

Methods of test for

Geotextiles —

**Part 7: Determination of in-plane
waterflow**

Committees responsible for this British Standard

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- Association of Consulting Engineers
- British Polyolefin Textiles Association
- British Textile Technology Group
- Chemical Industries Association
- Department of Transport
- Department of Transport (Transport and Road Research Laboratory)
- ERA Technology Ltd.
- Federation of Civil Engineering Contractors
- Institution of Civil Engineers
- Lambeg Industrial Research Association
- Ministry of Agriculture, Fisheries and Food
- Ministry of Defence
- Society of Engineers Incorporated

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Foreword

This Part of BS 6906 has been prepared under the direction of the Textiles and Clothing Standards Policy Committee.

This standard describes a method for determination of water flow through the plane of the geotextile under specified normal compressive stress and hydraulic gradient and is an additional method to that described in BS 6906-3 which determines water flow normal to the plane of the geotextile.

Other Parts of BS 6906 are as follows.

- *Part 1: Determination of the tensile properties using a wide width strip;*
- *Part 2: Determination of the apparent pore size distribution by dry sieving;*
- *Part 3: Determination of water flow normal to the plane of the geotextile under a constant head;*
- *Part 4: Determination of the puncture resistance (CBR puncture test);*
- *Part 5¹⁾: Determination of creep;*
- *Part 6: Determination of resistance to perforation (cone drop test);*
- *Part 8¹⁾: Method for investigating sand-geotextile frictional behaviour by direct shear.*

Information on the accuracy of the test is given in Appendix A.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

¹⁾ In preparation.

1 Scope

This Part of BS 6906 describes an index test procedure for determining the constant head water flow within the manufactured plane of geotextiles and related products under varying compressive stresses and typical hydraulic gradients.

The method can be adapted to model particular field conditions, e.g. by employing other contact surfaces, stresses and hydraulic gradients.

The procedure is limited to geotextiles and related materials that allow continuous flow paths to develop parallel to the longest edge of the specimen tested.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this Part of BS 6906 the following definitions apply.

2.1 normal stress

the stress component (in kPa) normal to a given plane

2.2 hydraulic transmissivity

the volumetric flow rate of water per unit width of specimen per unit gradient in a direction parallel to the plane of the specimen

2.3 in-plane flow

fluid flow confined to a direction parallel to the plane of the geotextile

2.4 gravity flow

flow in a direction parallel to the plane of the geotextile driven predominantly by a difference in elevation between the inlet and outlet points of a specimen

2.5 pressure flow

flow in a direction parallel to the plane of the geotextile driven predominantly by a differential fluid pressure

2.6 hydraulic gradient

ratio of the length of specimen in the flow direction to the total head loss across the specimen

3 Principle

The in-plane water flow is determined by measuring the quantity of water that passes along the test specimen in a known time and under specified normal stress and hydraulic gradient.

4 Apparatus

4.1 Constant head in-plane water flow apparatus, (typical unit illustrated in Figure 1). The loading platen shall be a very good fit, and shall not leak. There shall be provision for maintaining a constant water level at several different water levels to correspond to, at least, hydraulic gradients of 0.1 and 1.0. The apparatus shall be substantially leak free when the platen is seated in the unit without the test specimen.

4.2 Loading mechanism, capable of sustaining a constant normal stress on the specimen ranging from 10 kPa to at least 250 kPa.

4.3 Device such as a dial gauge, to measure changes in specimen thickness during the test (when this is specified).

NOTE For details of the source of supply of a suitable apparatus apply to Enquiries Section, BSI, Linford Wood, Milton Keynes, MK14 6LE, enclosing a stamped, addressed envelope for reply.

5 Test specimens

5.1 Selection of test specimens

Take specimens at random from the sample. Unless otherwise agreed between the interested parties, take specimens no nearer than 100 mm from the selvedge of the geotextile.

5.2 Number and dimensions of test specimens

Unless otherwise agreed between the interested parties, cut three test specimens from the sample with the length parallel to the machine direction, and three specimens with the length parallel to the cross direction. The specimens shall be clean and dry, and measure 300 mm in the length or flow direction and 200 mm in the width direction.

NOTE It is important that the specimen width is not undersize, i.e. a good push tight fit.

Where it is necessary to determine results to within a given confidence interval of the mean, determine the number of test specimens in accordance with BS 2846-2.

6 Procedure

6.1 Contact surface

The surfaces contacting the specimens shall be one of the following.

- the hard base of the apparatus and the lower rigid surface of the loading platen;
- other materials such as closed cell foam rubber or soil used to model field situations.