

<b>STN</b>	<b>Geosyntetika Skúšobná metóda na stanovenie modulu v spevnení s bariérou z HPDE geosyntetík</b>	<b>STN EN 17096</b>
		80 6144

Geosynthetics - Test method for the determination of the strain hardening modulus of PE-HD geosynthetic barriers

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola označená vo Vestníku ÚNMS SR č. 04/19

Obsahuje: EN 17096:2018

**128472**

**EUROPEAN STANDARD**  
**NORME EUROPÉENNE**  
**EUROPÄISCHE NORM**

**EN 17096**

November 2018

ICS 59.080.70

English Version

**Geosynthetics - Test method for the determination of the  
strain hardening modulus of PE-HD geosynthetic barriers**

Géosynthétiques - Méthode d'essai pour la  
détermination du module d'écrouissage des  
Géomembranes HDPE

Geokunststoffe - Prüfverfahren für die Bestimmung des  
Dehnverfestigungsmodul von HDPE-  
Kunststoffdichtungsbahnen

This European Standard was approved by CEN on 15 July 2018.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

## Contents

	Page
<b>European foreword.....</b>	<b>3</b>
<b>1 Scope.....</b>	<b>4</b>
<b>2 Normative references.....</b>	<b>4</b>
<b>3 Terms and definitions .....</b>	<b>4</b>
<b>4 Principle .....</b>	<b>6</b>
<b>5 Apparatus.....</b>	<b>6</b>
<b>5.1 Tensile-testing machine .....</b>	<b>6</b>
<b>5.2 Devices for measuring the thickness and width of the test specimens.....</b>	<b>7</b>
<b>5.3 Punch die tool.....</b>	<b>7</b>
<b>5.4 Device for application of the gauge marks.....</b>	<b>7</b>
<b>6 Test specimen.....</b>	<b>7</b>
<b>6.1 Dimensions and figure of the test specimen .....</b>	<b>7</b>
<b>6.2 Test specimen preparation.....</b>	<b>8</b>
<b>7 Test procedure .....</b>	<b>8</b>
<b>8 Calculation.....</b>	<b>9</b>
<b>9 Test report.....</b>	<b>9</b>
<b>Annex A (informative) Neo-Hookean constitutive model.....</b>	<b>11</b>
<b>Bibliography.....</b>	<b>13</b>

## **European foreword**

This document (EN 17096:2018) has been prepared by Technical Committee CEN/TC 189 "Geosynthetics", the secretariat of which is held by NBN.

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 May 2019, and conflicting national standards shall be withdrawn at the latest by May 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

**EN 17096:2018 (E)****1 Scope**

This document specifies a test method for the measurement of the strain hardening modulus which is used as a measure for the resistance to slow crack growth of polyethylene. The strain hardening modulus is obtained from true stress versus draw ratio curves on PE-HD geosynthetic barrier samples.

This standard specifies how measurement is performed and how the strain hardening modulus is determined. Details of the required equipment, precision and sample preparations are given.

This test method is suitable for all PE-HD types of GBR-P.

**2 Normative references**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1849-2:2009, *Flexible sheets for waterproofing - Determination of thickness and mass per unit area - Part 2: Plastic and rubber sheets*

EN ISO 9863-1:2016, *Geosynthetics - Determination of thickness at specified pressures - Part 1: Single layers (ISO 9863-1:2016)*

EN ISO 527-1, *Plastics - Determination of tensile properties - Part 1: General principles (ISO 527-1)*

EN ISO 7500-1, *Metallic materials - Calibration and verification of static uniaxial testing machines - Part 1: Tension/compression testing machines - Calibration and verification of the force-measuring system (ISO 7500-1)*

EN ISO 9513, *Metallic materials - Calibration of extensometer systems used in uniaxial testing (ISO 9513)*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN