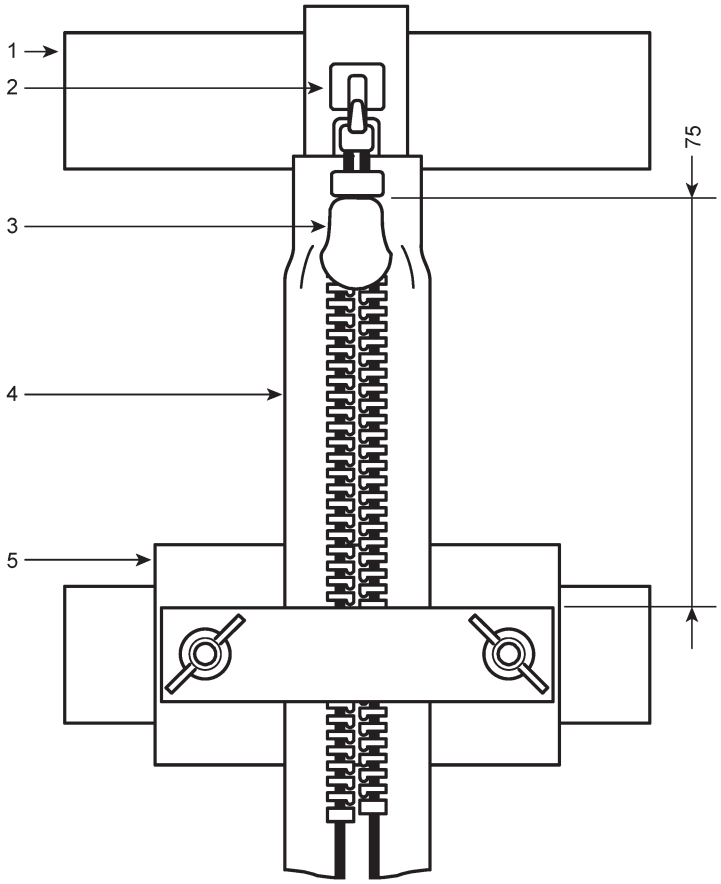


Key

1 upper clamp of testing machine
2 small hook
3 slider puller
4 stringer
5 lower clamp

Figure 3 — Clamping arrangement for Method 1

Dimensions in millimetres



Key

1 upper clamp of testing machine
2 small hook
3 slider puller
4 stringer
5 lower clamp

Figure 4 — Clamping arrangement for Method 2

6 Test specimens

Three fasteners are required for each of the tests. Condition the test specimens according to ISO 18454 for 24 h before testing and carry out the test in this environment.

7 Procedure

Three versions of the test method can be used.

7.1 Method 1 — Top stop attachment strength

7.1.1 Fit the hook attachment (5.2) into the upper jaw of the tensile testing machine (5.1) and zero the force measurement system (5.1.2).

7.1.2 Close a test fastener so that the slider is against the top stops.

7.1.3 Thread the hook attachment (5.2) though the hole in the puller of the closed fastener.

7.1.4 Clamp the main body of the fastener in the lower jaw of the tensile testing machine. If possible, the fastener should be clamped at a point approximately 75 mm below the slider. Surplus stringer may be cut away if necessary.

7.1.5 Turn on the recording system (5.1.3) of the tensile testing machine.

7.1.6 Operate the tensile testing machine so that the jaws separate at a rate of (100 ± 10) mm/min until the fastener fails.

7.1.7 Record the maximum force obtained, in Newtons, and the type of failure of the fastener such as: end stop pulled off, puller detached, puller broken.

7.1.8 Repeat the procedure in 7.1.2 to 7.1.7 on the two remaining slide fasteners.

7.1.9 Calculate the arithmetic mean of the three maximum forces recorded in 71.7.

7.2 Method 2 — Bottom stop attachment strength (Stringer-slider method)

7.2.1 Fit the hook attachment (5.2) into the upper jaw of the tensile testing machine (5.1) and zero the force measurement system (5.1.2).

7.2.2 Open a test fastener so that the slider is against the bottom stop. If the slider is fitted with a locking mechanism, it should be jammed in the off position so that the slider will move freely.

7.2.3 Thread the hook attachment (5.2) through the hole in the puller of the open fastener.

7.2.4 Clamp the two free ends of the stringers in the lower jaw of the tensile testing machine. If possible, the stringers should be clamped at a point approximately 75 mm from the slider. Surplus stringer may be cut away if necessary.

7.2.5 Follow the procedure in 7.1.5 to 7.1.7.

7.2.6 Repeat the procedure in 7.2.2 to 7.2.5 on the two remaining slide fasteners.

7.2.7 Calculate the arithmetic mean of the three maximum forces recorded in 7.1.7.

7.3 Method 3 — Bottom stop attachment strength (Stringer-stringer method)

7.3.1 Open a test fastener so that the slider is against the bottom stop. If the slider is fitted with a locking mechanism, it should be jammed in the off position so that the slider will move freely.

7.3.2 Clamp one of the free ends of the stringer into each of the jaws of the tensile testing machine. If possible, leave approximately 100 mm of each stringer between the jaws and the slider. Surplus stringer may be cut away if necessary.

7.3.3 Follow the procedure in 7.1.5 to 7.1.7.

7.3.4 Repeat the procedure in 7.3.1 to 7.3.3 on the two remaining slide fasteners.

7.3.5 Calculate the arithmetic mean of the three maximum forces recorded in 7.1.7.

8 Test report

The test report shall include the following information:

a) reference to this International Standard (i.e. ISO 10750);

b) full description of the samples tested;

c) date of testing;

d) the version of the test used: method 1, method 2, or method 3;

e) the arithmetic mean of the maximum forces and the type(s) of failure;

f) any deviations from this test method.

Bibliography

[1] ISO 17709, *Footwear — Sampling location, preparation and duration of conditioning of samples and test pieces*

(Continued from second cover)

Part 23 Resistance to repeated opening and closing
Part 24 Lateral Strength for slide fasteners
Part 25 Slip resistance
Part 26 Tensile strength and elongation for uppers
Part 27 Flex resistance of outsoles
Part 28 Top piece retention strength heels and top pieces

The text of ISO standard has been approved as suitable for publication as an Indian Standard without deviations.Certain conventions and terminologies are, however, not identical to those used in Indian Standards. Attention isparticularly drawn to the following:

a) Wherever the words `International Standard' appear referring to this standard, they should be read as `IndianStandard'; and

b) Comma (,) has been used as a decimal marker in the International Standard, while in Indian Standards, thecurrent practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed belowalong with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 7500-1 Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system	IS 1828 (Part 1) : 2022/ ISO 7500-1 : 2018 Metallic materials — Calibration and verification of static uniaxial testing machines: Part 1 Tension/ compression testing machines — Calibration and verification of the force-Measuring system (fifth revision)	Identical

The Committee has reviewed the provisions of the following International Standards referred in this adopted standard and has decided that they are acceptable for use in conjunction with this standard.

International Standard	*Title*
ISO 18454	Footwear — Standard atmospheres for conditioning and testing of footwear and components for footwear

In this adopted standard, reference appears to certain International Standards where the standard atmospheric conditions to be observed are stipulated which are not applicable to tropical/subtropical countries. The applicablestandard atmospheric conditions for Indian conditions are (27 ± 2) °C and (65 ± 5) percent, relative humidity andshall be observed while using this standard.

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 2022 'Rules for rounding off numericalvalues (*second revision*)'

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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

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