SLOVENSKI STANDARD
oSIST prEN 4717:2021

01-junij-2021

Aeronavtika - Polietereterketon s 55 % neprekinjenih ogljikovih vlaken (PEEK-CF55) - Zaloga materiala - Specifikacija materialov

Aerospace series - Polyetheretherketone with 55 % continuous carbon fibre by volume (PEEK-CF55) - Stock shape material - Material specification

Luft- und Raumfahrt - Polyetheretherketon mit 55 Volumen % (PEEK-CF55) endlos Kohlenstofffaser - Halbfabrikat - Materialspezifikation

Série aérospatiale - Polyétheréthercétone avec 55 % de fibre de carbone continue par volume (PEEK-CF55) - Demi-produit - Spécification de matériau

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49.025.40 Guma in polimerni materiali Rubber and plastics

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English Version

Aerospace series - Polyetheretherketone with 55 % continuous carbon fibre by volume (PEEK-CF55) - Stock shape material - Material specification

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 4717:2021) 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 document has received the approval of the National Associations and the Official Services of the member countries of ASD-STAN, prior to its presentation to CEN.

This document is currently submitted to the Enquiry.

This document will supersede EN 4717:2014.

1 Scope

This document specifies the requirements of a thermoplastic composite stock shape material (e.g. tape, rod, etc.) consisting of polyetheretherketone with 55 % continuous carbon fibres by volume (PEEK – CF55) for aerospace applications, which is presupposed to be used in a further thermal moulding process for forming parts described in prEN 4714 [1)].

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 2564, *Aerospace series - Carbon fibre laminates - Determination of the fibre, resin and void contents*

EN 2825, *Aerospace series - Burning behaviour of non metallic materials under the influence of radiating heat and flames - Determination of smoke density*

EN 2826, *Aerospace series - Burning behaviour of non metallic materials under the influence of radiating heat and flames - Determination of gas components in the smoke*

EN 3844-1, *Aerospace series - Flammability of non-metallic materials - Part 1: Small burner test, vertical - Determination of the vertical flame propagation*

prEN 4714, Aerospace series — Screws, bolts and nuts of continuous fibre reinforced PAEK (Polyaryletherketone) composite material — Technical specification [1)]

ISO 75-3, *Plastics — Determination of temperature of deflection under load — Part 3: High-strength thermosetting laminates and long-fibre-reinforced plastics* [2)]

ISO 175, *Plastics — Methods of test for the determination of the effects of immersion in liquid chemicals*

ISO 291, *Plastics — Standard atmospheres for conditioning and testing* [2)]

ISO 1183-1, *Plastics — Methods for determining the density of non-cellular plastics — Part 1: Immersion method, liquid pycnometer method and titration method*

ISO 1817, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids* [2)]

ISO 3597-2, *Textile-glass-reinforced plastics — Determination of mechanical properties on rods made of roving-reinforced resin — Part 2: Determination of flexural strength*

ISO 11357-3, *Plastics — Differential scanning calorimetry (DSC) — Part 3: Determination of temperature and enthalpy of melting and crystallization*

ISO 14125, *Fibre-reinforced plastic composites — Determination of flexural properties* [2)]

ASTM D4018-17, Standard Test Methods for Properties of Continuous Filament Carbon and Graphite Fiber Tows [3]

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1) In preparation at the date of publication of this document.
2) Published by: ISO International Organization for Standardization http://www.iso.ch/.
3) Published by: ASTM International (US) American Society for Testing and Materials http://www.astm.org/.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at http://www.iso.org/obp
- IEC Electropedia: available at http://www.electropedia.org/

4 Requirements

See Table 1.

Table 1

No.	Properties		Test methods	Specimen directions	Units	Requirements	Test conditions and supplementary instructions
Material							
Mechanical properties							
1	Flexural strength		ISO 14125 Method A	0°	MPa	≥ 1 400	Test specimen Class IV
				90°		≥ 90	Test specimen Class III
			ISO 3597-2	0° circular rod		≥ 1 150	round
2	Flexural strain at break		ISO 14125 Method A	0°	%	≥ 0,50	Test specimen Class IV
				90°		≥ 0,55	Test specimen Class III
3	Flexural modulus		ISO 14125 Method A	0°	GPa	≥ 125	Test specimen Class IV
				90°		≥ 8,6	Test specimen Class III
Thermal properties							
4	Temperature of deflection under load		ISO 75-3	0°	°C	200	–
Burning behaviour							
5	Flammability, vertical 12 s	burn length	EN 3844-1	–	mm	203 max.	Thickness of specimen: 1,5 mm
		after flame time			s	15 max.	
		after flame time of drips			s	5 max.	
6	Smoke density flaming mode	at 240 s	EN 2825	–	–	200 max.	
7	Concentration of smoke gas components after 4 min Flaming mode	HF	EN 2826	–	ppm	100 max.	
		HCL				150 max.	
		HCN				150 max.	
		SO_2				100 max.	