SLOVENSKI STANDARD
SIST EN 918:1999

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Geotekstilije in geotekstilijam sorodni izdelki - Dinamiļ ni luknjalni preskus (preskus s padanjem stoģca)

Geotextiles and geotextile-related products - Dynamic perforation test (cone drop test)

Geotextilien und geotextilverwandte Produkte - Dynamischer Durchschlagversuch (Kegelfallversuch)

Géotextiles et produits apparentés - Essai de perforation dynamique (essai par chute d'un cône)

Ta slovenski standard je istoveten z: **EN 918:1995**

ICS:

59.080.70 Geotekstilije Geotextiles

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English version

Geotextiles and geotextile-related products - Dynamic perforation test (cone drop test)

Géotextiles et produits apparentés - Essai de perforation dynamique (essai par chute d'un cône)

Geotextilien und geotextilverwandte Produkte - Dynamischer Durchschlagversuch (Kegelfallversuch)

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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.

The European Standards exist 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

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard has been prepared by the Technical Committee CEN/TC 189 "Geotextiles and geotextile-related products" of which the Secretariat 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of an identical text or by endorsement, at the latest by June 1996, and conflicting national standards shall be withdrawn at the latest by June 1996.

ISO/CS is presently preparing ISO/DIS 13433 that will deal with the same subject as prEN 918.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, 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 the determination of the resistance of geotextiles and geotextile-related products to the penetration by a steel cone dropped from a fixed height. The degree of penetration is an indication of the behaviour of the product likely to be caused by dropping sharp stones onto the geotextile surface.

The method is generally applicable to geotextiles and geotextile-related products. The validity of this test for some types of products (e.g. geogrids) should be considered carefully, as the principle of the test may not be applicable for these materials.

2 Normative references

This European standard incorporates by dated and 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 applications 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.

EN 963	Geotextiles and geotextile-related products - Sampling and preparation of test specimens
EN 30320	Geotextiles - Identification on site (ISO 10320:1991)
ISO 554	Standard atmospheres for conditioning and/or testing - Specifications
ISO 2854	Statistical interpretation of data - Techniques of estimation and tests relating to means and variances

3 Definition

For the purposes of this standard the following definition applies:

3.1 Hole size: The diameter in millimetres of the hole made by the cone in penetrating the specimen.

4 Principle

The geotextile specimen is clamped horizontally between two steel rings. A stainless steel cone is dropped, point first, from a distance of 500 mm onto the centre of the specimen. The degree of penetration is measured by insertion of a narrow-angle graduated cone into the hole.

5 Apparatus

5.1 Clamping system

The clamping system (see figure 1) shall prevent pre-tensioning of the specimen before, and slippage during the test. The internal diameter of the clamping rings shall be (150 ± 0,5) mm. An example of a clamping system is shown in figure 1. The clamping rings and the guide block are also shown in figure 1.

5.2 Frame for supporting the clamped specimen, and a means of releasing the cone from a distance of (500 ± 2) mm, point first, onto the centre of the specimen (see figure 2). The frame shall be mounted on a hard, non-resilient surface.

> **NOTE 1:** The cone should fall vertically point first. This can be achieved either by using guides which do not limit the rate of fall, or by an appropriate release mechanism ensuring free fall without rotation.
>
> **NOTE 2:** Safety: figure 2 shows a safety screen to protect the operator from injury by the falling cone.

5.3 A stainless steel cone, of 45° tip angle, with a smooth polished surface and a mass of (1000 ± 5) g including the guide rod, having detailed dimensions as shown in figure 3.

5.4 Means for ensuring the test specimen is horizontal and the cone axis vertical (e.g. spirit level and adjusting screws).

5.5 Measuring cone with the dimensions given in figure 4 and with a mass of (600 ± 5) g including grip.

6 Specimens

6.1 Sampling

Take specimens in accordance with EN 963.

6.2 Number and dimension of specimens

Cut ten specimens from the sample, each of suitable dimensions for the apparatus used.

If the material to be tested is known to have different characteristics on the two faces, (e.g. physical characteristics or as a consequence of the manufacturing process), then the complete test shall be carried out separately on each face using ten specimens.
The test report shall include details of this extension of the test procedure and

separate results for each face shall be given.

7 Conditioning

Condition the specimens, and conduct the tests in the standard atmosphere as defined in ISO 554. The specimens can be considered to have been conditioned when the change in mass of the specimen in successive weighings made at intervals of not less than 2 h does not exceed 0,25 % of the mass of the test specimens.

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

8 Procedure

8.1 Ensure that the clamping rings (see 5.1) are horizontal in the frame (see 5.2) using a suitable means (see 5.4).

8.2 Secure one specimen between the clamping rings of the clamping system free of slack (see figure 2) (e.g. using a guide block, see figure 1). Place the specimen and clamping system in the testing machine.

8.3 Release the cone (see 5.3) so that it falls smoothly from (500 ± 2) mm onto the surface of the specimen. Record any unusual occurences such as the cone bouncing off the specimen and making a new hole on its second fall. In this event measure the size of the larger hole.

> **NOTE:** A light dusting of talcum powder on the surface of the specimen can help to indicate the site of the first strike by the cone.

8.4 Immediately place the measuring cone (see 5.5) into the hole. Wait 10 s, then measure the diameter of the hole to the nearest millimetre. The value determined shall be the maximum visible diameter of the measuring cone when the cone is in a vertical position. If the material is very anisotropic, i.e. different properties across and along the machine direction, it can be necessary to make assessments of the hole diameter from two or more positions at right angles on the periphery of the cone.

9 Calculation

Calculate the mean hole diameter in millimetres to an accuracy of 0,1 mm and the coefficient of variation in percentage in accordance with ISO 2854.

> **NOTE:** If the falling cone totally penetrates one or more specimens resulting in a hole of 50 mm, then the mean and the coefficient of variation should not be calculated. In this case, the individual results should be quoted in the test report, and special comment on this behaviour should be made.

10 Test report

The test report shall include the following particulars:

a) number and date of this standard;

b) identification of the sample tested according to EN 30320, date of receipt and date of testing;

c) conditioning atmosphere;

d) mean hole diameter;

e) coefficient of variation of hole diameter in percentage;

f) any unusual behaviour, such as secondary penetration;

g) indication of the degree of anisotropy of the material from observations of the hole shape.

h) any deviation from the procedure.

Dimensions in millimetres

1 Upper clamping ring

2 Specimen

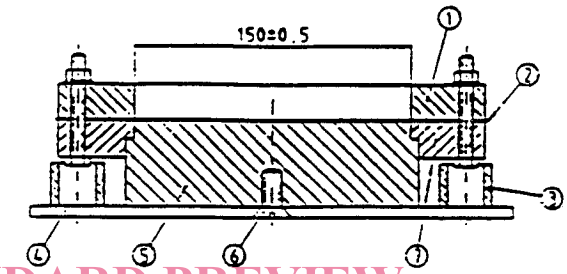
3 Tube

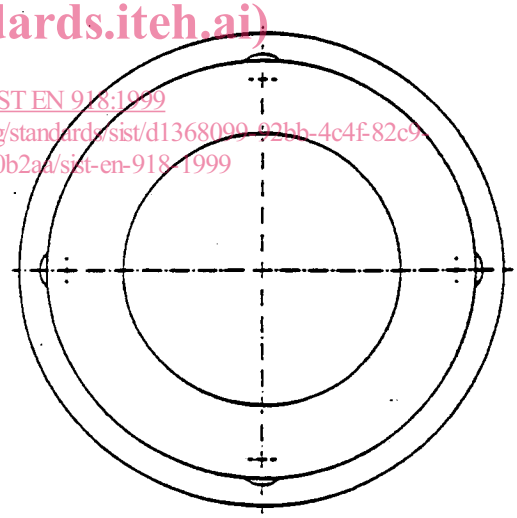
4 Clamping aid

5 Guide block

6 Screw

7 Lower clamping ring





Note1: This figure is not to scale.
Note 2: Number of screws to suit the clamping rings being used

Figure 1: Example of clamping rings and of guide block use