SLOVENSKI STANDARD
SIST ENV 12447:1999

01-marec-1999

Geotekstilije in geotekstilijam sorodni izdelki - Preskusne metode za ugotavljanje hidrolizne odpornosti

Geotextiles and geotextile-related products - Screening test method for determining the resistance to hydrolysis

Geotextilien und geotextilverwandte Produkte - Prüfverfahren zur Bestimmung der Hydrolysebeständigkeit

Géotextiles et produits apparentés - Méthode de détermination de la résistance a l'hydrolyse

Ta slovenski standard je istoveten z: **ENV 12447:1997**

ICS:

59.080.70	Geotekstilije	Geotextiles

SIST ENV 12447:1999 **en**

EUROPEAN PRESTANDARD

PRÉNORME EUROPÉENNE

EUROPÄISCHE VORNORM

ENV 12447

October 1997

ICS 59.080.70

Descriptors: geotextiles, tests, high temperature tests, immersion tests, hot water, determination, chemical resistance, hydrolysis

English version

Geotextiles and geotextile-related products - Screening test method for determining the resistance to hydrolysis

Géotextiles et produits apparentés - Méthode de détermination de la résistance à l'hydrolyse

Geotextilien und geotextilverwandte Produkte - Prüfverfahren zur Bestimmung der Hydrolysebeständigkeit

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This European Prestandard has been prepared by Technical Committee CEN/TC 189 " Geotextiles and geotextile-related products", 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 European Prestandard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This prestandard describes a screening test method to establish a minimum acceptance level of resistance of geotextiles and geotextile-related products to soil moisture.
In certain polymers moisture leads to hydrolysis throughout the thickness of the fibre (internal hydrolysis) but the rate of degradation is such that over short periods it is only measurable at elevated temperatures, e.g. by immersion in hot water.

1 Scope

This prestandard specifies a screening test method for determining the resistance of geotextiles and geotextile-related products to hydrolysis by exposing test specimens to water at elevated temperatures, followed by an evaluation of the changes in properties resulting from such exposure. It is intended as a means of establishing a minimum acceptable level of durability.
The test is applicable to any geotextile and geotextile-related product susceptible to hydrolysis, in particular polyester and polyamide based materials, and in addition to the yarns from which these geotextiles are made.
This method is not intended for determining the resistance of geotextiles to hydrolysis under highly acid or alkaline conditions.

NOTE: Performance tests to predict long-term lifetime or to compare products of different polymers or of similar polymers with differing structures can be based on the same method but with a wider range of temperatures and durations.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ENV 12226	Geotextiles and geotextile-related products - General tests for evaluation following durability testing.
EN ISO 3696	Water for analytical laboratory use - Specification and test methods
ISO 5077	Textiles - Determination of dimensional changes in washing and drying

3 Principle

Both test and control specimens are immersed in hot water for specified durations and at a specified temperature. The properties of the specimens are determined after immersion.

4 Water

Use deionised water to EN ISO 3696, class 3.

5 Safety precautions

Refer to national safety regulations.

6 Apparatus

6.1 Container

The container shall be made of a material which is inert under the conditions of test. The total volume of the test specimens shall not exceed 10% of the free space in the container. The test specimens shall be suspended free of significant load and shall be exposed to the test medium on both sides.

The container shall be provided with a means of heating and controlling the temperature to (95±1) °C and a separate means of measuring the temperature.

6.2 Thermometer: to measure the temperature in the container.

6.3 Glass tubes: of chemically inert material, typically borosilicate glass tubes of 60 mm external diameter, for winding yarn specimens.

7 Specimens

7.1 Size and shape

Prepare specimens to the size and shape specified in ENV 12226. If the requirements of ENV 12226 can not be met due to machine capacity then the relevant components (such as yarns or the components of a geocomposite) can be tested individually.

NOTE: Allowance is made for shrinkage by immersing the control specimens for 1 hour only(see clause 9). Shrinkage at test temperature in boiling water may be evaluated according to EN 5077 for woven geotextiles, grids and nonwovens or the same procedure applied to yarns and monofilaments. The deformation due to shrinkage is not expected to exceed 5%.

7.2 Number of specimens

Prepare enough specimens to provide a minimum of five test specimens and five control specimens.

NOTE: It is recommended to expose additional specimens in case an extra mechanical test is required (see clause 9)

8 Procedure

Deionised water as specified in clause 5 shall always be used in the tests.

NOTE 1: The quality of the water used as hydrolysing agent in this test is important for the reproducibility of the test results.

Expose the test specimens, free of significant load, on both sides to the test medium.

NOTE 2: It is preferable to test the material together with a control specimen taken from a roll of already tested material.

The test temperature shall be (95 ± 1) °C.

Test yarns as strands or wind them loosely on a glass tube (see 7.3). Do not overwind, and separate the yarns by at least one diameter. Wind the control specimens in the same way.

The ratio between the mass of water and the mass of the test specimens shall be at least 30:1. Cover the specimens completely with water. Do not treat materials differing in chemical composition in the same enclosure.

The test duration is 28 days.

The control specimens shall be exposed to the same environment for one hour and then removed and stored.

9 Determination of changes in properties

The test and control specimens shall be conditioned for at least 16 h at (20 ± 2) °C and (65 ± 5) % relative humidity before evaluation of the desired properties. For the method of test refer to ENV 12226.

If the mechanical test on one of the specimens is invalid (see ENV 12226), a further specimen shall be tested in its place.

10 Test report

The test report shall contain the following information:

a) a reference to this standard;
b) a description of the material;
c) the procedure and conditions used;
d) changes in properties as defined in ENV 12226;
e) date of test;
f) any deviation from this standard or other factors that may influence the result of this test.