

Geosynthetic barriers - Screening test method for determining the resistance to oxidation

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 14575:2005 sisaldab Euroopa standardi EN 14575:2005 ingliskeelset teksti. Käesolev dokument on jõustatud 30.05.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 14575:2005 consists of the English text of the European standard EN 14575:2005. This document is endorsed on 30.05.2005 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.
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Käsitlusala: This document specifies a test method for screening the resistance of polyethylene and polypropylene polymeric and bituminous geosynthetic barriers to oxidation.	Scope: This document specifies a test method for screening the resistance of polyethylene and polypropylene polymeric and bituminous geosynthetic barriers to oxidation.
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ICS 59.080.70, 91.100.50

Võtmesõnad:

ICS 59.080.70; 91.100.50

English version

Geosynthetic barriers - Screening test method for determining the resistance to oxidation

Barrières géosynthétiques - Méthode d'essai sélective pour la détermination de la résistance à l'oxydation

Geosynthetische Dichtungsbahnen - Orientierungsprüfung zur Bestimmung der Oxidationsbeständigkeit

This European Standard was approved by CEN on 3 March 2005.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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Foreword

This document (EN 14575:2005) has been prepared by Technical Committee CEN/TC 189 “Geosynthetics”, the secretariat of which is held by IBN/BIN.

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of an identical text or by endorsement, at the latest by October 2005, and conflicting national standards shall be withdrawn at the latest by October 2005.

This document includes a Bibliography.

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.

Introduction

In many civil engineering applications geosynthetic barriers may be in contact with water or aqueous solutions in the present soil environment. At the same time, in specific parts of the construction the geosynthetic barriers may be exposed to slowly diffusing oxygen in the soil.

The presence of oxygen gives rise to a very slow oxidative degradation process. Polyolefin materials such as polypropylene and polyethylene may be relatively more sensitive to oxidative degradation than polyesters, depending on the formulation of the material and the circumstances in use.

It is the purpose of this document to provide a method for screening the resistance of geosynthetic barriers to oxidation in service for at least 25 years.

1 Scope

This document specifies a test method for screening the resistance of polyethylene and polypropylene polymeric and bituminous geosynthetic barriers to oxidation.

The data are suitable for screening but not for deriving performance data such as lifetimes greater than 25 years, unless supported by further evidence.

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.

EN ISO 9862, *Geosynthetics - Sampling and preparation of test specimens (ISO 9862:2005)*

ISO 188:1998, *Rubber, vulcanised or thermoplastic - Accelerated ageing and heat-resistance tests*

3 Principle

Test specimens are exposed to an elevated temperature in air during a fixed time period, using a regulated laboratory oven with forced air circulation.

The test specimens shall hang freely in the oven space.

After the fixed time period of oven ageing the exposed test specimens are submitted to a tensile test. The tensile strength and the elongation at break are measured for both the control specimens and the exposed specimens.

NOTE The oxidative degradation of the exposed specimen may also be evaluated by comparing the oxidative induction time of the specimen measured according to ASTM D 3895-03 with the oxidative induction time of the control sample.

4 Specimens

The sample shall be taken in accordance with EN ISO 9862. Products shall have been manufactured at least 24 h prior to testing. The number of specimens shall be five test specimens and five control specimens, unless further specimens are required to assure statistical significance.

Test and control specimens shall conform to the requirements of the relevant test method as specified in the standard pertaining to the type of application where the geosynthetic barrier will be used (see Bibliography).

NOTE It is recommended to expose additional specimens in case an extra mechanical test is required (see 7.4).

5 Apparatus

- A thermostatically regulated oven with forced air circulation, according to ISO 188:1998 (4.1.3), with an internal volume capable of exposing test specimens to a temperature of $(85 \pm 1) ^\circ\text{C}$.
- Glass or other chemically inert fixtures for suspending the specimens in the center of the oven, such that the specimens are spaced by a distance of not less than 10 mm, and that the distance from each wall is at least 100 mm.