SLOVENSKI STANDARD
SIST EN 4641-202:2019

01-februar-2019

Aeronavtika - Kabli, optični, zunanji premer obloge vlakna 125 µm - 202. del: Polohlapna, robustna enoplastna konstrukcija obloge SM 9/125 µm, zunanji premer vlakna 2,74 mm - Standard za proizvod

Aerospace series - Cables, optical, 125 µm diameter cladding - Part 202: Semi-loose, ruggedized simplex construction 9/125 µm SM fibre nominal 2,74 mm outside diameter - Product standard

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Luft- und Raumfahrt - Lichtwellenleiterkabel, Mantelaußendurchmesser 125 µm - Teil 202: Kompaktader, 9/125 µm SM-Faser, Kabelaußendurchmesser 2,74 mm - Produktnorm

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Série aérospatiale - Câbles, optiques, diamètre extérieur de la gaine optique 125 µm - Partie 202 : Câble à structure semi-libre, fibre à SM 9/125 µm, diamètre extérieur 2,74 mm - Norme de produit

Ta slovenski standard je istoveten z: **EN 4641-202:2018**

ICS:

33.180.10	(Optična) vlakna in kabli	Fibres and cables
49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems

SIST EN 4641-202:2019 **en,fr,de**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 4641-202

November 2018

ICS 49.090

English Version

Aerospace series - Cables, optical, 125 µm diameter cladding - Part 202: Semi-loose, ruggedized simplex construction 9/125 µm SM fibre nominal 2,74 mm outside diameter - Product standard

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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
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SIST EN 4641-202:2019

Contents

Page

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 4641-202:2019
https://standards.iteh.ai/catalog/standards/sist/44fee36f-aede-4919-8545-3515cce20bbd/sist-en-4641-202-2019

SIST EN 4641-202:2019

European foreword

This document (EN 4641-202:2018) 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 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 organizations 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 United Kingdom.

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SIST EN 4641-202:2019
https://standards.iteh.ai/catalog/standards/sist/44fee36f-aede-4919-8545-3515cce20bbd/sist-en-4641-202-2019

SIST EN 4641-202:2019

1 Scope

This European product Standard specifies the general characteristics, conditions for qualification, acceptance and quality assurance for a fibre optic cable with a 9/125 µm. Single mode fibre core, 2,74 mm outside cable diameter and of semi-loose construction. The basic construction is the cable defined in EN 4641-201 with added sheaths for ruggedized usages.

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 2424, *Aerospace series — Marking of aerospace products*

EN 2812, *Aerospace series — Stripping of electric cables*

EN 3475-601, *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 601: Smoke density*

EN 3745 (all parts), *Aerospace series — Fibres and cables, optical, aircraft use — Test methods*

EN 3838, *Aerospace series — Requirements and tests on user-applied markings on aircraft electrical cables*

EN 3909, *Aerospace series — Test fluids and test methods for electrical and optical components and sub-assemblies*

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EN 4641-001, *Aerospace series — Cables, optical, 125 µm diameter cladding — Part 001: Technical specification*

EN 4641-102, *Aerospace series — Cables, optical, 125 µm diameter cladding — Part 102: Semi-loose 62,5/125 µm GI fibre nominal 1,8 mm outside diameter — Product standard*

SIST EN 4641-202:2019
https://standards.iteh.ai/catalog/standards/sist/44fee36f-aede-4919-8545-351fcea70bbc/sist-en-4641-202-2019

EN 4641-201, *Aerospace series — Cables, optical, 125 µm diameter cladding — Part 201: Semi-loose structure 9/125 µm SM fibre nominal 1,8 mm outside diameter — Product standard*

TR 4647, *Aerospace series — Termination procedure for EN 4639 optical contact* [1)]

3 Terms and definitions

For the purposes of this document, the following terms and definitions given in EN 3745-100 apply.

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

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

4 Required characteristics

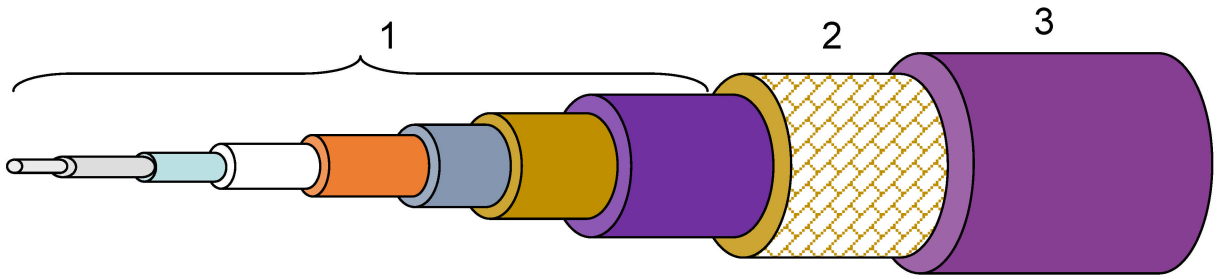
The characteristics of the cables, tested according to the methods described hereafter shall comply with the values defined in this product standard.

1) Published as ASD-STAN Technical Report at the date of publication of this European Standard by Aerospace and Defence Industries Association of Europe-Standardization (ASD-STAN), http://www.asd-stan.org/

SIST EN 4641-202:2019

5 Cable construction

See Figure 1 and Table 1.



Key

1 EN 4641-201 fibre optic cable
2 Mechanical strength
3 Jacket – Extruded fluoropolymer

Figure 1

Table 1

Property	Value
EN 4641-201 fibre optic cable	(1,80 ± 0,12) mm
Finished cable diameter	(2,74 ± 0,25) mm
Cable mass	≤ 10,7 g/m
Operating temperature	– 65 °C to 150 °C
Fibre cut-off wavelength	≤ 1 260 nm
Minimum bend radius (20 °C)	Installation : 12 mm (4 x outside diameter) Long term : 27 mm (10 x outside diameter) Storage : 54 mm (20 x cable outside diameter)

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SIST EN 4641-202:2019
https://standards.iteh.ai/catalog/standards/sist/44fee36f-aede-4919-8545-3515cce20bbd/sist-en-4641-202-2019

SIST EN 4641-202:2019

6 Materials

See Table 2.

Table 2

Element	Material
Fibre cable component	EN 4641-201 fibre optic cable
Mechanical strength	Reinforcement mechanical strength
Outer jacket	Extruded fluoropolymer

7 Test methods and performances

7.1 Tests in accordance with EN 3745-100

7.1.1 Optical fibre

See EN 4641-201.

7.1.2 Fibre optical cable

See EN 4641-201.

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7.1.3 Ruggedized fibre optic cable

See Table 3.

SIST EN 4641-202:2019
https://standards.iteh.ai/catalog/standards/sist/44fee36f-aede-4919-8545-3515cce20bbd/sist-en-4641-202-2019

SIST EN 4641-202:2019

Table 3 — Optical fibre performance requirements *(1 of 4)*

Test method EN 3745-	Designation of test	Test conditions and results
201	Visual inspection	The outer jacket shall have the correct identification as specified in this standard. The coating shall be continuous and free of visible defects such as lumps, abrasions, cracks, splits or blisters. Sample length: 3 m
203	Outer jacket outside diameter	(2,74 ± 0,25) mm
205	Longitudinal stability	The change in longitudinal dimensions between A and B shall not exceed the maximum value of 15 mm. Number of samples : 3 Sample length: (3,5 ± 0,03) m Test method 3745-402 – 25 Cycles
301 Method D	Cable attenuation	Max attenuation ≤ 0,80 dB/km at 1 310 nm; ≤ 0,60 dB/km at 1 550 nm at 20 °C Minimum sample length: ≥ 100 m
305	Cable immunity to ambient light	Applicable; Qualified by similarity as this is an EN 4641-201 component test
306/402	Attenuation during temperature cycling	Visual examination in accordance with EN 3745-201 Maximum variation of attenuation: Δα ≤ 0,30 dB at 1 310 nm Test method EN 3745-402 – 25 cycles High temperature: 150 °C Low temperature: – 65 °C Duration at extreme temperatures: 30 min Rate of change: 5 °C per minute Number of samples: 3 Sample length: ≥ 10 m
401	Cable accelerated aging	Applicable; Qualified by similarity as this is an EN 4641-201 component test
404	Thermal shock	Visual examination in accordance with EN 3745-201 Maximum permissible variation in attenuation during test sequence and after 24 h: Δα ≤ 0,30 dB at 1 310 nm High temperature: 150 °C Low temperature: – 65 °C Duration at extreme temperatures: 30 min Number of samples: 3 Sample Length: ≥ 10 m Number of temperature cycles: 25
406	Cold bend	Maximum permissible variation in attenuation: Δα ≤ 0,30 dB at 1 310 nm Visual examination in accordance with EN 3745-201 1 h soak at: – 65 °C Mandrel size: 50 mm Mandrel wraps: 10 Number of samples: 1 Sample length: ≥ 10 m
407	Flammability	No flaming particles shall fall from the sample during the test and the tissue paper shall not be ignited. Period of flame application: 30 s Maximum burn length: 75 mm – Self extinguish after 5 s Number of samples: 3 Sample length: (1 ± 0,05) m

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SIST EN 4641-202:2019
https://standards.iteh.ai/catalog/standards/sist/44fee36f-aede-4919-8545-351cce20bbd/sist-en-4641-202-2019