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Design using geosynthetics

Part 3: Filtration

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Contents

Page

Foreword ... **iv**
Introduction ... **vi**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms, definitions, symbols and abbreviated terms ... **1**
3.1 Terms and definitions ... 1
3.2 Symbols ... 1
3.3 Abbreviated terms ... 2
4 Concepts and fundamental principles ... **2**
4.1 General ... 2
4.2 The filtration function of geotextiles ... 3
4.3 Filter selection fundamentals ... 4
5 Typical applications ... **4**
5.1 General considerations ... 4
5.2 Soil filtration ... 5
5.3 Slurry filtration ... 5
6 Materials ... **5**
7 Functional properties relevant to design ... **8**
7.1 Characteristic opening size ... 8
7.2 Velocity index and permittivity (permeability) ... 9
7.3 Resistance to water penetration ... 9
7.4 Number of constrictions ... 9
7.5 Percent open area ... 9
8 Principles of design ... **10**
8.1 General considerations ... 10
8.2 Designing geotextiles for soil filtration ... 13
8.2.1 General ... 13
8.2.2 Retention criteria of the soil skeleton ... 13
8.2.3 Non-retention criteria of fines in suspension ... 14
8.2.4 Permeability criteria ... 14
8.3 Designing geotextiles for slurry and suspended solids filtration ... 14
9 Testing the soil/geotextile filtration compatibility ... **15**
9.1 General ... 15
9.2 Soil/geotextile compatibility ... 15
9.2.1 Gradient ratio ... 15
9.2.2 Hydraulic conductivity ratio ... 16
9.2.3 Retention performance of geotextiles exposed to turbulent flow conditions ... 16
9.3 Evaluation of slurry/geotextile behaviour ... 16
9.4 Biological or chemical clogging potential ... 16
9.5 Impact of abrasion on the filtration properties of geotextiles ... 17
9.5.1 Abrasion resistance – Index property ... 17
9.5.2 Abrasion resistance – Rotary drum method ... 17
10 Examples of material specifications and design guidance ... **17**
Bibliography ... **19**

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 221, *Geosynthetics*.

A list of all parts in the ISO/TR 18228 series can be found on the ISO website.

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.

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Introduction

The ISO/TR 18228 series provides guidance for designs using geosynthetics for soils and below ground structures in contact with natural soils, fills and asphalt. The series contains parts which cover designs using geosynthetics, including guidance for characterization of the materials to be used and other factors affecting the design and performance of the systems which are particular to each part, with ISO/TR 18228-1 providing general guidance relevant to the subsequent parts of the series.

The series is generally written in a limit state format and guidelines are provided in terms of partial material factors and load factors for various applications and design lives, where appropriate.

This document includes information relating to the filtration function. Details of design methodology adopted in a number of regions are provided. The characteristics of the geosynthetics and the test methods normally used to quantify the properties of the geosynthetics are described. Some regional specific rules and regulations that normally apply to designs using geosynthetics in these regions are also provided.

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Design using geosynthetics —

Part 3: Filtration

1 Scope

This document provides general considerations to support the design guidance to geotechnical and civil engineers involved in the design of structures in which a geotextile is used as a filter. The key potential failure mechanisms are described, and guidance is proposed to select engineering properties.

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 10318-1, *Geosynthetics — Part 1: Terms and definitions*

3 Terms, definitions, symbols and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10318-1 and the following apply.

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

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

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

3.2 Symbols

B, B_1, B_2	factors function of the application, soil properties and hydraulic conditions, used for the verification of the retention criteria of the soil skeleton
C	constant, used for the verification of the non-retention criteria of fines in suspension
C_u	coefficient of uniformity of the soil, defined as $C_u = d_{60} / d_{10}$
d_{85}, d_{60}, d_{50}, d_{30} or d_{10}	diameters of particles for which 85 %, 60 %, 50 %, 30 % or 10 % of all soil particles are smaller (e.g. d_{85} = 200 µm means that 85 % of the soil particles are smaller than 200 µm)
d_I	indicative diameter of the soil, for retention criteria
d_J	indicative diameter of the soil, for non-retention criteria of fines in suspension
ΔH	water head used to measure the indicative velocity in the laboratory test, i.e. ΔH = 0,05 m

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