



SLOVENSKI STANDARD

SIST EN 12226:2001

01-februar-2001

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SIST ENV 12226:1999

Geotekstilije in geotekstilijam sorodni izdelki - Splošni preskusi za ocenitev sprememb po preskusu staranja

Geotextiles and geotextile-related products - General tests for evaluation following durability testing

Geotextilien und geotextilverwandte Produkte - Allgemeine Prüfverfahren für die Bewertung nach Beständigkeitsprüfungen

Géotextiles et produits apparentés - Essais généraux pour l'évaluation apres les essais de durabilité

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Ta slovenski standard je istoveten z: EN 12226:2000

ICS:

59.080.70 Geotekstilije Geotextiles

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12226

September 2000

ICS 59.080.70

Supersedes ENV 12226:1996

English version

Geotextiles and geotextile-related products - General tests for evaluation following durability testing

Géotextiles et produits apparentés - Essais généraux pour l'évaluation après les essais de durabilité

Geotextilien und geotextilverwandte Produkte - Allgemeine Prüfverfahren für die Bewertung nach Beständigkeitsprüfungen

This European Standard was approved by CEN on 15 July 2000.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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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CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 189 "Geotextiles and geotextile-related products", the secretariat of which is held by IBN.

This European Standard supersedes ENV 12226:1996.

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 March 2001, and conflicting national standards shall be withdrawn at the latest by March 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This European Standard describes test methods for determining the change in specific properties of aged geotextiles. It is applicable to geotextiles and geotextile-related products.

NOTE: For further information see CR ISO 13434.

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 (including amendments).

EN 963	Geotextiles and geotextile-related products - Sampling and preparation of test specimens
EN 29073-3	Textiles - Test methods for nonwovens - Part 3: Determination of tensile strength and elongation
EN ISO 13934-1	Textiles - Tensile properties of fabrics - Part 1: Determination of maximum force and elongation at maximum force using the strip method (ISO 13934-1:1999)
ISO 554	Standard atmospheres for conditioning and/or testing - Specifications.
CR ISO 13434	Guidelines on durability of geotextiles and geotextile-related products

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3 Principle

The test specimens are exposed to a durability test for geotextiles. The exposure is followed by visual and, if required, microscopic inspection and by determination of changes in tensile properties.

NOTE: For further information on relevant durability tests see CR ISO 13434.

4 Specimens

4.1 Number of specimens

For each durability test the number of test and control specimens shall be a minimum of five, in both the machine and the cross-direction, unless the nature of the geotextile or geotextile-related product makes this inappropriate.

NOTE: If several durability tests are carried out simultaneously, common control specimens may be used.

Where specimens are exposed for more than one time duration, control specimens shall be prepared for each duration.

4.2 Sampling

Prepare specimens in accordance with EN 963.

For woven fabrics, cut pairs of test and control specimens at least 60 mm wide and 300 mm long containing the same yarns in the direction of test, i.e. adjacent along the shorter dimension. Count the number of these yarns within 50 mm in the machine direction and in the cross direction. Record the numbers as n_1 and n_2 respectively.

For nonwoven fabrics, cut pairs of test and control specimens at least 50 mm wide and 300 mm long adjacent along the larger dimension.

For geogrids, cut specimens containing one or more complete ribs in width and at least three junctions in length with one junction at the centre of the specimen.

Separate composite products into their constituent parts for durability testing. Attention should be paid to the fact that this may affect their performance.

NOTE: The variability in the tensile strength of nonwovens may be reduced if tensile strength is assumed to correlate with the mass of the specimens. Discard the outer 10 % of the roll width together with any areas with visible faults. The specimens should then be cut or punched out with equal dimensions, weighed, and the mean \bar{m} and standard deviation s of the mass calculated. All those whose mass m_i is greater or less than one standard deviation from the mean should be discarded, amounting to about one third of the specimens.

From these specimens of mass m_i sets of n specimens for each exposure time can be compiled such that the total mass of each set $\sum m_i$ fulfils the relation:

$$\bar{m} - s < \sum m_i < \bar{m} + s$$

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4.3 Conditioning and exposure

Expose the specimens as described in the relevant durability standard, following the guidelines of CR ISO 13434.

Store the control samples in the dark.

Before testing condition both test and control specimens at $(20 \pm 2)^\circ\text{C}$ and $(65 \pm 5)\%$ relative humidity for a minimum of 24 h, as defined in ISO 554. The test specimens shall be considered to have been conditioned when the change in mass of the test specimen in two successive weighings, made at intervals of not less than 2 h of conditioning, does not exceed 0,25 % of the mass of the test specimen.

NOTE: Conditioning and/or testing at a specified relative humidity may be omitted if it can be shown that the results are not affected by such treatment.

5 Procedures

5.1 Visual examination

Inspect the exposed specimens with the naked eye and report changes relative to the control specimens, e.g. discolourations.

5.2 Microscopic examination

When required, use a microscope with a magnification of approximately 250 to give a qualitative prediction of obvious differences between the exposed and the control specimens, e.g. damage to the individual fibres. Report the magnification factor.

NOTE: Specimens for microscopic examination may be taken separately from the specimens for tensile testing.

5.3 Tensile properties

Test tensile properties of woven fabrics in accordance with EN ISO 13934-1 and nonwoven fabrics in accordance with EN 29073-3, but using a jaw separation speed of 100 mm/min.

NOTE: Where required (see 4.2) specimens wider than 50 mm may be used.

For woven fabrics remove threads in approximately equal numbers from each of the long edges of the cut strip until the width of the exposed and control specimens contains a number of threads identical to the corresponding number n_1 or n_2 (see 4.4). For machine and cross-direction record separately the tensile strengths of the control specimens as F_{ci} and of the exposed as F_{ei} . If required, record the strains at maximum load as ϵ_{ci} and ϵ_{ei} respectively, "i" indicating the specimens.

6 Expression of results

6.1 Change in tensile strength

Calculate the mean tensile strength of the exposed specimens, F_e , and its standard deviation. Calculate the mean tensile strength of the control specimens, F_c , and its standard deviation.

Calculate the percentage retained strength R_F to one decimal place according to the formula:

$$R_F = \frac{F_e}{F_c} \times 100\%$$

6.2 Change in strain at maximum load.

If required, calculate the mean strain at maximum load of the exposed specimens, ϵ_e , and its standard deviation. Calculate the mean strain at maximum load of the control specimens, ϵ_c , and its standard deviation.

Calculate the percentage retained strain at maximum load R_ε to one decimal place according to the formula:

$$R_\varepsilon = \frac{\varepsilon_e}{\varepsilon_c} \times 100\%$$

7 Test report

The test report shall include the following information:

- a) reference to this European Standard;
- b) identification of the sample;
- c) number and dimensions of tested specimens;
- d) conditioning atmosphere;
- e) type of exposure with reference to the corresponding standard;
- f) results of visual examination and, if carried out, microscopic inspection, including the magnification factor;
- g) mean and standard deviation of F_e and F_c and the percentage retained strength (RF);
- h) mean and standard deviation of ε_e and ε_c , and the percentage retained strain at maximum load, R_ε ;
- i) deviations from this European Standard;
- j) date of the test.

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