

SLOVENSKI STANDARD

SIST EN 2713-010:2009

01-junij-2009

Aeronavtika - Eno- ali vel' h'lni elektril' ni kabli za splošno uporabo - Delovne temperature med -55 °C in 200 °C - 010. del: Oklopljeni (opleteni) in oplađ' eni, z mođnostjo laserskega tiskanja YAG X3 - Standard za proizvod

Aerospace series - Cables, electrical, single and multicore for general purpose - Operating temperatures between - 55 °C and 200 °C - Part 010: Screened (braided) and jacketed, YAG X3 laser printable - Product standard

Luft- und Raumfahrt - Leitungen, elektrisch, ein- und mehradrig, für allgemeine Verwendung - Betriebstemperaturen zwischen - 55 °C und 200 °C - Teil 010: Geschirmt (Umflechtung) und ummantelt, YAG X3-Laser-bedruckbar - Produktnorm

Série aérospatiale - Câbles, électriques, mono et multiconducteurs d'usage général - Températures de fonctionnement comprises entre - 55 °C et 200 °C - Partie 010 : Blindés (tressés) et gainés, marquables au laser YAG X3 - Norme de produit

Ta slovenski standard je istoveten z: EN 2713-010:2006

ICS:

49.060

Letalska in vesoljska
elektril' na oprema in sistemi

Aerospace electric
equipment and systems

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 2713-010

August 2006

ICS 49.060

English Version

**Aerospace series - Cables, electrical, single and multicore for
general purpose - Operating temperatures between - 55 °C and
200 °C - Part 010: Screened (braided) and jacketed, YAG X3
laser printable - Product standard**

Série aérospatiale - Câbles, électriques, mono et
multiconducteurs d'usage général - Températures de
fonctionnement comprises entre - 55 °C et 200 °C - Partie
010 : Blindés (tressés) et gainés, marquables au laser YAG
X3 - Norme de produit

Luft- und Raumfahrt - Leitungen, elektrisch, ein- und
mehradrig, für allgemeine Verwendung -
Betriebstemperaturen zwischen - 55 °C und 200 °C - Teil
010: Geschirmt (Umflechtung) und ummantelt, YAG X3
Laser bedruckbar - Produktnorm

This European Standard was approved by CEN on 19 May 2006.

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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 Central Secretariat has the same status as the official versions.

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Foreword

This European Standard (EN 2713-010:2006) 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 2007, and conflicting national standards shall be withdrawn at the latest by February 2007.

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According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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 2713-010:2006 (E)**1 Scope**

This standard specifies the characteristics of YAG X3 laser printable, single and multicore screened (braided) and jacketed electrical cables for use in the on-board electrical systems of aircraft, at operating temperatures between – 55 °C and 200 °C.

It shall also be possible to mark these cables by hot stamp printing or ink jet printing.

These markings shall be in accordance with EN 3838.

This standard is not valid for new study.

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 or copper alloy conductors for electrical cables — Product standard.*

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

EN 2266-003, *Aerospace series — Cables, electrical, for general purpose — Operating temperatures between – 55 °C and 200 °C — Part 003: Ink jet printable — Product standard.*

EN 2713-002, *Aerospace series — Cables, electrical, single and multicore for general purpose — Operating temperatures between – 55 °C and 200 °C — Part 002: Screened and jacketed — General.*

EN 3475-100*, *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 100: General.*

EN 3838, *Aerospace series — Requirements and tests on user-applied markings on aircraft electrical cables.* ¹⁾

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

3 Terms and definitions

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

* And all parts quoted in Table 2.

1) Published as AECMA Prestandard at the date of publication of this standard.

4 Materials and construction

4.1 Materials

These cables shall consist of the following:

- cores according to EN 2266-003, top coat dispersion fluorocarbon;
- number of cores 1 to 4.

2 to 4-core cables shall be twisted together according to EN 2235.

Filler cores shall not be permitted.

Screen:

- nickel-plated copper stranded 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:

- layer of polyimide with total wall thickness (nominal value) of 30 µm, coated on both sides with a layer 2,5 µm thick of fluorocarbon;
- direction of winding immaterial – overlap 67 % min.; or two layers – winding direction of first immaterial, overlap 51 % min. and second layer in opposite direction with 20 % min. overlap;
- top coat of dispersion fluorocarbon, wall thickness 15 µm min. including the necessary additives for the acceptance of user-applied YAG X3 laser marking.

4.2 Construction

See EN 2083 and Table 1.

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Table 1

Number of cores	Code for nominal section	Nominal section	AWG ^a	Linear resistance at 20 °C	Screen strands nominal diameter	External diameter	Mass
		mm ²		max. Ω/km		max. mm	
1	001	0,15	26	160,0	0,08	1,50	5,8
	002	0,25	24	114,0	0,08	1,60	6,8
	004	0,4	22	60,0	0,10	1,82	9,1
	006	0,6	20	33,2	0,10	2,07	12,9
	010	1	18	21,1	0,10	2,32	17,1
	012	1,2	16	14,5	0,10	2,58	22,1
	020	2	14	10,9	0,10	2,85	27,7
	030	3	12	6,8	0,10	3,40	40,8
	050	5	10	4,2	0,12	4,10	64,4
	051 ^b	5	10	4,1	0,12	4,25	66,6
2	001	0,15	26	165,00	0,10	2,41	10,6
	002	0,25	24	117,00	0,10	2,59	12,5
	004	0,4	22	61,70	0,10	2,91	15,9
	006	0,6	20	34,10	0,10	3,41	22,8
	010	1	18	21,70	0,10	3,95	31,6
	012	1,2	16	14,90	0,12	4,55	43,4
	020	2	14	11,20	0,12	5,09	55,8
	030	3	12	6,99	0,15	6,16	85,2
	050	5	10	4,32	0,15	7,60	126,7
	051 ^b	5	10	4,22	0,15	7,70	132,0
3	001	0,15	26	165,00	0,10	2,53	13,5
	002	0,25	24	117,00	0,10	2,73	16,2
	004	0,4	22	61,70	0,10	3,08	21,4
	006	0,6	20	34,10	0,10	3,64	31,7
	010	1	18	21,70	0,12	4,25	46,0
	012	1,2	16	14,90	0,12	4,84	61,1
	020	2	14	11,20	0,12	5,40	77,6
	030	3	12	6,99	0,15	6,66	122,8
4	001	0,15	26	165,0	0,10	2,74	16,1
	002	0,25	24	117,0	0,10	2,97	19,8
	004	0,4	22	61,7	0,10	3,35	26,4
	006	0,6	20	34,1	0,12	4,05	41,6
	010	1	18	21,7	0,12	4,66	57,5
	012	1,2	16	14,9	0,12	5,28	76,2
	020	2	14	11,2	0,15	6,10	103,0
^a AWG = Closest American Wire Gage. ^b Flexible construction which may be used as an alternative.							

4.3 Colour coding of cores and jacket

See EN 2713-002.

5 Required characteristics

According to EN 2235 and EN 3475-100.

See Table 2.

Table 2

EN 3475-	Designation of the test	Details
201	Visual examination	Applicable
202	Mass	Applicable; see Table 1.
203	Dimensions	Applicable; see Table 1.
301	Ohmic resistance per unit length	Applicable; see Table 1.
302	Voltage proof test	Applicable
303	Insulation resistance	Applicable
304	Surface resistance	Applicable
305	Overload resistance	Not applicable
401	Accelerated ageing	Applicable Temperature (250 ± 5) °C
402	Shrinkage and delamination	Applicable Temperature (250 ± 5) °C Maximum shrinkage at each end of cable: jacket 2 mm, core insulation, see EN 2266-003.
403	Delamination and blocking	Applicable Temperature (250 ± 5) °C
404	Thermal shock	Applicable Temperature (250 ± 5) °C Maximum shrinkage at each end of cable: jacket 2 mm, core insulation, see EN 2266-003.
405	Bending at ambient temperature	Applicable
406	Cold bend test	Applicable
407	Flammability	Applicable Extinguishing time: 3 s max.
408	Fire resistance	Not applicable
409	Air-excluded ageing	Not applicable
410	Thermal endurance	Applicable 40 000 h (temperature 200 °C)
411	Resistance to fluids	Applicable
501	Dynamic cut-through	Not applicable
502	Notch propagation	Applicable Notch depth: 40 µm

continued