TECHNICAL REPORT

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Footwear — Performance requirements for components for footwear — Heels and top pieces

Chaussures — Exigences de performance pour les composants des chaussures — Talons et bonbouts

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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.

ISO/TR 20573 was prepared by Technical Committee ISO/TC 216, *Footwear*.

Footwear — Performance requirements for components for footwear — Heels and top pieces

1 Scope

This Technical Report establishes the performance requirements for heel and top piece components for footwear (not for finished footwear), irrespective of the material, in order to assess the suitability for the end use and/or fitness for purpose.

It also establishes the test methods used to evaluate the compliance with the requirements.

This Technical Report applies to heel and top piece for all kind of footwear as defined in Clause 3.

This Technical Report is intended to be used as a reference between the manufacturer and the supplier. It is not intended for third party certification of finished footwear intended for the consumer.

2 Normative references

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

ISO 31-0, *Quantities and units — Part 0: General Principles*

EN 12770, *Footwear — Test methods for outsoles — Abrasion resistance*

EN 13287, *Personal protective equipment — Footwear — Test method for slip resistance*

EN 13400, *Footwear. Sampling location, preparation and duration of conditioning of samples and test pieces*

EN/ISO 19952, *Footwear — Vocabulary*

EN/ISO 19953, *Footwear — Test methods for heels — Resistance to lateral impact*

EN/ISO 19956, *Footwear — Test methods for heels — Fatigue resistance*

EN/ISO 19957, *Footwear — Test methods for heels — Heel pin holding strength*

EN/ISO 19958, *Footwear — Test methods for heels and top pieces — Top piece retention strength*

3 Terms and definitions

For the purposes of this document, the terms and definitions in EN/ISO 19952 apply.

4 Requirements

4.1 General

This Technical Report establishes two different types of performance requirement.

The essential requirements shall all be taken into account. The additional ones can be additionally agreed upon by the component supplier and the footwear manufacturer as indicated in 4.2 to 4.10.

The results of each single analytical determination, as well as the average values, shall be rounded off in accordance with ISO 31-0.

When taken from finished footwear, samples shall be prepared in accordance with EN 13400.

4.2 Performance requirements for heel and top piece components for general purpose sports and leisure footwear

4.2.1 Essential requirements for heel

Test method	Property	Requirement
EN/ISO 19957	Heel pin holding strength	$\geqslant$ 80 N/mm
EN 13287	Slip resistance	$\geqslant$ 0,30 (flat slip) $\geqslant$ 0,28 (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)

4.2.2 Essential requirements for top pieces

Test method	Property	Requirement	
EN 12770	Abrasion resistance	Density (d) $\geqslant$ 0,9 g/cm^3 d < 0,9 g/cm^3	$\leqslant$ 150 mm^3 $\leqslant$ 120 mg
EN/ISO 19958	Top piece retention strength	$\geqslant$ 150 N Testing shall be carried out with the appropriate spike fitting	
EN 13287	Slip resistance	$\geqslant$ 0,30 (flat slip) $\geqslant$ 0,28 (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)	

4.2.3 Additional requirements for heels[1)]

Subclause	Test method	Property	Requirement
4.2.3.1	EN/ISO 19956	Fatigue resistance	$\geqslant$ 14 000 blows
4.2.3.2	EN/ISO 19953	Resistance to lateral impact	$\geqslant$ 5 J

4.3 Performance requirements for heel and top piece components for school footwear

4.3.1 Essential requirements for heel

Test method	Property	Requirement
EN/ISO 19957	Heel pin holding strength	$\geqslant$ 70 N/mm
EN 13287	Slip resistance	$\geqslant$ 0,30 (flat slip) $\geqslant$ 0,28 (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)

4.3.2 Essential requirements for top pieces

Test method	Property	Requirement	
EN 12770	Abrasion resistance	$d \geqslant$ 0,9 g/cm^3 $d <$ 0,9 g/cm^3	$\leqslant$ 200 mm^3 $\leqslant$ 150 mg
EN/ISO 19958	Top piece retention strength	$\geqslant$ 140 N Testing shall be carried out with the appropriate spike fitting	
EN 13287	Slip resistance	$\geqslant$ 0,30 (flat slip) $\geqslant$ 0,28 (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)	

1) These characteristics are essential if the widest part of the heel is less than 30 mm.

4.4 Performance requirements for heel and top piece components for casual footwear

4.4.1 Essential requirements for heel

Test method	Property	Requirement
EN/ISO 19957	Heel pin holding strength	$\geqslant$ 80 N/mm
EN 13287	Slip resistance	$\geqslant$ 0,30 (flat slip) $\geqslant$ 0,28 (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)

4.4.2 Essential requirements for top pieces

Test method	Property	Requirement	
EN 12770	Abrasion resistance	$d \geqslant$ 0,9 g/cm^3 $d <$ 0,9 g/cm^3	$\leqslant$ 150 mm^3 $\leqslant$ 120 mg
EN/ISO 19958	Top piece retention strength	$\geqslant$ 150 N Testing shall be carried out with the appropriate spike fitting	
EN 13287	Slip resistance	$\geqslant$ 0,30 (flat slip) $\geqslant$ 0,28 (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)	

4.4.3 Additional requirements for heels[1)]

Subclause	Test method	Property	Requirement
4.4.3.1	EN/ISO 19956	Fatigue resistance	$\geqslant$ 14 000 blows
4.4.3.2	EN/ISO 19953	Resistance to lateral impact	$\geqslant$ 5 J

4.5 Performance requirements for heel and top piece components for men's town footwear

4.5.1 Essential requirements for heel

Test method	Property	Requirement
EN/ISO 19957	Heel pin holding strength	$\geqslant$ 80 N/mm
EN 13287	Slip resistance	$\geqslant$ 0,30 (flat slip) $\geqslant$ 0,28 (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)

4.5.2 Essential requirements for top pieces

Test method	Property	Requirement	
EN 12770	Abrasion resistance	$d \geqslant 0{,}9$ g/cm^3 $d < 0{,}9$ g/cm^3	$\leqslant 200$ mm^3 $\leqslant 150$ mg
EN/ISO 19958	Top piece retention strength	$\geqslant 140$ N Testing shall be carried out with the appropriate spike fitting	
EN 13287	Slip resistance	$\geqslant 0{,}30$ (flat slip) $\geqslant 0{,}28$ (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)	

4.5.3 Additional requirements for heels[1)]

Subclause	Test method	Property	Requirement
4.5.3.1	EN/ISO 19956	Fatigue resistance	$\geqslant 15\,000$ blows
4.5.3.2	EN/ISO 19953	Resistance to lateral impact	$\geqslant 5$ J

4.6 Performance requirements for heel and top piece components for cold weather footwear

4.6.1 Essential requirements for heel

Test method	Property	Requirement
EN/ISO 19957	Heel pin holding strength	$\geqslant 80$ N/mm
EN 13287	Slip resistance	$\geqslant 0{,}30$ (flat slip) $\geqslant 0{,}28$ (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)

4.6.2 Essential requirements for top pieces

Test method	Property	Requirement	
EN 12770	Abrasion resistance	$d \geqslant 0{,}9$ g/cm^3 $d < 0{,}9$ g/cm^3	$\leqslant 200$ mm^3 $\leqslant 150$ mg
EN/ISO 19958	Top piece retention strength	$\geqslant 140$ N Testing shall be carried out with the appropriate spike fitting	
EN 13287	Slip resistance	$\geqslant 0{,}30$ (flat slip) $\geqslant 0{,}28$ (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)	

4.6.3 Additional requirements for heels[1)]

Subclause	Test method	Property	Requirement
4.5.3.1	EN/ISO 19956	Fatigue resistance	$\geqslant 15\,000$ blows
4.5.3.2	EN/ISO 19953	Resistance to lateral impact	$\geqslant 5$ J

4.7 Performance requirements for heels and top pieces components for women's town footwear

4.7.1 Essential requirements for heel

Test method	Property	Requirement
EN/ISO 19957	Heel pin holding strength	$\geqslant 80$ N/mm
EN 13287	Slip resistance	$\geqslant 0{,}30$ (flat slip) $\geqslant 0{,}28$ (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)

4.7.2 Essential requirements for top pieces

Test method	Property	Requirement	
EN 12770	Abrasion resistance	$d \geqslant 0{,}9$ g/cm^3 $d < 0{,}9$ g/cm^3	$\leqslant 250$ mm^3 $\leqslant 170$ mg
EN/ISO 19958	Top piece retention strength	$\geqslant 120$ N Testing shall be carried out with the appropriate spike fitting	
EN 13287	Slip resistance	$\geqslant 0{,}30$ (flat slip) $\geqslant 0{,}28$ (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)	

4.7.3 Additional requirements for heels[1)]

Subclause	Test method	Property	Requirement
4.7.3.1	EN/ISO 19956	Fatigue resistance	$\geqslant 14\,000$ blows
4.7.3.2	EN/ISO 19953	Resistance to lateral impact	$\geqslant 5$ J

4.8 Performance requirements for heel and top piece components for fashion footwear

4.8.1 Essential requirements for heel

Test method	Property	Requirement
EN/ISO 19957	Heel pin holding strength	$\geqslant 80$ N/mm
EN 13287	Slip resistance	$\geqslant 0{,}30$ (flat slip) $\geqslant 0{,}28$ (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)

4.8.2 Essential requirements for top pieces

Test method	Property	Requirement	
EN 12770	Abrasion resistance	$d \geqslant 0{,}9$ g/cm^3 $d < 0{,}9$ g/cm^3	$\leqslant 300$ mm^3 $\leqslant 250$ mg
EN/ISO 19958	Top piece retention strength	$\geqslant 120$ N Testing shall be carried out with the appropriate spike fitting	
EN 13287	Slip resistance	$\geqslant 0{,}30$ (flat slip) $\geqslant 0{,}28$ (heel slip) In both cases testing shall be carried out using ceramic tiles (floor), water and detergent (lubricant)	

4.8.3 Additional requirements for heels[1)]

Subclause	Test method	Property	Requirement
4.7.3.1	EN/ISO 19956	Fatigue resistance	$\geqslant 14\,000$ blows
4.7.3.2	EN/ISO 19953	Resistance to lateral impact	$\geqslant 5$ J

4.9 Performance requirements for heel and top pieces component for infants' footwear

No performance requirements currently defined.

4.10 Performance requirements for heel and top piece components for indoor footwear

No performance requirements currently defined.

5 Marking and labelling

Marking and labelling is optional.

If reference to this Technical Report is made, only heels and top pieces complying with all the essential requirements can be marked. In this case, these shall be clearly marked by the manufacturer either directly on the product or by a label with the following additional information:

a) The manufacturer's name, trade mark or identification mark.

b) The type of footwear for which the heel or top piece shall be used as indicated as follows:

Type of footwear	Code
General sports footwear	SP
School footwear	SC
Casual footwear	CS
Men town footwear	MT
Cold weather footwear	CW
Women town footwear	WT
Fashion footwear	FS
Infants footwear	IF
Indoor footwear	IN

c) Reference to this Technical Report, i.e., ISO/TR 25073.

d) If the component complies with additional requirements agreed upon between the component supplier and the footwear manufacturer, it may be specified on the marking or label, making reference to the corresponding subclause.

Any reference to compliance with this Technical Report shall not be put in a part of the heel or top piece which could be visible when the footwear is finished.

ICS 61.060

Price based on 9 pages