

---

---

**Footwear — Test method for slide  
fasteners — Strength of slide  
fastener pullers**

*Chaussures — Méthodes d'essai des fermetures à glissière —  
Résistance des tirettes des fermetures à glissière*

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO 10734:2016](https://standards.iteh.ai/catalog/standards/sist/a9a2f13a-f026-44d7-94ac-0c2abb794f1c/iso-10734-2016)

[https://standards.iteh.ai/catalog/standards/sist/a9a2f13a-f026-44d7-94ac-  
0c2abb794f1c/iso-10734-2016](https://standards.iteh.ai/catalog/standards/sist/a9a2f13a-f026-44d7-94ac-0c2abb794f1c/iso-10734-2016)



**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 10734:2016

<https://standards.iteh.ai/catalog/standards/sist/a9a2f13a-f026-44d7-94ac-0c2abb794f1c/iso-10734-2016>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
[copyright@iso.org](mailto:copyright@iso.org)  
[www.iso.org](http://www.iso.org)

# Contents

	Page
<b>Foreword</b> .....	<b>iv</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Principle</b> .....	<b>3</b>
<b>5 Apparatus and materials</b> .....	<b>3</b>
5.1 Method 1 — Tension .....	3
5.2 Method 2 — Torsion .....	3
5.3 Minimum number of fasteners required .....	3
<b>6 Procedure</b> .....	<b>4</b>
6.1 Conditioning .....	4
6.2 Method 1 — Tension .....	4
6.3 Method 2 — Torsion .....	5
<b>7 Test report</b> .....	<b>6</b>

## iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO 10734:2016

<https://standards.iteh.ai/catalog/standards/sist/a9a2f13a-f026-44d7-94ac-0c2abb794ffc/iso-10734-2016>

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

ISO 10734 was prepared by the European Committee Standardization (CEN) Technical Committee CEN/TC 309, *Footwear*, in collaboration with ISO Technical Committee TC 216, *Footwear*, in accordance with the agreement on technical cooperation between ISO and CEN (Vienna Agreement).

<https://standards.iteh.ai/catalog/standards/sist/a9a2f13a-f026-44d7-94ac-0c2abb794f1c/iso-10734-2016>

# Footwear — Test method for slide fasteners — Strength of slide fastener pullers

## 1 Scope

This International Standard specifies a test method intended to assess the strength of slide fastener pullers for footwear. The method is applicable to all types of footwear slide fastener.

## 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 — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system*

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

ISO 19952, *Footwear — Vocabulary*

## 3 Terms and definitions

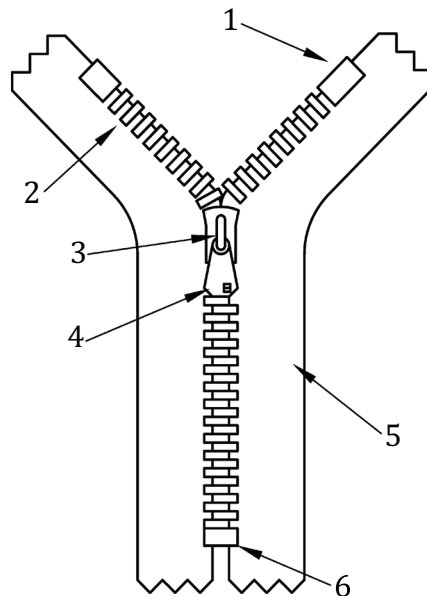
For the purposes of this document, the terms and definitions given in ISO 19952 and the following apply.

### 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* (3.2) and movable slider that spans the interlocking teeth which when moved in one direction causes the *teeth* (3.5) of one tape to interlock with the teeth of the other tape

Note 1 to entry: When the *slider* (3.3) is moved in the opposite direction, it causes the teeth to disengage (see Figure 1).



#### Key

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

**Figure 1 — Slide fastener**  
(standards.iteh.ai)

#### 3.2

##### tape

fabric panels to support other *teeth* (3.5) of the *slide fastener* (3.1)  
<https://standards.iteh.ai/catalog/standards/sist/a9a2f13a-f026-44d7-94ac-000000000000/iso-10734-2016>

#### 3.3

##### slider

means of drawing the two interlocking teeth together or apart as it traverses the length of the *teeth* (3.5)

#### 3.4

##### puller

piece of plastic or metal attached to the *slider* (3.3) as a means of manual grip for the user to operate

#### 3.5

##### teeth

individual component of the *slide fastener* (3.1) or continuous plastic spiral which interlocks with an opposing element

#### 3.6

##### end stop

##### top stop

terminal components of the *teeth* (3.5) to prevent the *slider* (3.3) from disengaging from the teeth and *tape* (3.2)

#### 3.7

##### stringer

textile tape with an attached row of *teeth* (3.5) designed to interact with a row attached to another *tape* (3.2)

## 4 Principle

The slider and puller of a test fastener are clamped so that the puller is perpendicular to the slider body. This International Standard describes the following methods:

Method 1: Tension — The force required to pull the puller from the slider in a direction parallel to the longitudinal centre line of the puller is measured;

Method 2: Torsion — The torque required to twist the puller from the slider about the longitudinal centre line of the puller is measured.

## 5 Apparatus and materials

### 5.1 Method 1 — Tension

A **tensile testing machine** with the following characteristics shall be used.

**5.1.1** A jaw separation rate of  $(100 \pm 10)$  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** A means of recording either the force at all times during the test or the maximum force.

**5.1.4** A jig, in one jaw, for holding the test fastener slider. A flat plate of thickness at least 1 mm, which fits between the slider and the puller and has a tapered slot to engage the slider body, is suitable. An arm attached to the plate is clamped into the jaw [see [Figure 2 a](#)].

**5.1.5** A device, fixed in the other jaw, for clamping the puller of the test fastener. A small rigid hook is suitable for pullers with a hole.

### 5.2 Method 2 — Torsion

A **test device** [see [Figure 2 b](#)] with the following characteristics shall be used.

**5.2.1** A pair of clamps, one capable of holding the test fastener slider and the other capable of gripping the puller so that it is perpendicular to the slider.

**5.2.2** A method of rotating the two clamps ([5.2.1](#)) relative to one another at a rate of  $(9 \pm 3)$  degree per second ( $^{\circ}/s$ ).

**5.2.3** The capability of measuring the torque between the two clamps to the nearest 0,5 Nm.

**5.2.4** Protractor capable of measuring angles of twist to the nearest  $1^{\circ}$ .

### 5.3 Minimum number of fasteners required

The minimum number of fasteners required for each version of the test are the following:

- Method 1 – Three;
- Method 2 – Six.

## 6 Procedure

### 6.1 Conditioning

The samples should be conditioned for at least 24 h according to ISO 18454 before the test is carried out and the test should be carried out in this environment.

### 6.2 Method 1 — Tension

**6.2.1** Remove the slider from the stringers of the test fastener. Clamp the main body of the slider in the jig (5.1.4) so that it is at 90° to the axis of the tensile testing machine (5.1).

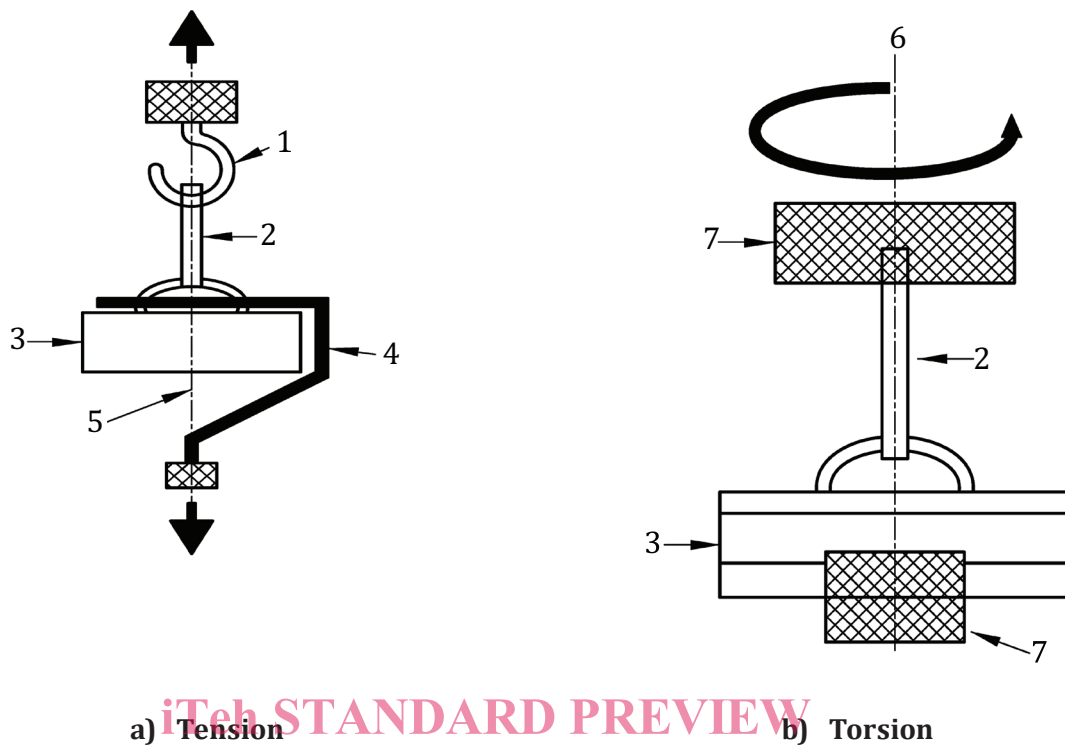
**6.2.2** Attach the puller of the test fastener to the device (5.1.5) so that it is parallel to the axis of the tensile testing machine (5.1). Try to grip the puller in such a way that the device (5.1.5) will not cause an unnatural failure of the puller during the test. For example, if using a hook with a two hole puller which looks weak around its top hole, insert the hook through the bottom hole in the puller where it is fixed to the slider body.

**6.2.3** Operate the tensile testing machine with a jaw separation rate of  $(100 \pm 10)$  mm/min until either the puller breaks or pulls off the slider.

**6.2.4** Record the maximum force obtained in newtons to the nearest 5 N and the type of failure such as the following:

- slider broke at the point of attachment to the puller;
- puller broke at the point of attachment to the slider;
- slider broke at a point away from the attachment to the puller;
- puller broke at a point away from the attachment to the slider.



**Key**

- 1 hook (5.1.5)
- 2 puller
- 3 slider
- 4 plate (5.1.4)

5 axis of tensile tester

6 axis of rotation

7 clamp (5.2.1)

ISO 10734:2016  
<https://standards.iteh.ai/catalog/standards/sist/a9a2f13a-f026-44d7-94ac-0c2abb794f1c/iso-10734-2016>

**Figure 2 — Test device**

**6.2.5** If the puller failed at the point of contact with the device (5.1.5), or it appears that the device contributed to the failure, then ignore this result and repeat the test with a fresh fastener.

**6.2.6** Repeat the procedure in 6.2.1 to 6.2.5 with the other two test fasteners.

**6.2.7** Calculate the arithmetic mean of the three maximum forces (6.2.4).

**6.3 Method 2 — Torsion**

**6.3.1** Remove the slider from the stringers of the test fastener. Clamp the slider in one of the clamps (5.2.1) and the puller in the other, so that the puller is perpendicular to the slider and the longitudinal centre line of the puller is aligned with the axis of rotation between the two clamps [see Figure 2 b)].

**6.3.2** Operate the testing device (5.2) so that the two jaws rotate relative to each other in a clockwise direction, when looking from the puller side of the slider, at a rate of  $(9 \pm 3)$  degree per second ( $^{\circ}/s$ ) until either

— the puller breaks or twists off the slider, or