

Aerospace series - Fibre reinforced plastics - Test method - Determination of in-plane shear properties ( $\pm 45^\circ$  tensile test)

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 6031:2015 sisaldab Euroopa standardi EN 6031:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 6031:2015 consists of the English text of the European standard EN 6031:2015.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
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Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

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English Version

**Aerospace series - Fibre reinforced plastics - Test method -  
Determination of in-plane shear properties ( $\pm 45^\circ$  tensile  
test)**

Série aérospatiale - Matières plastiques renforcées de  
fibres - Méthode d'essai - Détermination des propriétés  
en cisaillement plan (traction  $\pm 45^\circ$ )

Luft- und Raumfahrt - Faserverstärkte Kunststoffe -  
Prüfverfahren - Bestimmung der Schubeigenschaften  
( $\pm 45^\circ$  Zugversuch)

This European Standard was approved by CEN on 21 June 2014.

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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.

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

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## European foreword

This document (EN 6031:2015) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

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 2016, and conflicting national standards shall be withdrawn at the latest by May 2016.

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

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## 1 Scope

This European Standard specifies the procedure for the determination of the in-plane shear strength and modulus of fibre composites. The procedure is based on the uni-axial tensile stress-strain response of a  $\pm 45^\circ$  laminate which is symmetrically laminated about the mid-plane.

This standard is applicable to composite laminates manufactured from unidirectional tape or woven fabric reinforcement.

This standard does not give any directions necessary to meet the health and safety requirements. It is the responsibility of the user of this standard to consult and establish appropriate health and safety precautions.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2374, *Aerospace series — Glass fibre reinforced mouldings and sandwich composites — Production of test panels*

EN 2489, *Aerospace series — Fibre reinforced plastics — Determination of the action of test fluids*

EN 2565, *Aerospace series — Preparation of carbon fibre reinforced resin panels for test purposes* <sup>1)</sup>

EN 2743, *Aerospace series — Fibre reinforced plastics — Standard procedures for conditioning prior to testing unaged materials*

EN 2823, *Aerospace series — Fibre reinforced plastics — Test method for the determination of the effect of exposure to humid atmosphere on physical and mechanical characteristics* <sup>1)</sup>

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **tensile stress at a given moment during the test**

longitudinal tensile load experienced by the test specimen at a particular moment during the test, divided by the initial unit cross sectional area within the gauge length

### 3.2

#### **shear stress at a given moment during the test**

the shear stress is defined as the in-plane shear stress with its principal direction under  $\pm 45^\circ$  with the direction in which the tension load is applied, and its magnitude is half of the tensile stress

### 3.3

#### **shear strength**

the shear strength is the maximum occurring shear stress during the test. For calculation see 9.1.

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1) Published as ASD-STAN Prestandard at the date of publication of this standard. <http://www.asd-stan.org/>