NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 3903.8-2022

Footwear - Test methods for insoles - Delamination resistance

鞋类 内底试验方法 层间剥离强度

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Standardization Administration of the PRC

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Foreword

This document was issued on 12 October 2022 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 May 2023.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

1 Scope

GB/T 3903.8-2022 covers the measurement of delamination resistance in footwear insoles, whatever material the insole is made from - the instruments, equipment and materials, the sampling and the conditioning of specimens before test, the test method, the presentation of the result, and the report. An insole is usually a laminate, and its layers are held together by a bond rather than by the material itself; once that bond lets go, the insole ridges up under the foot and the shoe is finished long before the sole or the upper has worn out. The layers are pulled apart on a tensile testing machine complying with ISO 5893 at accuracy class B and running at a constant speed of separation. For the dry condition the result is the mean of the maximum tensile force from three specimens divided by the mean single-side area of those same three, which turns a raw force into a force per unit of bonded area and lets specimens of different size be compared. The report gives the result as presented in that clause, together with the reference of the document applied. Written for insole and component makers, for footwear brands setting incoming material requirements, and for the laboratories testing against them.

This document describes a method for the determination of the delamination resistance

of footwear insole materials.

This document applies to shoe insoles made of various materials.

2 Normative references

The following documents contain the provisions which, through normative reference in this document, constitute the essential provisions of this document. For the dated referenced documents, only the versions with the indicated dates are applicable to this document; for the undated referenced documents, only the latest version (including all the amendments) is applicable to this document.

ISO 5893 Rubber and plastics test equipment - Tensile, flexural and compression types (constant rate of traverse) - Specification

Note: GB/T 17200-2008 Technical specification for tensile, compression and flexural testing machines for rubber and plastics (constant rate of traverse) (ISO 5893:2002, IDT)

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

Note: GB/T 22050-2008 Footwear - Sampling location, preparation and duration of conditioning of

samples and test pieces (ISO 17709:2004, IDT)

ISO 18454 Footwear - Standard atmospheres for conditioning and testing of

footwear and components for footwear

Note: GB/T 22049-2019 Footwear - Standard atmospheres for conditioning and testing of footwear

and components for footwear (ISO 18454:2018, IDT)

3 Terms and definitions

The following terms and definitions apply to this document.

The addresses of terminology databases maintained by ISO and IEC for standardization are as follows:

--- ISO online browsing platform: https://www.iso.org/obp;

--- IEC Electronic Development Platform: http://www.electropedia.org/.

3.1 delamination resistance

The force per unit area required to delaminate the internal structure of the insole material.

4 Instruments, equipment, and materials

The following equipment and materials shall be used.

4.1 Tensile-testing machine (dynamometer): It shall be in accordance with the requirements of ISO 5893, the accuracy level shall be B, and the constant moving speed shall be 25 mm/min+/-5 mm/min.

4.2 Pair of solid cylinders: Each cylinder with a diameter of 38.92 mm+/-0.02 mm shall have a device connected to the tensile-testing machine. The end faces of the cylinders shall be perpendicular to their axes. The cylinders shall be adapted to the tensile-testing machine so that the force of the tensile-testing machine passes through the axes of the two cylinders. One pair of cylinders is required for each sample.

4.3 Collar: It shall have an inner diameter of 39.00 mm+/-0.03 mm to ensure that the cylinder and the sample are coaxial during assembly.

4.4 Circular knife cutting die: It is used to cut circular samples with a diameter of 38.0 mm+/-1.0 mm. The inner surface of the cutting die shall be angled approximately 5° outward from the cutting edge so that the knife will not damage the edge of the sample when sampling.

4.5 Pressing device or similar equipment: It shall be capable of applying a pressure of 5.00 kN+/-0.25 kN when the cylinder is bonded to the sample.

4.6 Vernier caliper: The accuracy shall be 0.1 mm.

4.7 Polymer adhesive: It shall be the solvent-based chloroprene, rubber type.

Note: Suitable adhesives are mostly chloroprene rubber sole-lamination adhesives and commercially

available household chloroprene rubber impact adhesives.

4.8 Distilled water1).

7 Result presentation

7.1 Dry test

The average value of the maximum tensile force recorded in the three dry tests is divided by the average value of the areas (single side) of the three samples. The result is expressed in megapascals (MPa)2) as the delamination resistance of the insole material.

Note:

2) 1 Mpa = 1 N/mm2.

The test results are generally accurate to 0.1 MPa or subject to product standards.

7.2 Wet test

The average value of the maximum tensile force recorded in the three wet tests is divided by the average value of the areas (single side) of the three samples. The result is expressed in megapascals (MPa) as the delamination resistance of the wet insole material.

Note: The test results are generally accurate to 0.1 MPa or subject to product standards.

8 Test report

The test report shall include the following contents:

a) The number of the adopted document;

b) The test results expressed in accordance with Chapter 7;

c) The material and detailed description of the sample;

d) If necessary, the preparation process of the sample shall be described;

e) The test method used (dry test or wet test);

f) Any deviation from the test procedures of this document;

g) The test date;

h) Standard environmental conditions observed during the test.

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