
**Geosynthetics — Determination of
friction characteristics —**

**Part 2:
Inclined plane test**

*Géosynthétiques — Détermination des caractéristiques de
frottement —*

Partie 2: Essai sur plan incliné



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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 12957-2 was prepared by the European Committee for Standardization (CEN) in collaboration with Technical Committee ISO/TC 221, *Geosynthetics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Throughout the text of this document, read “...this European Standard...” to mean “...this International Standard...”.

ISO 12957 consists of the following parts, under the general title *Geosynthetics — Determination of friction characteristics*:

- *Part 1: Direct shear test*
- *Part 2: Inclined plane test*

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Foreword

This document (EN ISO 12957-2:2005) 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of an identical text or by endorsement, at the latest by August 2005, and conflicting national standards shall be withdrawn at the latest by August 2005.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.

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1 Scope

This document describes a method to determine the friction characteristics of geosynthetics (geotextiles and geotextile-related products, geosynthetic barriers), in contact with soils, at low normal stress, using an inclining plane apparatus.

This test method is primarily intended as a performance test to be used with site specific soils but may also be used as an index test with standard sand.

Test data obtained for geogrids tested with a rigid support are not necessarily realistic as the results depend on the friction support.

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.*

ISO 9862, *Geotextiles – Sampling and preparation of test specimens.*

3 Terms and definitions

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

3.1

normal stress ($\sigma_{n,o}$)

normal force (N) divided by the area of the specimen, in kilopascals

$\sigma_{n,o}$ indicates the normal stress with the table in horizontal position; $\sigma_{n,calc}$ indicates the calculated normal stress at slippage failure with angle of slipping (β).

3.2

angle of friction (ϕ_{gp})

angle of friction between geosynthetic and soil, in degrees, defined as the average of the values recorded in the test

3.3

angle of slipping (β)

angle, in degrees, at which the box's displacement attains 50 mm

4 Principle

The angle of friction for the soil/geosynthetic system is determined by measuring the angle at which a soil filled box (with possible additional weights) slides when the base supporting the geosynthetic is inclined at a constant speed.

NOTE Variations to the test described in this document can be used to measure friction properties of geosynthetics in non-standard conditions, e.g.:

- a) a second layer of geosynthetic can be fitted in the upper part of the shear box to measure geosynthetic on geomembrane friction;
- b) normal pressures different from the standard values can be applied to simulate actual site conditions.