

SLOVENSKI STANDARD

SIST EN 4612-010:2019

01-november-2019

Nadomešča:

SIST EN 4612-010:2011

Aeronavtika - Kabli, električni, za splošne namene, eno- in večžilni - Družina XLETFE - Oplaščeni ali zaslonjeni in oplaščeni - 010. del: Posrebreni baker - Obratovalne temperature med -65 °C in 150 °C - Dvojno ekstrudirana izolacija za zunanjo uporabo, s plaščem in zaslonom (pletenica) - Potiskljiva z UV-laserjem - Standard za proizvod

Aerospace series - Cables, electrical, for general purpose, single and multicore assembly - XLETFE Family - Jacketed or screened and jacketed - Part 010: Silver plated copper - Operating temperatures, between -65 °C and 150 °C - Dual extruded wall for open applications, with jacket and screen (braid) - UV laser printable - Product standard

[SIST EN 4612-010:2019](http://www.sist.si/standards/4612-010-2019)

Luft- und Raumfahrt - Ein- und mehradrige elektrische Leitungen für allgemeine Verwendung - XLETFE Familie - mit Mantel oder geschirmt und Mantel - Teil 010: Kupfer versilbert - Betriebstemperaturen zwischen -65 °C und 150 °C - Doppelt extrudierte Isolierung für externe Verwendung, mit Mantel und Schirm (Geflecht) - UV-Laser bedruckbar - Produktnorm

Ta slovenski standard je istoveten z: EN 4612-010:2019

ICS:

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

SIST EN 4612-010:2019

en,fr,de

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EUROPEAN STANDARD

EN 4612-010

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2019

ICS 49.060

Supersedes EN 4612-010:2011

English Version

Aerospace series - Cables, electrical, for general purpose, single and multicore assembly - XLETFE Family - Jacketed or screened and jacketed - Part 010: Silver plated copper - Operating temperatures, between - 65 °C and 150 °C - Dual extruded wall for open applications, with jacket and screen (braid) - UV laser printable - Product standard

Série aérospatiale - Câbles, électriques, d'usage général, mono et multiconducteurs - Famille XLETFE - Gainés ou blindés et gainés - Partie 010 : Cuivre argenté - Températures de fonctionnement comprises entre - 65 °C et 150 °C - Fil double isolé pour applications externes, gainé et blindé (tressé) - Marquable au laser UV - Norme de produit

Luft- und Raumfahrt - Ein- und mehradrige elektrische Leitungen zur allgemeinen Verwendung - XLETFE-Familie - ummantelt oder geschirmt und ummantelt - Teil 010: Kupfer versilbert - Betriebstemperaturen zwischen -65 °C und 150 °C - doppelt extrudierte Isolierung für offene Anwendungen, ummantelt und geschirmt (Geflecht) - UV-Laser bedruckbar - Produktnorm

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This European Standard was approved by CEN on 5 May 2019, 010:2019

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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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, 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: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 4612-010:2019) 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 February 2020, and conflicting national standards shall be withdrawn at the latest by February 2020.

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.

This document supersedes EN 4612-010:2011.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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EN 4612-010:2019 (E)**1 Scope**

This document specifies the characteristics of UV laser printable jacket, silver plated copper conductor, electrical cables Crosslinked Ethylene Tetra Fluoro Ethylene co-polymer (XLETFE) family for use in the on-board electrical systems of aircraft operating at temperatures between – 65 °C and 150 °C, operating at voltages not exceeding 600 V rms at sea level and frequencies not exceeding 2 000 Hz. This insulation system has been used in aerospace applications using 115 V (phase-to-neutral) 400 Hz ac and 28 Vdc. Verification of the suitability of cables for use in other electrical systems is the responsibility of the user.

These cables are suitable for airframe use without additional protection. In case of conflict between this standard and other referenced documents the requirements of this standard shall take precedence.

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 2083, *Aerospace series — Copper or copper alloy conductors for electrical cables — Product standard.*

EN 2235, *Aerospace series — Single and multicore electrical cables, screened and jacketed*

EN 3475-100 (all parts), *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 100: General*

EN 4611-006, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — Part 006: Silver plated copper — Operating temperatures – 65 °C and 150 °C — Dual extruded wall for open applications – UV laser printable — Product standard*

EN 4612-002, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — Jacketed or screened and jacketed — Part 002: General*

EN 9133, *Aerospace series — Quality Management Systems — Qualification Procedure for Aerospace Standard Products*

3 Terms, definitions and symbols

For the purposes of this document, the terms, definitions and symbols given in EN 3475-100 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 Materials and construction

4.1 Materials

These cables shall consist of the following:

- cores according to EN 4611-006;
- number of cores 1 (one) to 4 (four).

2 (two) to 4 (four) cores be twisted together according to EN 2235.

Filler cores shall not be permitted.

Screen:

- tin plated copper stranded woven braid, for dimensions of strands, see Table 1;
- material according to EN 2083, tests according to EN 3475-100;
- construction according to EN 2235.

Outer jacket:

- XLETFE;
- it shall be possible to mark the jacket by UV laser printing;
- minimum thickness shall be 0,15 mm.

4.2 Construction

See Table 1.

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Table 1 — Single and multicore screened and jacketed

Number of cores	Code for nominal section	AWG ^a	Linear resistance at 20 °C	Screen strands nominal diameter	External diameter	Mass
			max. Ω /km			
1	001	26	149,0	0,10	1,90	7,81
	002	24	106,0		2,06	9,51
	004	22	60,0		2,16	10,98
	006	20	33,2		2,40	14,66
	010	18	21,1	0,13	2,65	19,00
	012	16	15,3		2,79	22,74
	020	14	10,9		3,40	32,08
	030	12	6,8		3,91	45,28
2	001	26	153,5	0,10	2,90	13,15
	002	24	109,2		3,22	16,34
	004	22	61,8		3,42	19,42
	006	20	34,2		3,90	26,65
	010	18	21,7	0,13	4,42	35,19
	012	16	15,8		4,69	42,65
	020	14	11,2		5,84	59,28
	030	12	7,0		6,86	84,82
3	001	26	153,5	0,10	3,06	17,02
	002	24	109,2		3,41	21,42
	004	22	61,8		3,62	25,85
	006	20	34,2		4,14	36,18
	010	18	21,7	0,13	4,70	48,40
	012	16	15,8		5,00	59,28
	020	14	11,2		6,23	83,38
	030	12	7,0		7,33	120,41
4	001	26	153,5	0,10	3,32	20,96
	002	24	109,2		3,71	26,64
	004	22	61,8		3,95	32,37
	006	20	34,2		4,53	45,82
	010	18	21,7	0,13	5,15	61,78
	012	16	15,8		5,49	76,10
	020	14	11,2		6,86	107,41
	030	12	7,0		8,10	156,50

^a AWG = Closest American Wire Gauge.

4.3 Colour coding of cores

See EN 4612-002.

5 Required characteristics

According to EN 2235 and EN 3475-100.

See Table 2.

Table 2 (1 of 4)

EN 3475-	Designation of the test	Details
201	Visual examination	Applicable
202	Mass	Applicable; see Table 1.
203	Dimensions	Applicable; see Table 1.
—	Lay Factor	Less than 3 (three) in accordance with Annex A (normative)
—	Screen coverage EN 2235	Applicable not less than 85 % in accordance with Annex A (normative)
301	Ohmic resistance per unit length	Applicable; see Table 1.
302	Voltage proof test	Applicable
303	Insulation resistance	Applicable (20 ± 2) °C, 500 MΩ.km min. (95 ± 2) °C, 1 MΩ.km min.
304	Surface resistance	Applicable 12 500 MΩ.mm min.
305	Overload resistance	Not applicable
401	Accelerated ageing	Applicable Temperature (200 ± 3) °C
402	Shrinkage and delamination	Applicable Temperature (150 ± 5) °C Maximum shrinkage at each end of cable: Jacket: 2 mm on sizes 001 to 010 3 mm on sizes 012 to 030 Cores: 0,80 mm on sizes 001 to 006 1,00 mm on sizes 010 to 012 1,20 mm on sizes 020 to 030
403	Delamination and blocking	Applicable Temperature (150 ± 5) °C