
Aeronavtika - Kabli, električni, za splošne namene, eno- in večžilni - Družina XLETFE - Oplaščeni ali zaslonjeni in oplaščeni - 004. del: Pocinjeni baker - Obratovalne temperature med -65 °C in 135 °C - Enojno ekstrudirana izolacija za zunanjo uporabo, s plaščem in zaslonom (opletom) - Potiskljiva z UV-laserjem - Standard za izdelek

Aerospace series - Cables, electrical, for general purpose, single and multicore assembly - XLETFE Family - Jacketed or screened and jacketed - Part 004: Tin plated copper - Operating temperatures, between -65 °C and 135 °C - Single extruded wall for open applications, with jacket and screen (braid) - UV laser printable - Product standard

Luft- und Raumfahrt - Ein- und mehradrige elektrische Leitungen zur allgemeinen Verwendung, XLETFE-Familie, ummantelt oder geschirmt und ummantelt - Teil 004: Kupfer verzinkt, Betriebstemperaturen zwischen -65 °C und 135 °C, einfach extrudierte Isolierung für offene Anwendungen, ummantelt und geschirmt (Geflecht), UV-Laser bedruckbar - Produktnorm

Série aérospatiale - Câbles, électriques, d'usage général, mono et multiconducteurs - Famille XLETFE - Gainés ou blindés et gainés - Partie 004: Cuivre étamé - Températures de fonctionnement comprises entre -65 °C et 135 °C - Fil simple isolé pour applications externes, gainé et blindé (tressé) - Marquable au laser UV - Norme de produit

Ta slovenski standard je istoveten z: EN 4612-004:2011

ICS:

49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems
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SIST EN 4612-004:2012

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EUROPEAN STANDARD

EN 4612-004

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2011

ICS 49.060

English Version

Aerospace series - Cables, electrical, for general purpose, single and multicore assembly - XLETFE Family - Jacketed or screened and jacketed - Part 004: Tin plated copper - Operating temperatures, between - 65 °C and 135 °C - Single extruded wall for open applications, with jacket and screen (braid) - UV laser printable - Product standard

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Luft- und Raumfahrt - Ein- und mehradrige elektrische Leitungen für allgemeine Verwendung - XLETFE Familie - Mit Mantel oder geschirmt und Mantel - Teil 004: Kupfer verzinkt - Betriebstemperaturen zwischen - 65 °C und 135 °C - Einfach extrudierte Isolierung für externe Verwendung, mit Mantel und Schirm (Geflecht) - UV-Laser bedruckbar - Produktnorm

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This European Standard was approved by CEN on 15 July 2011.

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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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Foreword

This document (EN 4612-004:2011) 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 April 2012, and conflicting national standards shall be withdrawn at the latest by April 2012.

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

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EN 4612-004:2011 (E)**1 Scope**

This European Standard specifies the characteristics of UV laser printable jacket, tin 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 135 °C, operating at voltages not exceeding 600 V r.m.s and frequencies not exceeding 2 000 Hz. These cables are suitable for airframe use without additional protection when the jacket is present. When the jacket is stripped back the cores may need 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 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 2083, *Aerospace series — Copper and copper alloys 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 4611-002, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — Part 002: General*¹⁾

EN 4611-003, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — Part 003: Tin plated copper — Operating temperatures, between – 65 °C and 135 °C — Single extruded wall for enclosed applications — UV laser printable — Product standard*¹⁾

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 parts*

3 Terms, definitions and symbols

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

1) Published as ASD-STAN Prestandard at the date of publication of this standard (www.asd-stan.org).

4 Materials and construction

4.1 Materials

These cables shall consist of the following:

- cores according to EN 4611-003;
- number of cores 1 (one) to 4 (four).

2 (two) core to 4 (four) core shall 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 single core and 2 (two) core shall be 0,13 mm;
- minimum thickness 3 (three) core and 4 (four) core 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
			Ω/km max.	mm	mm max.	kg/km max.
1	001 ^b	26	149,0	0,10	1,58	6,05
	002 ^b	24	106,0		1,69	7,02
	004	22	60,0		1,87	8,94
	006	20	33,2		2,11	12,31
	010	18	21,1	0,13	2,37	16,40
	012	16	15,3		2,61	21,12
	020	14	10,9		2,90	26,76
	030	12	6,8		3,39	38,50
2	001 ^b	26	153,5	0,10	2,41	10,43
	002 ^b	24	109,2		2,62	12,68
	004	22	61,8		2,98	16,50
	006	20	23,2		3,50	23,35
	010	18	21,7	0,13	4,02	31,62
	012	16	15,8		4,50	41,18
	020	14	11,2		5,09	52,76
	030	12	7,0		6,04	76,51
3	001 ^b	26	153,5	0,10	2,63	14,16
	002 ^b	24	109,2		2,79	16,92
	004	22	61,8		3,21	22,56
	006	20	23,2		3,74	32,08
	010	18	21,7	0,13	4,30	44,03
	012	16	15,8		4,84	58,32
	020	14	11,2		5,46	74,89
	030	12	7,0		6,45	109,33
4	001 ^b	26	153,5	0,10	2,83	17,38
	002 ^b	24	109,2		3,08	21,44
	002	22	61,8		3,51	28,46
	004	20	23,2		4,10	40,85
	006	18	21,7	0,13	4,75	56,84
	010	16	15,8		5,33	75,17
	012	14	11,2		6,04	97,36
	020	12	7,0		7,18	143,29

^a AWG = Closest American Wire Gage.

^b Tin plated copper alloy component conductor.

4.3 Colour coding of cores and jacket

See EN 4611-002.

5 Required characteristics

According to EN 2235 and EN 3475-100.

See Table 2.

Table 2

EN 3475-	Test	Details
201	Visual examination	Applicable
202	Mass	Applicable; see Table 1.
203	Dimensions	Applicable; see Table 1.
–	Lay Factor	Less than 3 in accordance with Annex A (normative)
–	Screen coverage, see EN 2235	Applicable not less than 85 % in accordance with Annex A.
301	Ohmic resistance per unit length	Applicable; see Table 1.
302	Voltage proof test	Applicable
303	Insulation resistance	Applicable <small>SIST EN 4612-004:2012 https://standards.iteh.ai/catalog/standards/sist/4612-004-2012/4612-004-2012 (20 ± 2) °C, 500 MΩ.km minimum (95 ± 2) °C, 1 MΩ.km minimum</small>
304	Surface resistance	Applicable 12 500 MΩ.mm minimum
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 size 001 to 010 3 mm on size 012 to 030 Cores: 0,80 mm on size 001 to 006 1,00 mm on size 010 to 012 1,20 mm on size 020 to 030

continued