
Aeronavtika - Kabli, optični, zunanji premer obloge 125 µm - 101. del: Kompaktna struktura 62,5 µm, zunanji premer vlakna 0,9 mm - Standard za proizvod

Aerospace series - Cables, optical 125 µm diameter cladding - Part 101: Tight structure 62,5 µm core GI fibre 0,9 mm outside diameter - Product standard

Luft- und Raumfahrt - Lichtwellenleiterkabel, Manteldurchmesser 125 µm - Teil 101: 62,5 µm Kerndurchmesser, Gradientenindexfaser Außendurchmesser 0,9 mm Leitung mit festem Aufbau - Produktnorm

(standards.iteh.ai)

Série aérospatiale - Câbles, optiques, diamètre extérieur de la gaine optique 125 µm - Partie 101 : Câble à structure serrée, fibre à gradient d'indice cœur 62,5 µm, diamètre extérieur 0,9 mm - Norme de produit

Ta slovenski standard je istoveten z: EN 4641-101:2015

ICS:

49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems
--------	--	--

SIST EN 4641-101:2015

en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 4641-101:2015](#)

<https://standards.iteh.ai/catalog/standards/sist/e269a96c-9a3d-41bb-997d-869a469b8ebe/sist-en-4641-101-2015>

EUROPEAN STANDARD

EN 4641-101

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2015

ICS 49.090

English Version

**Aerospace series - Cables, optical 125 µm diameter cladding -
Part 101: Tight structure 62,5 µm core GI fibre 0,9 mm outside
diameter - Product standard**

Série aérospatiale - Câbles, optiques, diamètre extérieur de la gaine optique 125 µm - Partie 101 : Câbles à structure serrée, fibre à gradient d'indice coeur 62,5 µm, diamètre extérieur 0,9 mm - Norme de produit

Luft- und Raumfahrt - Lichtwellenleiterkabel, Mantelaußendurchmesser 125 µm - Teil 101: Vollader, 62,5 µm GI-Faser, Kabelaußendurchmesser 0,9 mm - Produktnorm

This European Standard was approved by CEN on 29 November 2014.

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.

CEN members are the national standards bodies of 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 United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

	Page
Foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Required characteristics	4
5 Materials and description	5
6 Test methods and performances in accordance with EN 3745-100	5
7 Quality assurance	12
8 Designation, marking and colours	12
9 Delivery conditions	13
10 Storage.....	13

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 4641-101:2015

<https://standards.iteh.ai/catalog/standards/sist/e269a96c-9a3d-41bb-997d-869a469b8ebe/sist-en-4641-101-2015>

Foreword

This document (EN 4641-101:2015) 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 October 2015, and conflicting national standards shall be withdrawn at the latest by October 2015.

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.

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 4641-101:2015](https://standards.iteh.ai/catalog/standards/sist/e269a96c-9a3d-41bb-997d-869a469b8ebe/sist-en-4641-101-2015)

<https://standards.iteh.ai/catalog/standards/sist/e269a96c-9a3d-41bb-997d-869a469b8ebe/sist-en-4641-101-2015>

EN 4641-101:2015 (E)**1 Scope**

This product standard specifies the general characteristics, conditions for qualification, acceptance and quality assurance for a fibre optic cable with a 62,5/125 µm Graded Index fibre core, 0,9 mm outside diameter and of tight buffer construction, for inside wiring applications.

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 2812, *Aerospace series — Stripping of electric cables*

EN 3745-100 (all parts), *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 3909, *Aerospace series — Test fluids and test methods for electric components and sub-assemblies*

EN 9133, *Aerospace series — Quality management systems — Qualification procedure for aerospace standard parts*

TIA/EIA-455-30-B, *FOTP-30 — Frequency Domain Measurement of Multimode* ¹⁾

TIA/EIA-455-175-B, *FOTP175 — Chromatic Dispersion Measurement of Single-mode Optical Fibers by the Differential Phase Shift Method* ¹⁾

ANSI/EIA 4920000-A, *Generic Specification for Optical Waveguide Fibers* ¹⁾

3 Terms and definitions

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

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.

See Table 1.

Table 1

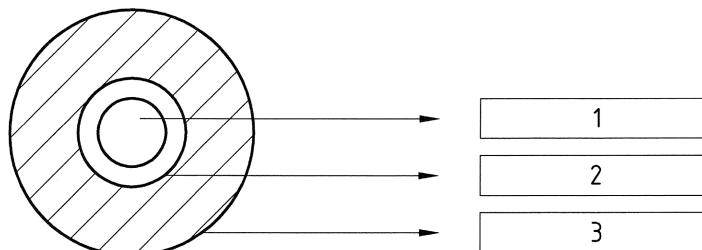
Property	Value
Cable mass	≤ 1 g/m
Operating temperature	−55 °C to 125 °C
Minimum bend radius (20 °C)	Installation: 10 mm (~10 × outside diameter) Long term: 10 mm (~10 × outside diameter) Storage: 20 mm (~20 × cable outside diameter)
Tensile strength	> 20 N

¹⁾ Published by: National (US) American National Standard Institute (www.ansi.org/).

5 Materials and description

The following table details a breakdown of materials used in the construction of the fibre optic cable. The list of materials is not exclusive and any materials used in the construction of the cable must meet the required operating and qualification requirements whilst being compatible with termination processes, methods of retention or epoxy adhesive application used in those processes.

See Figure 1 and Table 2.



Key

- 1 Optical fibre
- 2 Primary coating
- 3 Outer jacket

Figure 1

iTeh STANDARD PREVIEW
 (standards.itih.ai)

Table 2

Element		Material
Fibre	Core	Silica
	Cladding	Silica
Primary coating		Silicone
Outer jacket		Halogen free high temperature copolymer

6 Test methods and performances in accordance with EN 3745-100

6.1 Optical fibre tests

See Table 3.

Table 3 — Optical fibre test methods

Test method EN 3745-	Designation of test	Test conditions and results
201	Fibre visual examination	The coating shall be continuous and free of visible defects such as lumps, abrasions, cracks, splits or blisters
202	Fibre core dimensions	Core diameter: $62,5 \mu\text{m} \pm 3 \mu\text{m}$
202	Fibre dimension cladding diameter	Cladding diameter: $25 \mu\text{m} \pm 2 \mu\text{m}$ Method A or B Sample should be in accordance with test methods Number of sample: 1
202	Fibre dimension core non circularity	Core non circularity: $\leq 5 \%$ ($3 \mu\text{m}$) Number of sample: 1
202	Fibre dimension cladding non circularity	Cladding non circularity: $\leq 2 \%$ ($2,5 \mu\text{m}$) Number of sample: 1
202	Fibre dimension concentricity error	Concentricity error: $\leq 3 \mu\text{m}$ Number of sample: 1
501	Optical fibre proof test	$> 1 \%$
301 Method A	Fibre attenuation	$< 4 \text{ dB/km}$ at 850 nm at 20 °C $< 2 \text{ dB/km}$ at 1 300 nm at 20 °C
302	Numerical aperture	Numerical aperture: $0,275 \pm 0,015$ (0,26 to 0,29) Number of sample: 1 Length of the sample: 2 m Wavelength: $850 \text{ nm} \pm 20 \text{ nm}$
303	Bandwidth	Bandwidth $\geq 160 \text{ Mhz.km}$ at 850 nm Bandwidth $\geq 500 \text{ Mhz.km}$ at 1 300 nm Number of sample: 1 Minimal length of the sample: 1 km Central wavelengths: $850 \text{ nm} \pm 10 \text{ nm}$ $1 300 \text{ nm} \pm 10 \text{ nm}$ Spectral width (-3 dB): $\leq 10 \text{ nm}$ for 850 nm and 1 300 nm

6.2 Fibre optic cable

See Table 4.

Table 4 — Fibre optic cable test methods (1 of 5)

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: 100 m \pm 0,05 m
203	Primary coating outside diameter	400 μ m \pm 25 μ m
203	Outer jacket diameter	900 μ m \pm 25 μ m
205	Longitudinal stability	The change in longitudinal dimensions between core/cladding and primary jacket and core/cladding and outer jacket shall not exceed the maximum value of 200 μ m Number of samples: 4 in total, 2 for each length Length of the samples: 2 m, 20 m \pm 0,01 m
301 Method A	Attenuation	Maximum attenuation at 20 °C $\alpha \leq 4$ dB/km at 850 nm, $\alpha \leq 2$ dB/km at 1 300 nm Sample should be in accordance with fibre optic test procedure Central wavelengths: 850 nm and 1 300 nm Number of sample: 1 Length of the sample: 250 m minimum
301 Method A	Cable optical discontinuity	Signal discontinuity $< 0,2$ dB/point Number of sample: 1
305	Cable immunity to ambient light	Not applicable
306	Attenuation during temperature cycling	Visual examination in accordance with EN 3745-201 Maximum permitted variation of attenuation: $\alpha \leq 0,7$ dB at 850 nm and 1 300 nm Number of samples: 3 Length of the sample: 20 m \pm 0,01 m Temperature cycling (see EN 3745-402) Number of cycles: 5
401	Cable accelerated ageing	Visual examination in accordance with EN 3745-201 – Maximum permissible variation in attenuation: $< 0,5$ dB, – Maximum permissible variation in attenuation after 24 h: $< 0,3$ dB, – Residual maximum permissible variation in attenuation: $< 0,2$ dB. Number of samples: 3 Length of the sample: 100 m \pm 0,05 m Diameter of the mandrel: 250 mm Number of temperature cycles: 1 Test is carried out at the temperature of 125 °C
402	Temperature cycling	High temperature: 125 °C Low temperature: -55 °C Duration at extreme temperatures: 30 min Number of samples: 3 Number of cycles: 5 Rate of change: 5 °C per min