



SLOVENSKI STANDARD
oSIST prEN 4641-001:2023
01-maj-2023

Aeronavtika - Kabli, optični - 001. del: Tehnična specifikacija

Aerospace series - Cables, optical - Part 001: Technical specification

Luft- und Raumfahrt - Kabel, optisch - Teil 001: Technische Spezifikation

Série aérospatiale - Câbles, optiques - Partie 001 : Spécification technique

Ta slovenski standard je istoveten z: prEN 4641-001

<https://standards.iteh.ai/catalog/standards/sist/7df4d316-3855-4588-95d6-44fd3492a202/osist-pren-4641-001-2023>

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

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

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English Version

Aerospace series - Cables, optical - Part 001: Technical specification

Série aérospatiale - Câbles, optiques - Partie 001 :
Spécification technique

Luft- und Raumfahrt - Kabel, optisch - Teil 001:
Technische Spezifikation

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee ASD-STAN.

If this draft becomes a European Standard, 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.

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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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 4641-001:2023) 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 CEN Enquiry.

This document will supersede EN 4641-001:2018.

iTeh STANDARD PREVIEW
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prEN 4641-001:2023 (E)**1 Scope**

This document specifies the general characteristics, conditions for qualification, acceptance and quality assurance, as well as the test methods and groups for fibre optic cables with a cladding of 125 µm outside diameter.

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 3745-100,¹ *Aerospace series — Fibres and cables, optical, aircraft use — Test methods — Part 100: General*

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

EN 60793-1-30, *Optical fibres - Part 1-30: Measurement methods and test procedures - Fibre proof test (IEC 60793-1-30)*

EN 60793-1-41, *Optical fibres - Part 1-41: Measurement methods and test procedures - Bandwidth (IEC 60793-1-41)*

EN 60793-1-42, *Optical fibres - Part 1-42: Measurement methods and test procedures - Chromatic dispersion (IEC 60793-1-42)*

ISO 2574, *Aircraft — Electrical cables — Identification marking*

3 Terms and definitions

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

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

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

3.1**tight simplex cable**

structure that allows no movement between the secondary buffer (or buffer) and the outer layers

3.2**semi-loose simplex cable**

structure that allows a limited movement of the secondary buffer (or buffer) compared to the outer layers

3.3**loose simplex cable**

structure that allows an unlimited movement of the secondary buffer compared to the outer layers

¹ And all parts quoted in this document.

3.4**tight multifibre cable**

structure that allows no movement between the fibres and the outer layers

3.5**semi loose multifibre cable**

structure that allows a limited movement of the secondary buffers (or buffers or inner sheaths) compared to the outer layers

3.6**loose multifibre cable**

structure that allows an unlimited movement of the fibres compared to the outer layers

3.7**tight buffer**

structure that allows no movement between fibre and secondary buffer (or buffer)

3.8**loose buffer**

structure that allows an unlimited movement of the fibre compared to the secondary buffer (or buffer)

4 Required characteristics**4.1 Description**

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

4.2 Materials and construction of cables

The configuration, dimensions and mass of the cable shall meet the values specified in the product standard as well as the requirements hereafter.

Materials and colour shall meet the product standard:

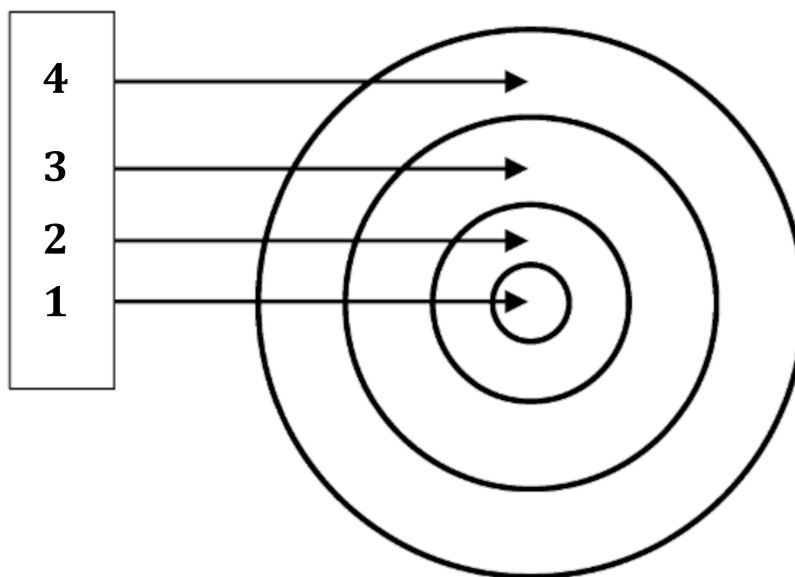
- configuration (see Clause 3, no. of fibre, brais, jackets);
- dimensions;
- mass;
- colours;
- materials.

4.3 Fibre construction

The fibre shall consist of a single all silica core and a silica cladding protected by a primary coating in accordance with the product standards.

See Figure 1.

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**Key**

- 1 Core
- 2 Cladding
- 3 Primary coating
- 4 Buffer (optional)

Figure 1 — Fibre construction (axial view)

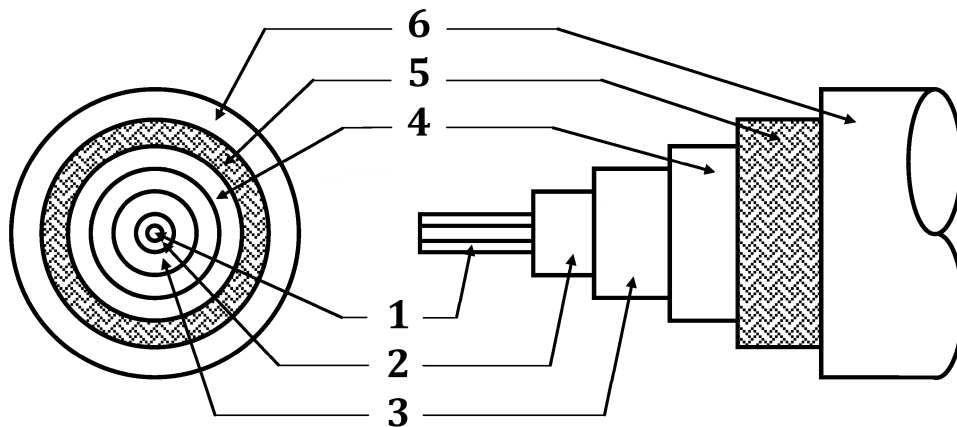
4.4 Cable construction

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The typical requirements of the cable shall be an outer jacket, strength member, buffer and fibre, which is protected by a primary coating. See example at Figure 2.

Details of the materials used for the outer sheath, strength member, inner sheath and buffer shall be defined in the product standard.



Key

- | | | | | | |
|---|-------------------------------|---|---|---|---|
| 1 | Fibre (core + primary buffer) | 3 | Strength members | 5 | External strength members (only for ruggedised cable) |
| 2 | Secondary buffer | 4 | Outer jacket for simple inner sheath for ruggedised cable | 6 | Outer jacket (only for ruggedised cables) |

Figure 2 — Example of cable construction

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5 Test methods

5.1 Tests in accordance with EN 3745-100

5.1.1 Optical fibre

See Table 1.

Table 1 — Optical fibre test methods

Test method EN 3745-	Test method EN 60793	Designation of test	Test performance/conditions/criteria
201	/	Visual examination	The primary coating and buffer shall have the correct identification outer colour if specified in the product standard.
202	/	Fibre dimensions	See product standard.
501	-1-30	Optical fibre proof test	See product standard.
301 Method A		Attenuation	See product standard.
302	/	Numerical aperture	See product standard.
/	-1-41	Bandwidth	See product standard.
/	-1-42	Fibre Chromatic dispersion	See product standard
/	-1-42	Index of refraction	See product standard

5.1.2 Fibre optic cable

See Table 2.

Table 2 — Fibre optic cable test methods

Test method EN 3745-	Designation of test	Test performance/conditions/criteria
201	Visual examination	The outer jacket shall have the correct identification if specified in the appropriate product standard. The coating shall be continuous and free of visible defects such as lumps, abrasions, cracks, splits or blisters. See product standard.
202	Include all sections of concentricity	See product standard.
203	Cable dimensions	Primary buffer or coating outer diametre.
		Secondary buffer diametre.
		Outer external jacket diametre.
	Outer jacket wall thickness: not applicable	
205	Cable longitudinal dimensional stability	See product standard.
301: Method A	Attenuation	See product standard.
402	Temperature cycling	See product standard.
306	Attenuation during temperature cycling	See product standard.
404	Thermal shock	See product standard.
405	Low/high temperature bend test	See product standard.
406	Cold bend test	See product standard.
407	Flammability	See product standard.
410	Thermal life	See product standard.
411	Resistance to fluids	See product standard.
412	Humidity resistance	See product standard.
503	Scrape abrasion	See product standard.
504	Micro bending test	See product standard.
505	Cable tensile strength	See product standard.
506	Impact resistance	See product standard.
507	Cut-through	See product standard.