PD CEN/TS 14416:2014

BSI Standards Publication

# Geosynthetic barriers — Test method for determining the resistance to roots

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The UK participation in its preparation was entrusted to Technical Committee B/553, Geotextiles and geomembranes.

A list of organizations represented on this committee can be obtained on request to its secretary.

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# CEN/TS 14416

February 2014

ICS 59.080.70

Supersedes CEN/TS 14416:2005

English Version

# Geosynthetic barriers - Test method for determining the resistance to roots

Barrières géosynthétiques - Méthode d'essai pour la détermination de la résistance aux racines

Geosynthetische Dichtungsbahnen - Prüfverfahren zur Bestimmung des Widerstandes gegen Wurzeln

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# Foreword

This document (CEN/TS 14416:2014) has been prepared by Technical Committee CEN/TC 189 “Geosynthetics”, the secretariat of which is held by NBN.

This document supersedes CEN/TS 14416:2005.

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# Introduction

This Technical Specification defines a method for testing the resistance of a geosynthetic barrier to penetration by roots. Such resistance is a requirement for many uses of geosynthetic barriers.

This Technical Specification does not purport to address all safety problems, if any, associated with its use.

## 1 Scope

This Technical Specification describes a laboratory procedure for the rapid testing of the resistance of polymeric, bituminous or clay geosynthetic barriers to root penetration. It is suitable for testing of welded seams or other areas of potential weakness.

A longer test that may be more suitable for testing the long-term resistance of geosynthetic barriers is described in EN 13948.

## 2 Principle

A section of geosynthetic barrier is placed in soil into which seeds are sown. Six to eight weeks later the geosynthetic barrier is examined to see whether it has been penetrated by the roots of the young plants.

## 3 Apparatus

The following equipment shall be used:

— four dry unglazed clay flower pots approximately 220 mm high. The diameter at the base of the pot shall be approximately 140 mm, the diameter at the top 250 mm, and the angle between side and central axis approximately 13°. A 40 mm wide band shall be painted on the inside of the pot, about 100 mm above the base, and allowed to dry;

— lime-free soil (pH 5 to 6), mixed with a little loam or high quality potting soil;

  Compost should not be used.

— lupin seeds (lupinus alba);

— silicone mastic sealant or mortar-sand mixture;

— bitumen 85/40;

— glass tubes;

— anti-mould agent.

## 4 Procedure

— Fill the pots with the soil as far as the lower edge of the painted band, then seal and humidify.

— Cut three discs of geosynthetic barrier to cover the soil exactly.

— Place the geosynthetic barrier on the soil of three of the pots with the upper side uppermost.

— Carefully seal the gap between geosynthetic barrier and pot with the sealant or mortar-sand mixture.

— Prepare the fourth pot in which the geosynthetic barrier is replaced by a 20 mm thick layer of bitumen 85/40 (oxidized grade bitumen with a softening point of (85 ± 5) °C and a penetration temperature of (40 ± 5) °C).

— Cover the geosynthetic barrier or the bitumen with 90 mm of soil, then seal and humidify.

— Sow 30 to 40 lupin seeds in each pot evenly on the soil, and pre-treat with anti-mould agent.

— Cover the seeds with 10 mm of light soil.

— In summer, place the pots outside. In winter, place them in a heated greenhouse with additional artificial light.

Moisten the soil above the geosynthetic barrier or bitumen by pouring rain water as necessary into a glass tube that extends down as far as the geosynthetic barrier. If no rain water is available use a 1:1 mixture of tap water and distilled water.

## 5 Evaluation

After six weeks (eight weeks in winter) empty the pots and inspect the upper and lower surface of the geosynthetic barrier for roots that have penetrated into it or through it.

Inspect the bitumen layer. If the roots have not penetrated the bitumen, the test shall be repeated.

NOTE This is a control of the vitality of the plants.

## 6 Test report

The test report shall include the following information:

a) reference to this Technical Specification and to the method;

b) test laboratory;

c) identification of the product tested;

d) number of specimens;

e) test duration;

f) observed results, stating whether the roots have penetrated the geosynthetic barrier and the bitumen, accompanied by relevant photographs;

g) date of testing.

# Bibliography

[1] EN 13948, *Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of resistance to root penetration*

[2] EN ISO 10318, *Geosynthetics - Terms and definitions (ISO 10318)*

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