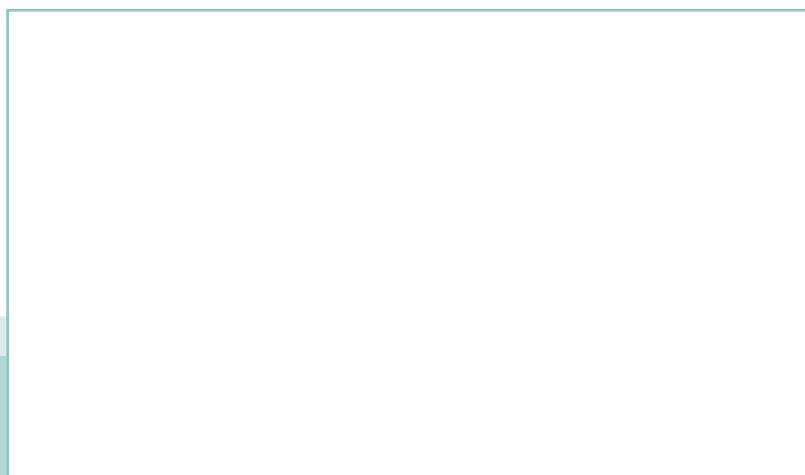


SVENSK STANDARD

SS-EN 4612-010:2011

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**Aerospace series – Cables, electrical, for general 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**



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EUROPEAN STANDARD

EN 4612-010

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2011

ICS 49.060

English Version

Aerospace series - Cables, electrical, for general 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 aéronautique - 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 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

This European Standard was approved by CEN on 20 August 2011.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 4612-010:2011) 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.

1 Scope

This European Standard 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 at operating temperatures between – 65 °C and 150 °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. 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 4611-006, *Aerospace series — Cables, electrical, for general purpose, single and multicore assembly — XLETFE Family — Part 006: Silver plated copper — Operating temperatures, between – 65 °C and 150 °C — Dual extruded wall for open 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 4611-006;
- number of cores 2 (two) 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:

- silver plated copper stranded woven screen;
- 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.

Table 1 — Multicore screened and jacketed

Number of cores	Code for nominal section	AWG ^a	Linear resistance at 20 °C Ω/km max.	Screen strands nominal diameter mm	External diameter	Mass
					mm max.	kg/km max.
1	001 ^b	26	149,0	0,10	1,90	7,81
	002 ^b	24	106,0		2,06	9,51
	004	22	55,3		2,16	10,98
	006	20	31,0		2,40	14,66
	010	18	19,6	0,13	2,65	19,00
	012	16	14,9		2,79	22,74
	020	14	10,2		3,40	32,08
	030	12	6,4		3,91	45,28
2	001 ^b	26	153,5	0,10	2,90	13,15
	002 ^b	24	109,2		3,22	16,34
	004	22	57,0		3,42	19,42
	006	20	32,0		3,90	26,65
	010	18	20,2	0,13	4,42	35,19
	012	16	15,4		4,69	42,65
	020	14	10,5		5,84	59,53
	030	12	6,6		6,86	84,82
3	001 ^b	26	153,5	0,10	3,06	17,02
	002 ^b	24	109,2		3,41	21,42
	004	22	57,0		3,62	25,85
	006	20	32,0		4,14	36,18
	010	18	20,2	0,13	4,70	48,40
	012	16	15,4		5,00	59,28
	020	14	10,5		6,23	83,38
	030	12	6,6		7,33	120,41
4	001 ^b	26	153,5	0,10	3,32	20,96
	002 ^b	24	109,2		3,71	26,64
	002	22	57,0		3,95	32,37
	004	20	32,0		4,53	45,82
	006	18	20,2	0,13	5,15	61,78
	010	16	15,4		5,49	76,10
	012	14	10,5		6,86	107,41
	020	12	6,6		8,10	156,50

^a AWG = Closest American Wire Gage.

^b Silver plated copper alloy component conductor.

4.3 Colour coding of cores and jacket

See EN 4612-002.

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 (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 minimum (95 ± 2) °C, 1 MΩ.km minimum
304	Surface resistance	Not applicable
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 050 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