



# SLOVENSKI STANDARD

## SIST EN ISO 10321:1999

01-marec-1999

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**Geotekstilije - Natezni preskus za spojev/šivov na širokih preskušancih (ISO 10321:1992)**

Geotextiles - Tensile test for joints/seams by wide-width method (ISO 10321:1992)

Geotextilien - Zugversuch am breiten Streifen an Verbindungen/Nähten (ISO 10321:1992)

Géotextiles - Essai de traction pour joints/coutures par la méthode de la bande large (ISO 10321:1992)

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**ICS:**

59.080.70      Geotekstilije                                      Geotextiles

**SIST EN ISO 10321:1999**                                      en

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EUROPEAN STANDARD

EN ISO 10321

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 1996

ICS 59.080.70

Descriptors: textiles, filter fabrics, joints, tests, tension tests, determination, tensile properties

English version

### Geotextiles - Tensile test for joints/seams by wide-width method (ISO 10321:1992)

Géotextiles - Essai de traction pour  
joints/coutures par la méthode de la bande  
large (ISO 10321:1992)

Geotextilien - Zugversuch am breiten Streifen  
an Verbindungen/Nähten (ISO 10321:1992)

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**CEN**

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

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

## Foreword

The text of the International Standard from Technical Committee ISO/TC 38 "Textiles" of the International Organization for Standardization (ISO) has been taken over as a European Standard by Technical Committee CEN/TC 189 "Geotextiles and geotextile-related products", 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of an identical text or by endorsement, at the latest by November 1996, and conflicting national standards shall be withdrawn at the latest by November 1996.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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## Endorsement notice

The text of the International Standard ISO 10321:1992 has been approved by CEN as a European Standard without any modification.

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# INTERNATIONAL STANDARD

**ISO**  
**10321**

First edition  
1992-12-01

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## Geotextiles — Tensile test for joints/seams by wide-width method

**iTeh STANDARD PREVIEW**

*Géotextiles — Essai de traction pour joints/coutures par la méthode de  
la bande large*  
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Reference number  
ISO 10321:1992(E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 10321 was prepared by Technical Committee ISO/TC 38, *Textiles*, Sub-Committee SC 21, *Geotextiles*.

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# Geotextiles — Tensile test for joints/seams by wide-width method

## 1 Scope

This International Standard specifies an index test method for determination of the tensile properties of joints and seams in geotextiles and related products, using a wide-width strip. The method is applicable to most geotextiles and geotextile-related products. It is also applicable to geogrids, but the specimen dimensions may need to be altered.

This method quantifies the tensile strength of a joint or seam between geotextiles or related products. It can provide data to indicate the joint or seam tensile strength which can be achieved.

A joint or seam efficiency can be calculated by comparison of the joint/seam tensile strength with the tensile strength of the unjointed material as determined by ISO 10319.

Procedures for measuring the tensile properties of both conditioned and wet specimens are included.

Some modification of techniques may be necessary for particular geotextiles, e.g. strong geotextiles, meshes or geotextiles made from glass fibre, to prevent them from slipping in the jaws or being damaged as a result of being gripped in the jaws.

The basic test for joints or seams in all kinds of geotextiles or related products uses test specimens of 200 mm width, with the provision for the seam or joint to extend for 25 mm on each side in order to provide joint or seam stability during the test (see figure 2).

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publi-

cation, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 554:1976, *Standard atmospheres for conditioning and/or testing* — Specifications.

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*.

ISO 7500-1:1986, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tensile testing machines*.

ISO 9862:1990, *Geotextiles — Sampling and preparation of test specimens*.

ISO 10319:—<sup>1)</sup>, *Geotextiles — Wide-width tensile test*.

## 3 Definitions

For the purposes of this International Standard, the following definitions apply.

**3.1 seam:** Series of stitches joining two or more separate pieces of a material or materials of planar structure, e.g. geotextiles or related products.

**3.2 joint:** The junction at which two or more separate pieces of a geotextile or related product are joined by a method other than stitching.

**3.3 joint/seam strength** (for geotextiles and related products): The maximum tensile resistance, measured in kilonewtons per metre, of the junction formed by stitching or joining two or more planar structures.

1) To be published.

**3.4 joint/seam efficiency:** The ratio, expressed as a percentage, of joint/seam strength to the geotextile strength evaluated in the same direction.

## 4 Principle

A geotextile specimen, 200 mm wide and containing a joint/seam, is gripped across its entire width in the clamps of a tensile testing machine, operated at a prescribed rate of extension, and subjected to a longitudinal force (perpendicular to the seam axis) until the joint/seam of the geotextile or related product ruptures.

## 5 Apparatus and materials

**5.1 Tensile testing machine,** constant rate of extension type, complying with ISO 7500-1, in which the rate of increase of specimen length is uniform with time.

**5.2 Jaws,** which are sufficiently wide to hold the entire width of the specimen and with appropriate means to limit slippage or damage. Each jaw shall have faces measuring at least the width of the specimen, i.e. 200 mm.

NOTE 1 It is stressed that it is essential to choose jaw faces that limit slippage of the geotextile that may occur, especially for stronger geotextiles. Examples of types of jaw face, which have been found satisfactory, are given in figure 1.

**5.3 Water** (for wet specimens only), purity grade 3 as defined in ISO 3696.

**5.4 Non-ionic wetting agent** (for wet specimens only).

## 6 Test specimens

### 6.1 Number of test specimens

Cut at least five test specimens, each of which includes the seam or joint.

### 6.2 Selection of test specimens

Select specimens in accordance with ISO 9862.

### 6.3 Dimensions of test specimens

**6.3.1** Prepare test specimens from the jointed or seamed specimen, each of sufficient length to ensure an initial jaw separation of 100 mm plus the joint or seam width  $b$  (see figure 3) and with the

seam or joint located along the centre-line of the specimen, perpendicular to the direction of the applied load.

Cut each specimen, as shown in figure 2, to achieve a final specimen width of 200 mm. When removing the shaded area from a specimen, as shown in figure 2, the angles between the 25-mm extensions, which are parallel to the seam or joint, and that section of the specimen having a finished width of 200 mm shall be 90°.

**6.3.2** For woven geotextiles (see ISO 10319), make 25-mm-long cuts at a distance of 25 mm plus  $b/2$  from the centre-line of the specimen, to facilitate the removal of the edge yarns in attaining the nominal width of 200 mm.

**6.3.3** For geogrids, prepare jointed specimens at least 200 mm wide and sufficiently long to ensure a clamp separation of at least 100 mm plus the joint width, measured to  $\pm 3$  mm. The jointed test specimen shall contain at least five tensile elements within the width of the test specimen and at least one row of nodes or cross-members on either side of the joint, excluding those by which the test specimen is held in the jaws or from which the joint is to be made. Cut all ribs or cross-members at least 10 mm from any node (see figure 4).

The cross-members, from which the joint is to be made, shall be extended, by at least one pitch beyond the tensile elements to be tested, on both sides of the specimen, in order to facilitate the formation of the joint.

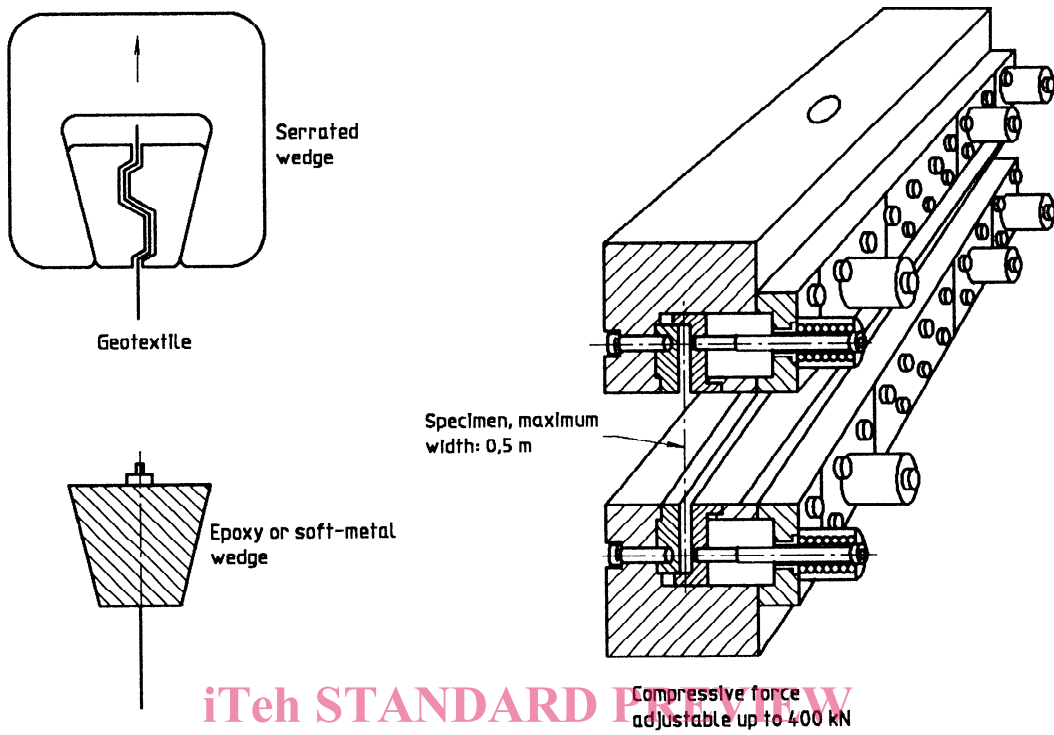
**6.3.4** For knitted geotextiles, geocomposites or others in which preparing the specimen by cutting with a knife or scissors may affect the geotextile structure, thermal cutting can be used, taking care to avoid damaging the specimen during the cutting operation, particularly at the point labelled "A" in figure 2. This shall be reported in the test report [clause 10, b)].

**6.3.5** If wet testing is also required, cut an additional five specimens.

### 6.4 Index characterisation

For index characterisation of the seam/joint, the two elements seamed/jointed together shall be orientated in the same direction (warp or weft, machine or cross-machine direction) and aligned perpendicular to the seam/joint and parallel to the applied load axis.

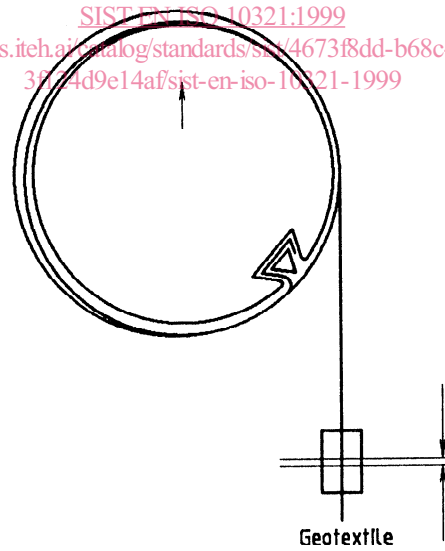




a) Wedge Jaws

b) Compressive block Jaws

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c) Capstan

Figure 1 — Examples of jaw faces for testing geotextiles