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Design using geosynthetics

Part 4: Drainage

bsi.

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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.

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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 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 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 10 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 drainage function. Details of design methodology adopted in a number of regions are provided.

Parts of this document have been adapted from *Comité français des géosynthétiques*, 2014[10].

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TECHNICAL REPORT **ISO/TR 18228-4:2022**

Design using geosynthetics —

Part 4: Drainage

1 Scope

This document outlines the criteria for evaluating the available and the required flow rate of geosynthetics in various situations, provides a summary of the available laboratory testing, and lists the safety factors and reduction factors that can be applied to the parameters when designing using geosynthetics for drainage systems.

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 and symbols

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

3.1 Symbols and abbreviations

O_{90}	characteristic opening size of a geosynthetic (µm)
k_n	coefficient of permeability normal to the plane(m/s)
q_n	flux(l/m^2·s)
v-index	velocity index(mm/s)
ψ	permittivity(s^{-1})
ϑ	transmissivity (m^3/s/m or l/s/m)
GCD	acronym used for draining geocomposites
dQ/dt	volumetric flow rate of water through the soil (m^3/s or l/s)
A	bulk cross-sectional area through which the flow occurs (m^2)
h	hydraulic head (m)
l	distance travelled by the bulk water flow (m)

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