SLOVENSKI STANDARD
SIST EN 4641-105:2011

01-maj-2011

Aeronavtika - Kabli, optični, premer obloge 125 µm - 105. del: Poltrdi kabli, robustna kvadroaksialna konstrukcija GI 62,5/125 µm, zunanji premer vlakna 5,72 mm - Standard za proizvod

Aerospace series - Cables, optical 125 µm diameter cladding - Part 105: Semi-loose, ruggedized quadraxial construction 62,5/125 µm GI fibre nominal, 5,72 mm outside diameter - Product standard

Luft- und Raumfahrt - Lichtwellenleiterkabel, Manteldurchmesser 125 µm - Teil 105: Kompaktader, widerstandsfähig quadraxiale Konstruktion 62, 5/125 µm GI-Faser, Kabelaußendurchmesser 5,72 mm - Produktnorm

Série aérospatiale - Câble, optique, diamètre extérieur de la gaine optique 125 µm - Partie 105 : Câble à structure semi libre, construction quarte renforcée, fibre à gradient d'indice 62,5/125 µm, diamètre extérieur 5,72 mm - Norme de produit

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ICS:

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

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Aerospace series - Cables, optical 125 µm diameter cladding - Part 105: Semi-loose, ruggedized quadraxial construction 62,5/125 µm GI fibre nominal, 5,72 mm outside diameter - Product standard

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Foreword

This document (EN 4641-105:2010) 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of an identical text or by endorsement, at the latest by May 2011, and conflicting national standards shall be withdrawn at the latest by May 2011.

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1 Scope

This product standard specifies the general characteristics, conditions for qualification, acceptance and quality assurance for a fibre optic cable with four 62,5/125 µm Graded Index fibre cores, 5,72 mm nominal outside diameter and of semi loose construction. The basic construction is a pair of the cables defined in with added sheaths for ruggedized usages.

2 Normative references

The following referenced documents are indispensable for the application 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 3745-100, *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* [1)]

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

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

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

TR 4647, *Aerospace series — Termination procedure for EN 4639 optical contact* [2)]

3 Terms and definitions

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

4 Required characteristics

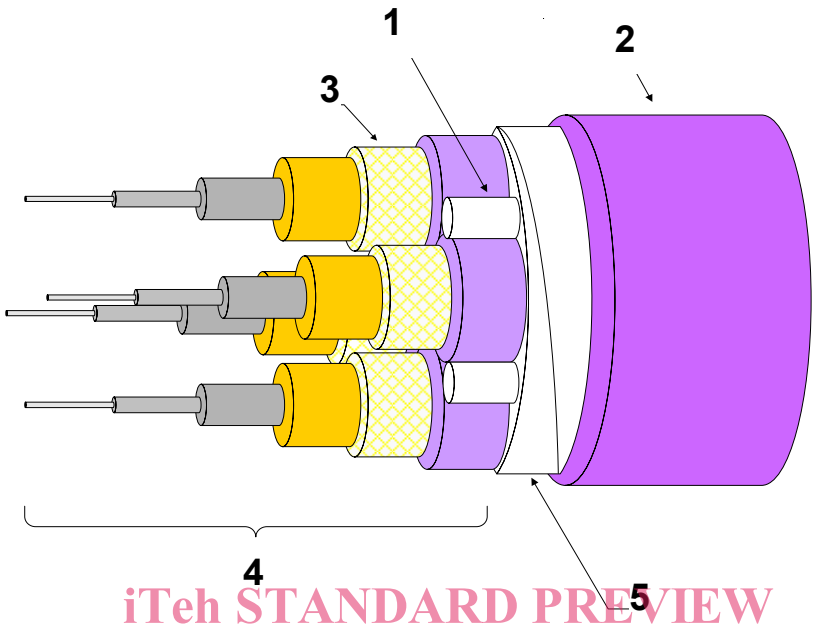
The characteristics of the cables, tested according to the methods described hereafter shall comply with the values defined in this product standard.

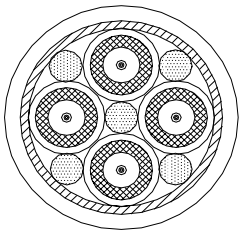
1) Published as ASD-STAN Prestandard at the date of publication of this standard by Aerospace and Defence Industries Association of Europe-Standardization (ASD-STAN), (www.asd-stan.org).

2) Published as ASD-STAN Technical Report at the date of publication of this standard by Aerospace and Defence Industries Association of Europe-Standardization (ASD-STAN), (www.asd-stan.org).

5 Cable construction

See Figure 1 and Table 1.





Key

1 Filler – 5 places
2 Overall jacket
3 Natural
4 Single fibre optic cables
5 PTFE barrier tape

Figure 1

Table 1

Property	Value
EN 4641-102 — Fibre optic cable	(1,80 ± 1,2) mm
Finished cable diameter	5,72 mm
Cable mass	40 g/m
Operating temperature	– 65 °C to 150 °C
Attenuation at 850 nm (20 °C)	≤ 4 dB/km
Attenuation at 1 300 nm (20 °C)	≤ 2 dB/km
Numerical aperture	0,275 ± 0,015
Minimum bend radius (20 °C)	Installation: 60 mm (10 × outside diameter) Long term: 60 mm (10 × outside diameter) Storage: 130 mm (20 × cable outside diameter)

6 Materials

See Table 2.

Table 2

Element	Material
4 - Fibre cable components	EN 4641-102 — Fibre optic cable
5 fillers	PTFE
Barrier tape	PTFE
Outer jacket	Extruded fluoropolymer

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

7.1 Optical fibre tests

In accordance with EN 4641-102.

7.2 Fibre optic component cable tests

In accordance with EN 4641-102.

7.3 Ruggedized fibre optic cable

Tests in accordance with Table 3.

Table 3 — Ruggedized fibre optic cable test methods

Designation of the test	Test method EN 3745--	Test conditions and results
Visual examination	201	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
Outer jacket outside diameter	203	(5,72 ± 0,25) mm
Outer jacket wall thickness	203	Minimum wall ≥ 0,20 mm
Cable longitudinal dimensional stability	205	The change in longitudinal dimensions between A and B shall not exceed the maximum value of ≤ 5 mm Number of samples: 3 – Sample length: (3,5 ± 0,03) m Test method EN 3745-402 – 25 cycles
Fibre attenuation	301 Method D	Maximum attenuation ≤ 4 dB/km at 850 nm, ≤ 2 dB/km at 1 300 nm at 20 °C Minimum sample length: ≥ 100 m
Cable immunity to ambient light coupling	305	Not applicable. This is an EN 4641-102 component test.
Cable accelerated ageing	401	Not applicable if jacket materials are the same. This is an EN 4641-102 component test.
Variation of attenuation during temperature cycling	306	Visual examination in accordance with EN 3745-201 Maximum variation of attenuation: α ≤ 0,25 dB at 850 nm and 1 300 nm. Test method EN 3745-402 – 10 Cycles High temperature: 150 °C – Low temperature: – 65 °C Duration at extreme temperatures: 30 minutes Rate of change: 5 °C per minute Number of samples: 3 – Sample Length: ≥ 20 m
Thermal shock	404	Visual examination in accordance with EN 3745-201. Maximum permissible variation in attenuation during test sequence and after 24 h: Δα ≤ 0,25 dB at 850 nm and 1 300 nm. High temperature: 150 °C – Low temperature: – 65 °C Duration at extreme temperatures: 30 minutes Number of samples: 3 – Sample Length: ≥ 20 m Number of temperature cycles: 10

continued