

Geotextiles and geotextile-related products — Determination of the compressive creep properties

The European Standard EN 1897:2001 has the status of a
British Standard

ICS 59.080.70

National foreword

This British Standard is the official English language version of EN 1897:2001. It supersedes DD ENV 1897:1996 which will be withdrawn. Together with BS EN ISO 13431:1999 it supersedes BS 6906-5:1991 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/533, Geosynthetics, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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This British Standard, having been prepared under the direction of the Sector Policy and Strategy Committee for Building and Civil Engineering, was published under the authority of the Standards Policy and Strategy Committee on 6 September 2001

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English version

Geotextiles and geotextile-related products — Determination of the compressive creep properties

Géotextiles et produits apparentés — Détermination des propriétés de fluage en compression

Geotextilien und geotextilverwandte Produkte —
Bestimmung des Kriechverhaltens unter
Druckbeanspruchung

This European Standard was approved by CEN on 9 June 2001.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 189, Geosynthetics, the Secretariat of which is held by IBN.

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of an identical text or by endorsement, at the latest by January 2002, and conflicting national standards shall be withdrawn at the latest by January 2002.

This European Standard replaces ENV 1897:1996.

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.

1 Scope

This European Standard specifies index test methods for determining the compressive behaviour of geotextiles and geotextile-related products.

The test specimens can be subjected either to normal compressive loading or to a combination of normal compressive loading and shear loading. Products which are sensitive to shear failure, i.e. which have a columnar or cusped structure, should be tested with both normal and shear loads applied (see clause 6); all other products can be tested with a normal load only (see clause 5).

The tests are carried out with the specimen dry or immersed in water.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate points 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	<i>Geotextiles and geotextile-related products — Sampling and preparation of test specimens.</i>
EN 964-1	<i>Geotextiles and geotextile-related products — Determination of thickness at specified pressures — Part 1: Single layers.</i>
ISO 554	<i>Standard atmospheres for conditioning and/or testing — Specification.</i>
ISO 3696	<i>Water for analytical laboratory use — Specification and test methods.</i>

3 Terms and definitions

For the purposes of this European Standard the following terms and definitions apply.

3.1

thickness

distance, in millimetres, between the two rigid plates in contact with the specimen at any stage in the test (see Figures 1 and 2)

3.2

compression creep (Δt_g)

time dependent change in thickness of a material subjected to a constant compressive load after the initial compression (t_o) of the specimen

3.3 initial thickness (t_i)

thickness, in millimetres, of the specimen when subject to an applied normal stress of 5 kPa, when measured in accordance with EN 964-1

3.4

compressive strain (ϵ)

time dependent change in thickness, expressed as a percentage of the initial thickness

3.5

initial compression (t_0)

change in thickness which occurs immediately after the specimen is loaded; the difference between the initial thickness and the thickness is measured at 1 min (normal loading only) or 4 min (normal and shear loading)

3.6

compressive creep collapse

sudden increase in the rate of change in thickness of a specimen subject to a constant compressive load

4 Test specimens

4.1 Sampling

Take specimens in accordance with EN 963.

4.2 Number and dimensions of test specimens

Cut eight specimens from the test sample for each test procedure to be followed; a new specimen is required for each test.

The size of each specimen shall satisfy the following criteria:

- the specimen shall be square and have a minimum size of 100 mm × 100 mm (see Figure 1);
- if the specimen has a structure in which loading is resisted at defined points or areas, then the loading plate shall cover at least three of these points or areas in both directions (see Figure 2);
- specimens shall be cut with the sides parallel to the length and width of the sample.

4.3 Conditioning

The test specimens shall be conditioned and the tests conducted in the standard atmosphere for testing, i.e. at a relative humidity of $(65 \pm 5) \%$ and a temperature of $(20 \pm 2) ^\circ\text{C}$ (according to ISO 554). The test specimens can be considered to have been conditioned when the change in mass of the test specimen in successive weighings made at intervals of not less than 2 h does not exceed 0,25 % of the mass of the test specimen.

The test shall be carried out with the specimen immersed in water, where any part of the geotextile or geotextile-related product contains a hydrophilic polymer. Where the test is to be carried out with the specimen immersed in water, the specimen shall be soaked in water for 24 h prior to the test. The water shall be maintained at a temperature of $(20 \pm 2) ^\circ\text{C}$. The water to be used shall be deionized water according to ISO 3696.

5 Normal compressive load method

5.1 Principle

The geotextile specimen is placed on the fixed base of a compression machine with an upper loading plate, the vertical compressive load is applied and the change in thickness is recorded with time. The vertical compressive load is applied to the specimen for a period of 1 000 h with greater or lesser times by agreement.