
**Textiles — Determination of resistance to
water penetration — Impact penetration
test**

*Textiles — Détermination de la résistance à la pénétration de l'eau —
Essai de pénétration par impact*



Reference number
ISO 18695:2007(E)

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Foreword

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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.

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 18695 was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 2, *Cleansing, finishing and water resistance tests*.

Textiles — Determination of resistance to water penetration — Impact penetration test

1 Scope

This International Standard is applicable to any textile fabric, which may or may not have been given a water-resistant or water-repellent finish. It measures the resistance of fabrics to the penetration of water by low impact, and thus can be used to predict the probable rain penetration resistance of apparel fabrics. The test is best suited for fabrics of medium to loose construction where the Bundesmann rain-shower test (ISO 9865), or Rain Test (ISO 22958) is too severe. Fabrics that do not lie flat under tension are not applicable.

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 139, *Textiles — Standard atmospheres for conditioning and testing*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

water resistance

characteristic of resisting wetting and penetration by water

4 Principle

A volume of water is allowed to spray from a height of (610 ± 10) mm against a taut surface of a test specimen backed by a weighed blotter. The blotter is then reweighed to determine water penetration and the specimen is classified accordingly.

5 Safety Precautions

Good laboratory practises should be followed. Wear safety glasses in all laboratory areas.

NOTE These safety precautions are for information purposes only. The precautions are ancillary to the testing procedures and are not intended to be all inclusive. It is the user's responsibility to use safe and proper techniques in handling materials in this International Standard. Manufacturers should be consulted for specific detail such as material safety sheets and other manufacturer's recommendations.

6 Reagent

6.1 Distilled water or water of equivalent purity, at $(27 \pm 1) ^\circ\text{C}$

7 Apparatus

7.1 Impact Penetration Tester¹⁾.

7.1.1 Type 1 tester (see Figures 1 and 3).

7.1.2 Type 2 tester (see Figures 2 and 3).

7.2 White textile blotting paper, of $(0,71 \pm 0,1)$ mm in thickness, weight of $(370 \pm 4,5)$ g/m², and with an absorbent capacity of (220 ± 30) %²⁾.

7.3 Laboratory balance, accurate to 0,1 g.

8 Conditioning

Condition the test specimens and blotting paper for a minimum of 4 h prior to testing. Conditioning and testing shall be carried out in accordance with ISO 139.

9 Test specimens

Cut a minimum of three specimens of (178 ± 10) mm \times (330 ± 10) mm from the test fabric with the warp in the length direction.

10 Procedure

10.1 Clamp one end of the test specimen under the (152 ± 10) mm spring clamp at the top of the inclined stand. Clamp another (152 ± 10) mm clamp, of $(0,45 \pm 0,05)$ kg total weight, to the free end of the test specimen. Weigh a standard paper blotter (152 ± 10) mm \times (229 ± 10) mm to the nearest 0,1 g and insert beneath the specimen.

10.2 Pour (500 ± 10) ml of distilled water (6.1) into the funnel of the tester and allow to spray on to the test specimen. The water should be poured into the funnel without imparting any swirling motion to the water in the funnel.

10.3 Upon completion of the spraying period (2 s after continuous flow stops), carefully lift the test specimen, remove the blotter, then quickly reweigh to the nearest 0,1 g.

1) Impact Penetration Tester is the name of a suitable product available from AATCC, P O Box 12215, Research Triangle Park, NC 27709-2215 (tel: 1-919-549-8141; fax: 1-919-549-8933; www.aatcc.org). This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of the product named. Equivalent products may be used if they can be shown to lead to the same results.

2) White Textile Blotting Paper is the trade-name of a product supplied by AATCC, P.O. Box 12215, Research Triangle Park, NC 27709-2215 (tel: 1-919-549-8141; fax: 1-919-549-8933; www.aatcc.org). This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of the product named. Equivalent products may be used if they can be shown to lead to the same results.

11 Evaluation

The increase in weight of the blotter, in grams, is calculated and the average result for the three test specimens is reported. Individual determinations or average values over 5,0 g may be simply reported as + 5,0 g or > 5 g.

12 Test report

The test report shall include the following information:

- a) reference to this International Standard, i.e., ISO 18695:2007;
- b) all information necessary to complete identification of the sample tested;
- c) the number of specimens tested;
- d) the conditioning and testing atmosphere used;
- e) any deviation from the specified procedure;
- f) test results.

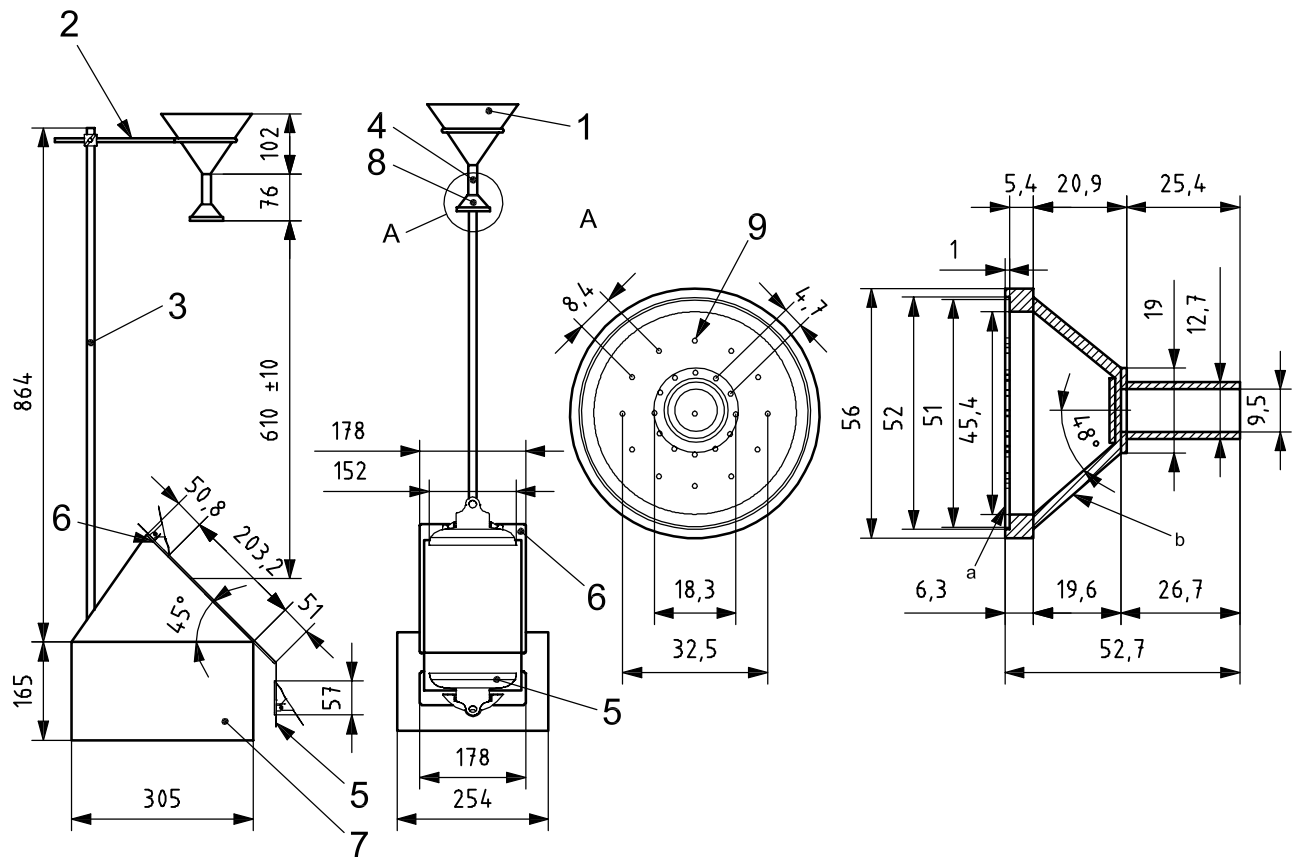


Figure 1 — Impact penetration tester — Type 1 tester



Figure 2 — Impact penetration tester — Type 2 tester

Dimensions in millimetres



Key

- 1 laboratory funnel, 152 mm
- 2 laboratory ring support
- 3 metal rod, \varnothing 12,7 mm
- 4 rubber tubing, 9,5 mm
- 5 metal spring clip, 152 mm (494 g)
- 6 steel plate with clip
- 7 inclined stand
- 8 spray head nozzle (see detail A)
- 9 twenty five holes, $(0,99 \pm 0,005)$ mm

- a Brass.
- b Bronze.

Figure 3 — Structural details of impact penetration tester

Bibliography

- [1] ISO 9865, *Textiles — Determination of water repellency of fabrics by the Bundesmann rain-shower test*
- [2] ISO 22958, *Textiles — Water resistance — Rain tests: exposure to a horizontal water spray*
- [3] AATCC Test Method 42 *Water Resistance: Impact Penetration Test*

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