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GEOSYNTHETICS - DETERMINATION OF FRICTION CHARACTERISTICS - PART 1: DIRECT SHEAR TEST (ISO 12957-1:2005)

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Géosynthétiques - Détermination des caractéristiques de frottement - Partie 1: Essai de cisaillement direct (ISO 12957-1:2005)

Geokunststoffe - Bestimmung der Reibungseigenschaften - Teil 1: Scherkastenversuch (ISO 12957-1:2005)

This European Standard was approved by CEN on 18 November 2004.

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Contents

Foreword

This document (EN ISO 12957-1:2005) has been prepared by Technical Committee CEN/TC 189 "Geosynthetics", the secretariat of which is held by IBN, in collaboration with Technical Committee ISO/TC 221 "Geosynthetics".

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2005, and conflicting national standards shall be withdrawn at the latest by August 2005.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This document describes an index test method to determine the friction characteristics of geotextiles and geotextile-related products in contact with a standard sand, i.e. with a specified density and moisture content, under a normal stress and at a constant rate of displacement, using a direct shear apparatus.

The procedure can also be used for testing geosynthetic barriers.

When geogrids are tested with a rigid support, the results are dependent on the friction with the support and the results are not necessarily realistic. The accuracy of the test should be verified by calibration tests.

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 554, *Standard atmospheres for conditioning and/or testing — Specifications.*

ISO 6344-2, *Coated abrasives – Grain size analysis – Part 2: Determination of grain size distribution of macrogrits P 12 to P 220.*

EN ISO 9862, *Geotextiles – Sampling and preparation of test specimens (ISO 9862:2005).*

3 Terms and definitions

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

3.1
relative displacement (*s*)
displacement of the sand relative to the specimen during shearing, in millimetres

3.2
normal force *(N)*
constant vertical force applied to the specimen, in kilonewtons

3.3
shear force (*S*)
horizontal force, measured during shearing at a constant rate of displacement, in kilonewtons

3.4
normal stress (σ)
normal force divided by the contact area of the specimen, in kilopascals

3.5
shear stress (τ)
shear force along the sand/geotextile interface, divided by the contact area of the specimen, in kilopascals

3.6
maximum shear stress (τ^{max})
maximum value of shear stress developed in a shear test, in kilopascals

3.7
angle of friction (ϕ_{sg}) (between geosynthetic and sand)
slope of the "best fit straight line", through the plot of maximum shear stress, in degrees