



# SLOVENSKI STANDARD

## SIST-TS CEN/TS 14416:2006

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Geosynthetic barriers - Test method for determining the resistance to roots

Geosynthetische Dichtungsbahnen - Prüfverfahren zur Bestimmung des Widerstandes gegen Wurzeln

Géomembranes et géosynthétiques bentonitiques - Méthode d'essai pour la détermination de la résistance aux racines

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**Ta slovenski standard je istoveten z: CEN/TS 14416:2005**

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**ICS:**

59.080.70      Geotekstilije      Geotextiles

**SIST-TS CEN/TS 14416:2006      en**

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TECHNICAL SPECIFICATION  
SPÉCIFICATION TECHNIQUE  
TECHNISCHE SPEZIFIKATION

**CEN/TS 14416**

October 2005

ICS 59.080.70

English Version

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

Géomembranes et géosynthétiques bentonitiques -  
Méthode d'essai pour la détermination de la résistance aux  
racines

Geosynthetische Dichtungsbahnen - Prüfverfahren zur  
Bestimmung des Widerstandes gegen Wurzeln

This Technical Specification (CEN/TS) was approved by CEN on 28 December 2004 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of 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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## Foreword

This Technical Specification (CEN/TS 14416:2005) has been prepared by Technical Committee CEN/TC 189 “Geosynthetics”, the secretariat of which is held by IBN.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this CEN Technical Specification: 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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**CEN/TS 14416:2005 (E)**

## **Introduction**

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

The standard does not purport to address all of the safety problems, if any, associated with its use.

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## 1 Scope

This CEN Technical Specification covers a laboratory procedure for the testing of the resistance of polymeric, bituminous or clay geosynthetic barriers to root penetration.

## 2 Normative references

Not applicable.

## 3 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.

## 4 Apparatus

The following equipment shall be used:

- four dry unglazed clay flower pots approximately 220 mm high. The diameter of the base of the flower pot shall be approximately 140 mm, the diameter of the top 250 mm, and the cone angle (angle between side and central axis) approximately 13°. A band about 40 mm wide 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;

NOTE Compost should not be used;

- seeds of lupin (*lupinus alba*);
- silicone mastic sealant;
- bitumen 85/40;
- glass tubes.

## 5 Procedure

- Fill the pots with the soil as far as the lower edge of the painted band.
- 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.
- Prepare the fourth pot in which the geosynthetic barrier is replaced by a 20 mm thick layer of bitumen 85/40.

NOTE 85/40 is an oxidized grade bitumen with a softening point of  $(85 \pm 5)$  °C and a penetration temperature of  $(40 \pm 5)$  °C.

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- Cover the geosynthetic barrier or the bitumen with 90 mm of soil.
- Sow 30 to 40 lupin seeds in each pot evenly on the soil.
- Cover the seeds with 10 mm of 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.
- Moisten the soil below the geosynthetic barrier or bitumen by placing the pot from time to time in a saucer filled with rain water.

**6 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 layer of bitumen.

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

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

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**7 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 where possible by a photograph;
- g) date of testing.