TECHNICAL REPORT

ISO/TR 20882

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Footwear — Performance requirements for components for footwear — Lining and insocks

Chaussures — Exigences de performance pour les composants des chaussures — Doublures et premières de propreté

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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.

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is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.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 20882 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 309, *Footwear*, in collaboration with Technical Committee ISO/TC 216, *Footwear*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Footwear — Performance requirements for components for footwear — Lining and insocks

1 Scope

This Technical Report establishes the performance requirements for lining and insock 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 to be used to evaluate the compliance with the requirements.

This Technical Report applies to lining and insocks for all kinds 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.

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*

ISO 17694, *Footwear — Test methods for uppers and lining — Flex resistance*

ISO 17696, *Footwear — Test methods for uppers, lining and insocks — Tear strength*

ISO 17697, *Footwear — Test methods for uppers, lining and insocks — Seam strength*

ISO 17699, *Footwear — Test methods for uppers and lining — Water permeability and absorption*

EN ISO 17700, *Footwear — Test methods for uppers, linings and insocks — Colour fastness to rubbing*

ISO 17704, *Footwear — Test methods for uppers, lining and insocks — Abrasion resistance*

ISO 17705, *Footwear — Test methods for uppers, lining and insocks — Thermal insulation*

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

EN ISO 19952, *Footwear — Vocabulary*

ISO 20869, *Footwear — Test methods for outsoles, insoles, lining and insocks — Water soluble content*

ISO 22649, *Footwear — Test methods for insoles and insocks — Water absorption and desorption*

ISO 22652, *Footwear — Test methods for insoles, lining and insocks — Perspiration resistance*

ISO 22653, *Footwear — Test methods for lining and insocks — Static friction*

3 Terms and definitions

For the purposes of this document, the terms and definitions given 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 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 ISO 17709.

4.2 Performance requirements for lining and insock components for general purpose sports footwear

4.2.1 Essential requirements (lining)

These essential requirements shall be fulfilled in all cases. See Table 1.

Table 1 — Test methods and properties for general sports footwear — Essential requirements for linings

Test method	Property	Requirement	
ISO 17696	Tear strength	lining ⩾ 15 N reinforcing lining ⩾ 20 N (if it applies)	
ISO 17697	Lining seam strength	method A ⩾ 4,0 N/mm	
EN ISO 17700	Colour fastness	method A staining ⩾ 3 (grey scale) after 50 cycles with perspiration solution	
ISO 17704	Abrasion resistance	25 600 cycles dry 12 800 cycles wet	without hole through the thickness of the material component

4.2.2 Essential requirements (insocks)

These essential requirements shall be fulfilled in all cases. See Table 2.

Table 2 — Test methods and properties for general sports footwear — Essential requirements for insocks

Test method	Property	Requirement
EN ISO 17700	Colour fastness	method A staining ⩾ 3 (grey scale) after 50 cycles with perspiration solution
ISO 17704	Abrasion resístance	25 600 cycles dry 12 800 cycles wet
ISO 22649	Insocks water absorption and desorption	(method B) absorption ⩾ 70 mg/cm^2 desorption ⩾ 60 %

4.2.3 Additional requirements (lining)

These additional requirements should be agreed by both component supplier and footwear manufacturer. See Table 3.

Table 3 — Test methods and properties for general sports footwear — Additional requirements for linings

Subclause	Test method	Property	Requirement
4.2.3.1	ISO 17699	Lining water vapour permeability and absorption	WVP ⩾ 2,0 mg/cm^2.h if WVP of upper < 0,8 mg/cm^2.h then WVA of lining ⩾ 8,0 mg/cm^2
4.2.3.2	ISO 20869	Water soluble substances content	⩽ 1,5 % sulfated ashed water soluble (SAWS) ⩽ 16 % total water soluble (TWS) (testing not necessary to certain lining materials) [a]
4.2.3.3	ISO 22652	Perspiration resistance	After five cycles the component shall not develop any cracks when bent, and must keep 80 % tear resistance (testing not necessary to certain lining materials) [a]
4.2.3.4	ISO 22653	Static friction	⩾ 0,7
4.2.3.5	ISO 17694	Flex resistance	dry 15 000 cycles without visible damage

[a] This requirement is considered essential for leather.

4.2.4 Additional requirements (insocks)

These additional requirements should be agreed by both component supplier and footwear manufacturer. See Table 4.

Table 4 — Test methods and properties for general sports footwear — Additional requirements for insocks

Subclause	Test method	Property	Requirement
4.2.4.1	ISO 20869	Water soluble substances content	⩽ 1,5 % sulfated ashed water soluble (SAWS) ⩽ 16 % total water solubles (TWS) (testing not necessary to certain insocks materials) [a]
4.2.4.2	ISO 22652	Perspiration resistance	After five cycles the component shall not develop any cracks when bent, and must keep 80 % tear resistance (testing not necessary to certain insocks materials)
4.2.4.3	ISO 22653	Static friction	⩾ 0,7
4.2.4.4	ISO 17694	Flex resistance	dry 15 kc without visible damage
4.2.4.5	ISO 17696	Tear strength	insocks ⩾ 15 N

[a] This requirement is considered essential for leather.

4.3 Performance requirements for lining and insocks components for school footwear

4.3.1 Essential requirements (lining)

These essential requirements shall be fulfilled in all cases. See Table 5.

Table 5 — Test methods and properties for school footwear — Essential requirements for linings

Test method	Property	Requirement	
ISO 17696	Tear strength	lining ⩾ 15 N reinforcing lining ⩾ 20 N (if it applies)	
ISO 17697	Lining seam strength	method A ⩾ 3,5 N/mm	
EN ISO 17700	Colour fastness	method A staining ⩾ 3 (grey scale) after 50 cycles with perspiration solution	
ISO 17704	Abrasion resistance	25 600 cycles dry 12 800 cycles wet	without hole through the thickness of the material component

4.3.2 Essential requirements (insocks)

These essential requirements shall be fulfilled in all cases. See Table 6.

Table 6 — Test methods and properties for school footwear — Essential requirements for insocks

Test method	Property	Requirement
EN ISO 17700	Colour fastness	method A staining ⩾ 3 (grey scale) after 50 cycles with perspiration solution
ISO 17704	Abrasion resistance	25 600 cycles dry 12 800 cycles wet
ISO 22649	Insocks water absorption and desorption	(method B) absorption ⩾ 70 mg/cm^2 desorption ⩾ 60 %

4.3.3 Additional requirements (lining)

These additional requirements should be agreed by both component supplier and footwear manufacturer. See Table 7.

Table 7 — Test methods and properties for school footwear — Additional requirements for linings

Subclause	Test method	Property	Requirement
4.3.3.1	ISO 17699	Lining water vapour permeability and absorption	WVP ⩾ 2,0 mg/cm^2.h if WVP of upper < 0,8 mg/cm^2.h then WVA of lining ⩾ 8,0 mg/cm^2
4.3.3.2	ISO 20869	Water soluble substances content	⩽ 1,5 % sulfated ashed water soluble (SAWS) ⩽ 16 % total water soluble, (TWS) (testing not necessary to certain lining materials) [a]
4.3.3.3	ISO 22652	Perspiration resistance	After three cycles the component shall not develop any cracks when bent, and must keep 80 % tear resistance (testing not necessary to certain lining materials)
4.3.3.4	ISO 22653	Static friction	⩾ 0,7
4.3.3.5	ISO 17694	Flex resistance	dry 15 000 cycles without visible damage

[a] This requirement is considered essential for leather.

4.3.4 Additional requirements (insocks)

These additional requirements should be agreed by both component supplier and footwear manufacturer. See Table 8.

Table 8 — Test methods and properties for school footwear — Additional requirements for insocks

Subclause	Test method	Property	Requirement
4.3.4.1	ISO 20869	Water soluble substances content	⩽ 1,5 % sulfated ashed water soluble (SAWS) ⩽ 16 % total water soluble (TWS) (testing not necessary to certain insocks materials) [a]
4.3.4.2	ISO 22652	Perspiration resistance	After three cycles the component shall not develop any cracks when bent, and must keep 80 % tear resistance (testing not necessary to certain insocks materials)
4.3.4.3	ISO 22653	Static friction	⩾ 0,7
4.3.4.4	ISO 17694	Flex resistance	dry 15 000 cycles without visible damage
4.3.4.5	ISO 17696	Tear strength	insocks ⩾ 15 N

[a] This requirement is considered essential for leather.

4.4 Performance requirements for lining and insocks components for casual footwear

4.4.1 Essential requirements (lining)

These essential requirements shall be fulfilled in all cases. See Table 9.

Table 9 — Test methods and properties for casual footwear — Essential requirements for linings

Test method	Property	Requirement	
ISO 17696	Tear strength	lining ⩾ 15 N reinforcing lining ⩾ 20 N (if it applies)	
ISO 17697	Lining seam strength	method A ⩾ 4,0 N/mm	
EN ISO 17700	Colour fastness	method A staining ⩾ 3 (grey scale) after 50 cycles with perspiration solution.	
ISO 17704	Abrasion resistance	25 600 cycles dry 12 800 cycles wet	without hole through the thickness of the material component

4.4.2 Essential requirements (insocks)

These essential requirements shall be fulfilled in all cases. See Table 10.

Table 10 — Test methods and properties for casual footwear — Essential requirements for insocks

Test method	Property	Requirement
EN ISO 17700	Colour fastness	method A staining ⩾ 3 (grey scale) after 50 cycles with perspiration solution.
ISO 17704	Abrasion resistance	25 600 cycles dry 12 800 cycles wet
ISO 22649	Insocks water absorption and desorption	(method B) absorption ⩾ 70 mg/cm^2 desorption ⩾ 60 %

4.4.3 Additional requirements (lining)

These additional requirements should be agreed by both component supplier and footwear manufacturer. See Table 11.

Table 11 — Test methods and properties for casual footwear — Additional requirements for linings

Subclause	Test method	Property	Requirement
4.4.3.1	ISO 17699	Lining water vapour permeability and absorption	WVP ⩾ 2,0 mg/cm^2.h if WVP of upper < 0,8 mg/cm^2.h then WVA of lining ⩾ 8,0 mg/cm^2
4.4.3.2	ISO 20869	Water soluble substances content	⩽ 1,5 % sulfated ashed water soluble (SAWS) ⩽ 16 % total water soluble (TWS) (testing not necessary to certain lining materials) [a]
4.4.3.3	ISO 22652	Perspiration resistance	After five cycles the component shall not develop any cracks when bent, and must keep 80 % tear resistance (testing not necessary to certain lining materials)
4.4.3.4	ISO 22653	Static friction	⩾ 0,7
4.4.3.5	ISO 17694	Flex resistance	dry 15 000 cycles without visible damage

[a] This requirement is considered essential for leather.