

**Kiudsarrustatud plastkomposiidid.
Pikisuunalisele
nihkepingele/nihkedeformatsioonile
vastupidavuse määramine, kaasa
arvatud pikisuunalise nihkemooduli
määramine ja pikisuunalise
nihketugevuse määramine $\pm 45^\circ$
tõmbeteimi meetodil**

Fibre-reinforced plastic composites - Determination of the in-plane shear stress/shear strain response, including the in-plane shear modulus and strength, by the $\pm 45^\circ$ tension test method

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 14129:2000 sisaldab Euroopa standardi EN ISO 14129:1997 ingliskeelset teksti. Käesolev dokument on jõustatud 11.01.2000 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 14129:2000 consists of the English text of the European standard EN ISO 14129:1997. This document is endorsed on 11.01.2000 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.
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Käsitlusala: Käesolev standard määrab kindlaks meetodi kiudsarrustatud plastkomposiitide pikisuunalisele nihkepingele/nihkedeformatsioonile vastupidavuse määramiseks, kaasa arvatud pikisuunalise nihkemooduli ja nihketugevuse määramine +/-45° tõmbeteimi meetodil.	Scope:
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ICS 83.120

Võtmesõnad: määramine, nihkemoodul, nihketeimid, nihketugevus, plastid, sarrusplastid, testimine, testitavad proovikehad

ICS 83.120; 83.140.20

Descriptors: Plastics, fibre-reinforced plastic composites, testing.

English version

Fibre-reinforced plastic composites

Determination of the in-plane shear stress/shear strain response,
including the in-plane shear modulus and strength,
by the $\pm 45^\circ$ tension test method
(ISO 14129 : 1997)

Composites plastiques renforcés de fibres – Détermination de la réponse contrainte-déformation en cisaillement plan, module et résistance compris, par essai de traction à $\pm 45^\circ$ (ISO 14129 : 1997)

Faserverstärkte Kunststoffe – Zugversuch an 45° -Laminaten zur Bestimmung der Schubspannungs-/Schubverformungs-Kurve, des Schubmoduls und der Schubfestigkeit in der Lagenebene (ISO 14129 : 1997)

This European Standard was approved by CEN on 1997-11-23.

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.

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.

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

CEN

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

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Foreword

International Standard

ISO 14129 : 1997 Fibre-reinforced plastic composites – Determination of the in-plane shear stress/shear strain response, including the in-plane shear modulus and strength, by the $\pm 45^\circ$ tension test method,

which was prepared by ISO/TC 61 'Plastics' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 249 'Plastics', the Secretariat of which is held by IBN, as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by June 1998 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 14129 : 1997 was approved by CEN as a European Standard without any modification.

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Introduction

This International Standard covers all current and future fibre-reinforced plastic composites which fail in the required manner. Harmonisation with the new tensile standard, ISO 527-5:1997, *Plastics — Determination of tensile properties — Part 5: Test conditions for unidirectional fibre-reinforced plastic composites*, has been achieved where relevant (e.g. document format, specimen size and related strains for modulus measurement).

The test is acceptable for modulus but there is concern over its use for the ultimate shear strength for high shear-elongation materials due to the high strain at failure with only a small further increase in load, fibre rotation and associated temperature rise. Therefore, the stress at a maximum shear strain of 5 % or less is used as the failure criterion. This failure criterion is also used in ASTM D 3518 (1995).

1 Scope

1.1 This International Standard specifies a procedure for determining the in-plane shear stress/shear strain response, including the in-plane shear modulus and shear strength, of fibre-reinforced plastic composites by the $\pm 45^\circ$ tension test method.

1.2 The method is suitable for use with thermoset and thermoplastic matrix laminates made from unidirectional layers and/or fabrics including unidirectional fabrics, with the fibres oriented at $\pm 45^\circ$ to the specimen axis, where the lay-up is symmetrical and balanced about the specimen mid-plane.

NOTE — The method is not suitable for coarse fabrics.

1.3 As the test has been shown to be sensitive to the number and distribution of layers, comparisons should be undertaken using the same number of layers, which must be well distributed.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, 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 291:1997, *Plastics — Standard atmospheres for conditioning and testing*.

ISO 1268:1974, *Plastics — Preparation of glass fibre reinforced, resin bonded, low-pressure laminated plates or panels for test purposes*.¹⁾

ISO 2602:1980, *Statistical interpretation of test results — Estimation of the mean — Confidence interval*.

ISO 2818:1994, *Plastics — Preparation of test specimens by machining*.

ISO 5893:1993, *Rubber and plastics test equipment — Tensile, flexural and compression types (constant rate of traverse) — Description*.

1) Under revision.