SLOVENSKI STANDARD

SIST EN 2714-013:2006

01-julij-2006

Aeronavtika ï Eno- ali veļ ģilni elektriļ ni kabli za sploģno uporabo ï Delovne temperature med ï 55 ÁC in 260 ÁC ï 013. del: Druģina DR, oklopljeni (spirala) in oplaģļ eni, z moģnostjo UV-laserskega tiskanja ï Standard za proizvod

Aerospace series - Cables, electrical, single and multicore for general purpose - Operating temperatures between - 55 °C and 260 °C - Part 013: DR family, screened (spiral) and jacketed, UV laser printable - Product standard

Luft- und Raumfahrt - Leitungen, elektrisch, ein- und mehradrig, für allgemeine Verwendung - Betriebstemperaturen zwischen - 55 °C und 260 °C - Teil 013: DR-Familie, geschirmt (Umseilung) und ummantelt UV Laser bedruckbar - Produktnorm

Série aérospatiale - Câbles, électriques, mono et multiconducteurs d'usage général - Températures de fonctionnement comprises entre - 55 °C et 260 °C - Partie 013 : Famille DR, blindés (guipés) et gainés, marquable au laser UV - Norme de produit

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English Version

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This European Standard was approved by CEN on 12 September 2005.

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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.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This European Standard (EN 2714-013:2005) has been prepared by the European Association of Aerospace Manufacturers - Standardization (AECMA-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 AECMA, 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 2006, and conflicting national standards shall be withdrawn at the latest by April 2006.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard specifies the characteristics of UV laser printable DR family, single and multicore screened (spiral) and jacketed electrical lightweight cables for use in the on-board electrical systems of aircraft, at operating temperatures between – 55 °C and 260 °C. Nevertheless, if needed, – 65 °C is also acceptable as shown by cold test.

It shall also be possible to mark these cables by qualified compatible marking.

These markings shall satisfy the requirements of EN 3838.

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 2235, *Aerospace series – Single and multicore electrical cables, screened and jacketed – Technical specification.* [1)]

EN 2267-009, *Aerospace series – Cables, electrical, for general purpose – Operating temperatures between – 55 °C and 260 °C – Part 009: DRA family, single and multicore assembly – Product standard.* [1)]

EN 2267-010, *Aerospace series – Cables, electrical, for general purpose – Operating temperatures between – 55 °C and 260 °C – Part 010: DR family, single UV laser printable – Product standard* [1)]

EN 2714-002, *Aerospace series – Cables, electrical, single and multicore for general purpose – Operating temperatures between – 55 °C and 260 °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 4434, *Aerospace series – Copper or copper alloy lightweight conductors for electrical cables – Product standard (Normal and tight tolerances).*

EN 9133, *Aerospace series – Quality management systems – Qualification Procedure for Aerospace Standard Parts.*

TR 6058, *Aerospace series – Cable code identification list.* [2)]

3 Terms, definitions and symbols

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

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* And all its parts quoted in Table 2.

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

2) Published as AECMA Technical Report 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 2267-009 (or EN 2267-010 for single core construction)

— 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 spiral screen;

— for dimensions of strands, see Table 1;

— material according to EN 4434, tests according to EN 3475-100;

— construction according to EN 2235.

Outer jacket:

— Shall be defined to satisfy all required characteristics of Clause 5.

4.2 Construction

See EN 4434 and Table 1.

Table 1

Number of cores	Code for nominal section	Nominal section mm²	AWG [a]	Linear resistance at 20 °C Ω/km max.	Screen strands nominal diameter mm	External diameter mm max.	Mass kg/km max.
1	001	0,15	26	160,0	0,08	1,31	4,68
	002	0,25	24	114,0	0,08	1,45	5,76
	004	0,4	22	60,0	0,08	1,60	7,51
	006	0,6	20	33,2	0,08	1,84	10,77
	010	1	18	21,1	0,08	2,08	14,97
	012	1,2	16	14,5	0,10	2,43	20,97
	020	2	14	10,9	0,10	2,74	27,03
	030	3	12	6,8	0,10	3,20	39,70
	051	5	10	4,1	0,12	3,89	61,94

continued

Table 1 (*concluded*)

Number of cores	Code for nominal section	Nominal section mm²	AWG [a]	Linear resistance at 20 °C Ω/km max.	Screen strands nominal diameter mm	External diameter mm max.	Mass kg/km max.
2	001	0,15	26	165,00	0,08	2,13	8,17
	002	0,25	24	117,00	0,08	2,40	10,23
	004	0,4	22	61,70	0,08	2,70	13,64
	006	0,6	20	34,10	0,10	3,22	21,05
	010	1	18	21,70	0,10	3,71	29,52
	012	1,2	16	14,90	0,12	4,38	41,20
	020	2	14	11,20	0,15	5,04	55,83
	030	3	12	6,99	0,20	6,09	86,79
	051	5	10	4,22	0,20	7,39	130,51
3	001	0,15	26	165,00	0,08	2,26	10,94
	002	0,25	24	117,00	0,10	2,59	14,72
	004	0,4	22	61,70	0,10	2,91	19,76
	006	0,6	20	34,10	0,12	3,48	30,44
	010	1	18	21,70	0,12	4,00	42,96
	012	1,2	16	14,90	0,15	4,73	60,67
	020	2	14	11,20	0,15	5,39	78,83
	030	3	12	6,99	0,20	6,50	122,72
	051	5	10	4,22	0,20	7,90	186,69
4	001	0,15	26	165,0	0,10	2,51	14,57
	002	0,25	24	117,0	0,10	2,84	18,47
	004	0,4	22	61,7	0,10	3,19	25,04
	006	0,6	20	34,1	0,12	3,82	38,81
	010	1	18	21,7	0,12	4,41	55,22
	012	1,2	16	14,9	0,15	5,23	78,02
	020	2	14	11,2	0,20	6,06	107,36

[a] AWG = Closest American Wire Gage.

4.3 Colour coding of cores and jacket

See EN 2714-002.

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.
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
306	Continuity of conductors	Applicable
307	Corona extinction voltage	Not applicable
401	Accelerated ageing	Applicable Temperature (310 ± 5) °C
402	Shrinkage and delamination	Applicable Temperature (290 ± 5) °C Maximum shrinkage at each end of cable: jacket: 2 mm on AWG 26 to 18 3 mm on AWG 16 to 10 core: according to EN 2267-009
403	Delamination and blocking	Applicable Temperature (310 ± 5) °C
404	Thermal shock	Applicable but (– 65 ± 2) °C instead of (– 55 ± 2) °C Temperature (260 ± 5) °C Maximum shrinkage at each end of cable: jacket: 2 mm on AWG 26 to 18 3 mm on AWG 16 to 10 core: according to EN 2267-009
405	Bending at ambient temperature	Applicable
406	Cold bend test	Applicable but (– 65 ± 2) °C
407	Flammability	Applicable Extinguishing time: 3 s max.

continued