
**Z vlakni ojačeni kompozitni polimerni materiali - Navajanje karakteristik surovin -
4. del: Posebne zahteve za tkanine**

Fibre-reinforced plastic composites - Declaration of raw material characteristics - Part 4:
Specific requirements for fabrics

Faserverstärkte Verbundwerkstoffe - Angabe von Werkstoffeigenschaften - Teil 4:
Spezifische Anforderungen an Gewebe

Composites plastiques renforcés de fibres - Déclaration des caractéristiques des
matières premières - Partie 4: Exigences particulières pour les tissus

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Fibre-reinforced plastic composites - Declaration of raw material characteristics - Part 4: Specific requirements for fabrics

Composites plastiques renforcés de fibres - Déclaration des caractéristiques des matières premières - Partie 4: Exigences particulières pour les tissus

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This European Standard was approved by CEN on 1 March 2013.

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.

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Contents	Page
Foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions and abbreviated terms	5
3.1 Terms and definitions	5
3.2 Abbreviated terms	5
4 Content of a declaration.....	5
5 Specific declaration requirements	5
5.1 General.....	5
5.2 Declaration for fabrics with continuous fibre	6
5.2.1 Declaration for uni-axial and multi-axial fabrics.....	6
5.2.2 Declaration for woven roving fabric	10
5.3 Declaration for fabrics with discontinuous fibre	10
5.4 Declaration for additional process/material.....	10
Bibliography.....	12

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[SIST EN 16245-4:2013](https://standards.itech.ai/catalog/standards/sist/17655e2e-bd09-43e7-866d-b05abc2cc69a/sist-en-16245-4-2013)

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Foreword

This document (EN 16245-4:2013) has been prepared by Technical Committee CEN/TC 249 "Plastics", 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 October 2013, and conflicting national standards shall be withdrawn at the latest by October 2013.

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.

EN 16245 consists of the following parts, under the general title *Fibre-reinforced plastic composites — Declaration of raw material characteristics*:

- Part 1: General requirements
- Part 2: Specific requirements for resin, curing systems, additives and modifiers
- Part 3: Specific requirements for fibre
- Part 4: Specific requirements for fabrics
- Part 5: Specific requirements for core materials

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 16245-4:2013 (E)**1 Scope**

This part of this European Standard specifies the minimum information to be declared for fabrics to be used for the manufacturing of composites products, also impregnated products, but not to the composite products or impregnated products themselves.

These specific declaration requirements are in addition to the general requirements given in Part 1 of this standard (i.e. EN 16245-1).

This document includes requirements for the Certificate of Analysis (CoA). The purpose of the CoA is to verify that material properties and quality conform to the declared values.

This part of the standard is applicable to uni-axial and multi-axial fabric material.

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 13473-1, *Reinforcement — Specifications for multi-axial multi-ply fabrics — Part 1: Designation*

EN 13473-2, *Reinforcement — Specifications for multi-axial multi-ply fabrics — Part 2: Methods of test and general requirements*

EN 16245-1:2013, *Fibre-reinforced plastic composites — Declaration of raw material characteristics — Part 1: General requirements* <https://standards.iteh.ai/catalog/standards/sist/17655e2e-bd09-43e7-866d-b05abc2cc69a/sist-en-16245-4-2013>

EN 16245-3, *Fibre-reinforced plastic composites — Declaration of raw material characteristics — Part 3: Specific requirements for fibre*

EN ISO 291, *Plastics — Standard atmospheres for conditioning and testing (ISO 291)*

EN ISO 1889, *Reinforcement yarns — Determination of linear density (ISO 1889)*

EN ISO 3344, *Reinforcement products — Determination of moisture content (ISO 3344)*

EN ISO 4921, *Knitting — Basic concepts — Vocabulary (ISO 4921)*

ISO 1887, *Textile glass — Determination of combustible-matter content*

ISO 3374, *Reinforcement products — Mats and fabrics — Determination of mass per unit area*

ISO 5025, *Reinforcement products — Woven fabrics — Determination of width and length*

3 Terms and definitions and abbreviated terms

3.1 Terms and definitions

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

3.1.1

fabric

material constructed of interlaced yarns, fibres, or filaments, usually a planar structure

Note 1 to entry: Nonwovens can be included in this classification.

3.1.2

structural fibre

load carrying fibre in the fabric

3.2 Abbreviated terms

UD uni-axial, fibres in one direction

BIAX bi-axial, fibres in two directions

TRIAX three-axial, fibres in three directions

QUADRIAX four-axial, fibres in four directions

4 Content of a declaration

A declaration for the fabrics shall consist of information according to Clause 5 of EN 16245-1:2013 and Clause 5 of this standard.

5 Specific declaration requirements

5.1 General

The specific requirements for fabrics are given below.

All declaration requirements, i.e. the general information according to EN 16245-1 and the specific declaration requirements according to this part (i.e. EN 16245-4), and application dependant requirements as agreed between manufacturer/supplier and customer shall be declared by the supplier as information to the customer, and the following apply:

- if the property given has reference to a test method standard or test method, this test method standard or test method shall be used;
- the values given shall be in accordance with the test method standard given;
- if the test environment is not clearly stated in the specific test method standard, the standard atmosphere conditioning and testing shall be carried out in accordance with EN ISO 291;
- the manufacturer shall be responsible for the performance and results of all tests required for the declaration.

EN 16245-4:2013 (E)**5.2 Declaration for fabrics with continuous fibre****5.2.1 Declaration for uni-axial and multi-axial fabrics****5.2.1.1 Properties of fabrics**

The specific declaration requirements for fabrics are listed below. The declaration including tolerances shall be given in accordance with the test method standards stated in Table 1.

The following specific declaration requirements a) to k) apply for all fabrics independent of application:

- a) identification (name/number/code used by the manufacturer for identification purposes);
 - 1) Products with equal identification shall have identical processing cards (i.e. fabrication specification, thread tension, knitting/stitching pattern, etc.).
- b) fabric type (e.g. UD, BIAx, QUADRIAX);
- c) fibre orientations (layer number one facing inwards against the centre of the roll) [°];
- d) total nominal area weight [g/m²];
- e) dimensions (length and width) [mm];
- f) defects;
- g) moisture content [%];
- h) loss of ignition; <https://standards.iteh.ai/catalog/standards/sist/17655e2e-bd09-43e7-866d-b05abc2cc69a/sist-en-16245-4-2013>
- i) core tube inner diameter [mm];
- j) expiry date;
 - 1) The expiry date of the fabric is generally equal to the expiry date of the constituent sized fibre specified by the fibre manufacturer/supplier.
 - 2) If the fabric manufacturer/supplier applies size or other material affecting the expiry date of the fabric, this shall be taken into account.
- k) marking.

The requested content of a Certificate of Analysis (CoA) verifies that the properties of the delivered fabric material comply with the declared properties based on Table 1. The CoA shall be given in accordance with Clause 6 in EN 16245-1:2013.

Table 1 — Material declaration of fabrics physical properties relevant for CoA

Ref. no 5.2.1.1	Property	Nominal value	Minimum and/or maximum value	Unit	Test method
c)	Fibre orientations	Mean value	Minimum and maximum value	°	EN 13473-1
d)	Total nominal area weight	Mean value	Minimum and maximum value	g/m ²	EN 3374
e)	Dimensions	Mean value	Minimum and maximum value	mm	ISO 5025
f)	Defects	Mean value	Minimum and maximum value		EN 13473-2
g)	Moisture content	Mean value	Minimum and maximum value	%	EN ISO 3344
h)	Loss of ignition	Mean value	Minimum and maximum value		ISO 1887

5.2.1.2 Properties of structural fibre

The structural fibres used in the fabric shall be declared according to EN 16245-3.

The fabric specific declaration requirements for structural fibres are listed below. The declaration including tolerances shall be given in accordance with the test method standards stated in Table 2.

The following specific declaration requirements a) to j) apply for all structural fibres independent of application:

- a) identification (fibre name/number/code used by the fibre manufacturer for identification purposes);
- b) layer number; <https://standards.iteh.ai/catalog/standards/sist/17655e2e-bd09-43e7-866d-b05abc2cc69a/sist-en-16245-4-2013>
 - 1) The actual layer number where the fibre is used in the fabric.
 - 2) Layer number one is facing inwards on the roll.
- c) fibre manufacturer;
- d) fibre material type (e.g. glass, carbon, thermoplastics);
- e) orientation, see 5.2.1.1 c);
- f) linear density [g/km (=tex)];
- g) area weight (the area weight of the structural fibres in respective orientation and layer) [g/m²];
- h) size type and identification;
 - 1) Reference to the size type and identification of the fibre manufacturer shall be given.
- i) size content [wt%];
- j) maximum gap between fibre bundles measured at stitch/knit point [mm].

The requested content of a Certificate of Analysis (CoA) verifies that the properties of the delivered structural fibre material comply with the declared properties based on Table 2. The CoA shall be given in accordance with Clause 6 in EN 16245-1:2013.