
Zippers — Specification

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Foreword

This Ethiopian Standard has been prepared under the direction of Technical Committee for Made-up-Textiles & Ready-Made Garments (TC 72) and published by the Ethiopian Standards Agency (ESA).

In preparing this Ethiopian Standard reference has been made to the EAS 223 : 2010 *Zippers — Specification ; published by East African community (EAC)*

Acknowledgement is made to the EAC (East African community) for the use of the said publication in preparing the standard.

Zippers — Specification

1 Scope

This Ethiopian Standard specifies performance requirements for zippers made from interlocking components mounted on textile tapes.

2 Application

This standard applies to all types of zippers except those designed for aeronautical purposes, those intended to be exposed to corrosive influences and zippers of complicated structure such as three-way and double-pull as used in tents.

3 Definitions

For the purpose of this standard, the definition given below and those in ES 6766 shall apply:

3.1

batch of zippers

a quality of zippers having one design, one performance code and one side

4 Requirements

4.1 Zippers codes

All zippers shall be grouped into five performance codes 1 to 5, 5 being the most stringent as shown in Table 1.

4.2 Code performance requirements

4.2.1 Each zipper shall comply with the respective code performance requirements given in Table 2.

4.2.2 Each test shall be done in accordance with Appendices C to J respectively.

4.3 Colour fastness and dimensional stability

Zippers shall comply with fastness and dimensional change requirements of Table 3.

4.4 Tape

4.4.1 The textile tape used in making zippers shall be free from any manufacturing and dyeing defects.

4.4.2 The tape shall be enough to withstand the force applied during lateral strength test (Annex G).

4.5 Thread

4.5.1 The thread used to secure the continuous monofilament to the tape shall comply to ES 3744

4.5.2 The fibre composition of the thread shall be the same as that of the tape.

4.5.3 The thread shall be strong enough to withstand the force applied to zippers during 'Lateral Strength Test' (Annex G).

4.6 Length measurement

The length of zippers shall be as declared, subject to a tolerance of 1.5 percent or +3 mm, whichever is greater.

4.7 Designation

All parts and materials used in making zippers shall conform to the guidance factor as given in Annex A.

5 Marking

5.1 Permanent mark on the zipper

Each zipper shall be permanently marked with the following information:

- (i) Manufacturer's name and/or trade mark.
- (ii) Zipper's code number.

5.2 Batch Marking —

A batch or several batches of zippers shall have the following information which shall be indicated on the package, the swing ticket or accompanying documents:

- (i) Name and/or trade mark of the manufacturer.
- (ii) All the guidance factors given in Annex A.

6 Packing

Zippers shall be properly packed in a carton (box) or any suitable container to avoid any entanglement during transit and/or unpacking.

Table 1 — End uses and performance codes

Performance code End use	1 (ultra-light)	2 (Light)	3 (Medium)	4 (Medium-heavy)	5 (Heavy)
Dresses					
Knitwear					
Light leather goods					
Skirts, jeans or trousers					
Upholstery					
Foundation garments					
Coats and jackets					
Overalls					
Luggage					
Slippers					
Sleeping bags					
Lightweight and innertents					
Footwear					
Leather garments					
Ski clothes					
Wet suits					
Awnings and frame tents					

Table 2 — Physical performance requirements of zippers

Test description	Performance code					Method of test
	1 2		3	4	5	
Puller attachment, N (Min.)	70	80	200	250	300	Annex C
Closed end test, N (Min.)	35	60	80	100	140	Annex D
Top stop test, N (Min.)	50	70	90	110	130	Annex E
Open end fastener box test, N (Min.) 40	40 7	0	90	120	150	Annex F
Lateral strength test, N (Min.)	150	200	250	370	470	Annex G
Lateral strength of open end, N. (Min.)	40 70		90	120	160	Annex H
Slider locking test N (Min.)	10	15	25	40	60	Annex J

Table 3 — Colour fastness and dimensional stability

Characteristic	Performance level	Method of test
Colour fastness to:	Change in shade and staining: 4 or better	ES ISO105-E01
(a) Washing		
(b) Dry cleaning	Changing in shade and staining: 4 or better	ES ISO 105-D01
Dimensional change (Max.)	Warpway and Weftway: ± 3 per cent	ES ISO 7771
(a) After 3 washings		
(b) After 3 dry -cleanings	Warpway and Weftway: ± 2 per cent.	EAS 236 [3]

Annex A

Guidance factors

The following shall be taken into consideration when specifying zippers.

- (i) The type of zippers as defined in ES 6766
- (ii) The composition of the tape fabric.
- (iii) The type and material of the elements.
- (iv) The length of the zipper.
- (v) The chain width.
- (vi) The tape width.
- (vii) The slider type.
- (viii) The zipper code.

Annex B

Conditioning and testing atmosphere

Zippers shall be conditioned and tested in the standard atmosphere for testing textiles as defined in ES ISO 139

Annex C

Puller attachment

C.1 Principle

The puller is subjected to tension while the slider is rigidly supported.

C.2 Apparatus

The testing machine of the constant-rate-of-traverse type and the opening speed of the jaws at 100 ± 15 mm/min. The load range should be such that the breaking strength of the test specimen falls between 15 percent and 90 percent of the maximum on the scale. A marking device for the slide, such as face-plate or a blanking-off plate, is required so that tension is confined to the puller and its attachment to the slider (Figure 1).

C.3 Procedure

Mount the specimen in one gripping device of the testing machine with the puller through a hole in the mask. Arrange the mask so that the slider and the chain are rigidly clamped in place only the puller being free. Secure the end of the puller to the other gripping device so that the tension is applied at 90° to the face of the slider. Set the testing machine in operation until the specified loading is reached, unless the specimen fails earlier.

C.4 Test report

Record the test results in accordance with 4.2.1.

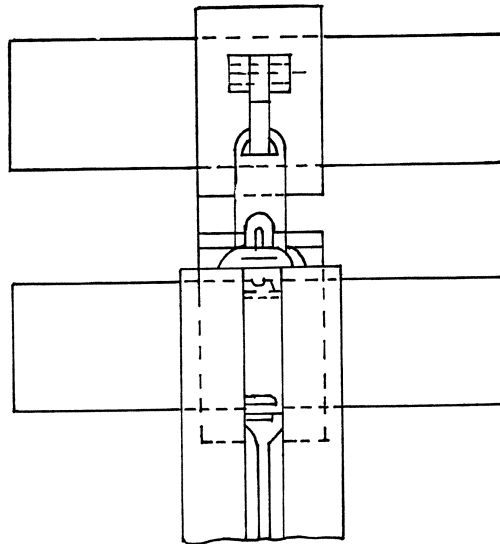


Figure 1 — Puller attachment test

Annex D

Closed-end test

D.1 Principle

The bottom stop is subjected to a force via the slider by tension applied to the stringers.

D.2 The testing machine as described in Annex C is used. Mounting of the specimen is as shown in Figure 2.

D.3 Procedure

The test specimen is in the open position, the slider being adjacent to bottom stop. Ensure that the locking mechanism is released. Grip the stringer in the two jaws approximately 10 cm away from the slider. (This may be achieved by cutting away the surplus stringer). Apply a longitudinal force to the stringers thus loading the slider against the bottom stop. Set the machine in operation until the specified loading is reached, unless the specimen fails earlier.

D.4 Test report

Report as in C.4.

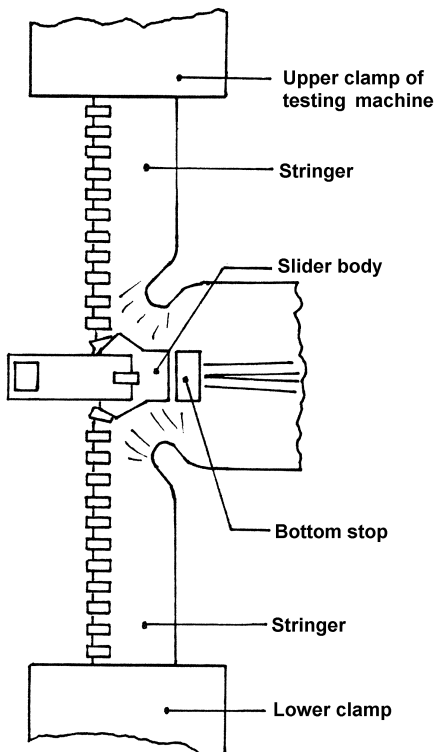


Figure 2 — Closed-end test

Annex E

Top-stop test

E.1 Principle

The top-stop is subjected to a force via the slider applied through the puller.

E.2 Apparatus

The testing machine as described in Annex C is used. Mount the specimen as shown in Figure 3.

E.3 Procedure

The test specimen is in the closed position with the slider adjacent to the top. Secure the puller in one jaw of the machine and the other end of the specimen in the other jaw, steps being taken to avoid damaging the chain. Set the machine in operation until the specified force is reached unless the specimen fails earlier.

E.4 Test report

Report as in C.4.

Dimensions in millimetres

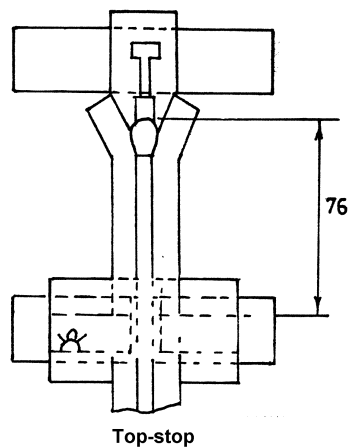


Figure 3 — Top-stop test

Annex F

Open-end fastener box test

F1. Principle

The box is subjected to a longitudinal force while the chain is in the closed position.

F.2 Apparatus

The testing machine described in Annex C is used. Mount the specimen as shown in Figure 4.

F.3 Procedure

With the test specimen in closed position, clamp the interlocked chain into the jaw of the testing machine, steps being taken to avoid damaging the chain. Clamp a slotted plate, shaped to clear the tape, chain and pin and to bear against the whole of the top edges of the box, into the other jaw. Set the machine in operation until the specified force is reached, unless the specimen fails earlier.

F.4 Test report

Report as in C4.

Dimensions in millimetres

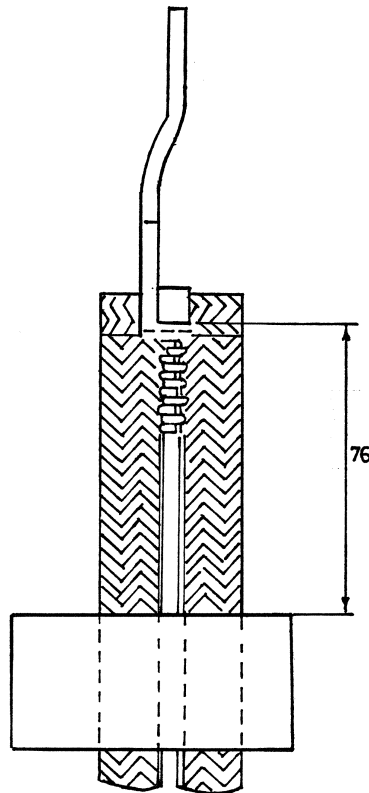


Figure 4 — Open-end fastener box test

Annex G

Lateral strength test

G.1 Principle

The test specimen is subjected to lateral force under controlled conditions while the fastener chain is in the closed position.

G.2 Apparatus

The testing machine as described in Annex C is used. The gripping surface 25.4 mm wide are used. The jaws shall be so constructed and finished so as not to damage the tape, and not to allow slippage of the specimen. (See Figure 5).

G.3 Procedure

Secure the test specimen in place with the gripping devices so arranged that at least the width of each tape is gripped and there is at least 25.4 mm of closed chain on each side. Set the machine in operation until the specified force is reached, unless the specimen fails earlier.

G.4 Test report

Report as in C.4.

Dimensions in millimetres

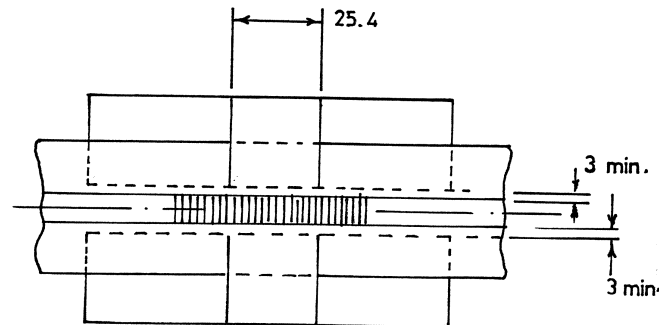


Figure 5 — Lateral strength test

Annex H

Lateral strength of open-end attachment test

H.1 Principle

The test specimen is subjected to straight lateral loading under controlled conditions while the fastener chain is in closed position.

H.2 Apparatus

The testing machine as described in Annex C is used. The gripping jaws shall be 6 mm wide for testing zippers for performance codes 1 and 2, and 12 mm for codes 3, 4 and 5. The jaws shall be so constructed and finished as not to damage the tape or allow slippage during the test, (See Figure 6).

H.3 Procedure

Secure the test specimen in place with the gripping jaws set approximately 3 mm from the sides of the box, and with one edge of each jaw aligned with the ends of tapes. Set the machine in operation until the specified load is reached, unless the specimen fails earlier.

H.4 Test report

Report as in C.4.

Dimensions in millimetres

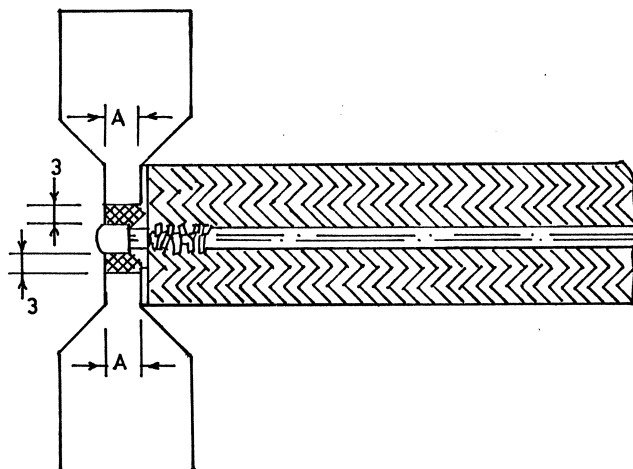


Figure 6 — Lateral strength of open-end attachment

Annex J

Slider locking test

J.1 Principle

The slider is locked on the chain and the locking device subjected to tension, the load being applied at 180° to the device, via the chain stringers in such a way as to bring the locking device under pressure from the chain.

J.2 Apparatus

The test machine as described in Annex B is used. Mounting of the specimen is as shown in Figure 7.

J.3 Procedure

The test specimen is in the open position with the locking device locked into the chain 25 mm from the top-stops. Set the jaws 50 mm apart and secure the top of the stringer into the jaws adjacent to the top so that the top of the slider is 25 mm from the edge of each jaw. Set the machine in motion and increase the load until the locking mechanism slips or the specimen fails.

J.4 Test report

Report as in C.4.

Dimensions in millimetres

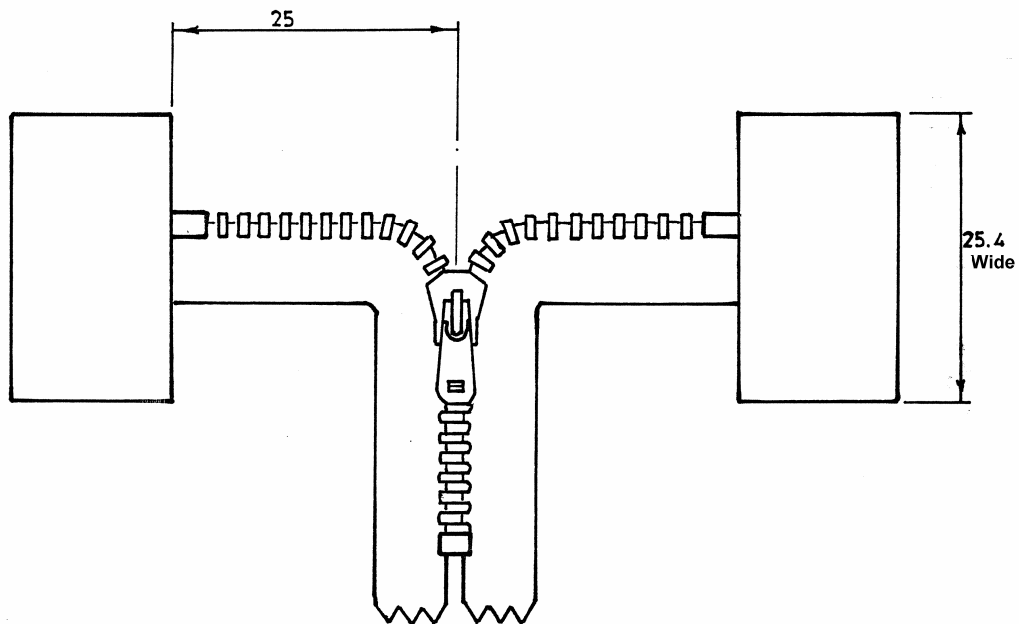


Figure 7 — Slider locking test

Organization and Objectives

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ESA's objectives are:-

- ❖ Develop Ethiopian standards and establish a system that enable to check whether goods and services are in compliance with the required standards,
- ❖ Facilitate the country's technology transfer through the use of standards,
- ❖ Develop national standards for local products and services so as to make them competitive in the international market.

Ethiopian Standards

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