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

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Foreword

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This document was prepared by Technical Committee ISO/TC 216, *Footwear*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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

1 Scope

This document establishes the performance requirements for lining and insock components for 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 compliance with these requirements.

This document applies to lining and insocks for all kinds of footwear as defined in Clause 4.

This document can be used as a reference by the manufacturer and the supplier.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 17694, *Footwear — Test methods for uppers and lining — Flex resistance*

ISO 17696, *Footwear — Test methods for uppers, linings 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 vapour permeability and absorption*

ISO 17700, *Footwear — Test methods for upper components and insocks — Colour fastness to rubbing and bleeding*

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

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

ISO 19952, *Footwear — Vocabulary*

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 80000-1, *Quantities and units — Part 1: General*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Classification

The footwear shall be classified according to Table 1.

Table 1 — Classification

Class	Exposure	Shoe type
A	slight	infant shoes, slippers, indoor shoes, fashion shoes
B	medium	casual shoes (adult and children shoes)
C	high	children school shoes, adult work shoes (not PPE) and general sport shoes
D	heavy	heavy work shoes (not PPE), trekking, hiking or similar purpose sports shoes

5 Requirements

5.1 General

This document establishes two different types of performance requirements.

The essential requirements shall all be fulfilled. Additional requirements can be agreed upon by the component supplier and the footwear manufacturer as indicated in Table 2 or Table 3.

The results of each determination, as well as the average values, shall be rounded off in accordance with ISO 80000-1.

When taken from finished footwear, samples shall be prepared in accordance with ISO 17709.

5.2 Essential and additional performance requirements for lining

The essential requirements in Table 2 shall be fulfilled in all cases.

Table 2 — Test methods and requirements for lining

Test method		Test name	Requirements			
			Class A	Class B	Class C	Class D
Essential requirements	ISO 17696	Tear strength	Lining: ≥ 10 N	Lining: ≥ 12 N	Lining: ≥ 15 N	Lining: ≥ 30 N
			Reinforcing lining: ≥ 20 N (if it applies)			
	ISO 17697 (method A)	Seam strength	≥ 2,0 N/mm	≥ 2,5 N/mm	≥ 3,0 N/mm	≥ 5,0 N/mm
	ISO 17700 (method A)	Colour fastness to rubbing	Staining ≥ 3 (grey scale) after: — 150 cycles dry — 50 cycles wet or 20 cycles with perspiration solution			
	ISO 17704	Abrasion resistance	No holes[a] after: — 25 000 cycles dry — 6 400 cycles (counter lining) wet; 3 200 cycles (vamp and quarter lining) wet	No holes[a] after: — 30 000 cycles dry — 12 800 cycles (counter lining) wet; 6 400 cycles (vamp and quarter lining) wet	No holes[a] after: — 50 000 cycles dry — 25 600 cycles (counter lining) wet; 12 800 cycles (vamp and quarter lining) wet	
Additional requirements	ISO 17699	Water vapour permeability	WVP ≥ 2,0 mg/cm²/h			
	ISO 22652	Perspiration resistance	After 3 cycles the component shall not develop any cracks when bent, and shall keep ≥ 80 % tear resistance (testing not necessary to certain lining materials)		After 5 cycles the component shall not develop any cracks when bent, and shall keep ≥ 80 % tear resistance (testing not necessary to certain lining materials)	
	ISO 17694	Flex resistance	Dry: 15 000 cycles without visible damage (only for coated material)			

[a] A hole should only be considered as a hole when it extends through the full thickness of the wearing surface.

5.3 Essential and additional performance requirements for insock

The essential requirements in Table 3 shall be fulfilled in all cases.

Table 3 — Test methods and requirements for insock

Test method		Test name	Requirements			
			Class A	Class B	Class C	Class D
Essential requirements	ISO 17700 (method A)	Colour fastness to rubbing	Staining ≥ 3 (grey scale) after: — 150 cycles dry — 50 cycles wet or 20 cycles with perspiration solution			
	ISO 17704	Abrasion resistance	No holes[a] in material in contact with foot after: — 12 800 cycles dry — 3 200 cycles wet	No holes[a] in material in contact with foot after: — 12 800 cycles dry — 6 400 cycles wet	No holes[a] in material in contact with foot after: — 25 600 cycles dry — 12 800 cycles wet	
	ISO 22649 (method B)	Water absorption and desorption	Only for insocks with thickness more than 3 mm: — Absorption: ≥ 60 mg/cm^2 — Desorption: ≥ 60 %		Only for insocks with thickness more than 3 mm: — Absorption: ≥ 70 mg/cm^2 — Desorption: ≥ 80 %	
Additional requirements	ISO 22652	Perspiration resistance	After 3 cycles the component shall not develop any cracks when bent, and shall keep ≥ 80 % tear resistance (testing not necessary to certain lining materials)			

[a] A hole should only be considered as a hole when it extends through the full thickness of the wearing surface.