SLOVENSKI STANDARD

SIST EN 2267-007:2006

01-julij-2006

Aeronavtika ï Električni kabli za splošno uporabo ï Delovne temperature med ï 55 ÁC in 260 ÁC ï 007. del: Družina DMA, snop enožilnih in večžilnih kablov z možnostjo brizgalnega tiskanja ï Standard za proizvod

Aerospace series - Cables, electrical, for general purpose - Operating temperatures between - 55 °C and 260 °C - Part 007: DMA family, single ink-jet printable and multicore assembly - Product standard

Luft- und Raumfahrt - Leitungen, elektrisch, für allgemeine Verwendung - Betriebstemperaturen zwischen - 55 °C und 260 °C - Teil 007: DMA-Familie, ein- und mehradrige Leitungen, ink-jet-bedruckbar - Produktnorm

Série aérospatiale - Câbles électriques, d'usage général, températures de fonctionnement comprises entre - 55 °C et 260 °C - Partie 007 : Famille DMA, fil simple marquable au jet d'encre et éléments assemblés - Norme de produit

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This European Standard was approved by CEN on 26 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.

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Foreword

This European Standard (EN 2267-007:2005) 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of an identical text or by endorsement, at the latest by May 2006, and conflicting national standards shall be withdrawn at the latest by May 2006.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 ink jet printable electrical lightweight cables DMA family 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 2084, *Aerospace series — Cables, electric, single-core, general purpose, with conductors in copper or copper alloy — Technical specification.*

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

EN 2267-002, *Aerospace series — Cables, electrical, for general purpose — Operating temperatures between – 55 °C and 260 °C — Part 002: 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.*

3 Terms, definitions and symbols

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

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* All parts quoted in this standard.

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

4 Materials and construction

4.1 Materials

Conductor:

These cable conductors shall be made of copper or copper alloy and nickel plated according to EN 4434 code D.

Insulation:

For all conductor size codes:

— first insulation polyimide tape with total thickness (nominal value) of 30 µm, coated on both sides with a layer 2,5 µm thick of fluorocarbon;

— direction of winding immaterial – overlap 51 % min.;

— second insulation: one or two polytetrafluoroethylene (PTFE) tape(s) with thickness and overlap according to Table 1, each tape running in opposite direction to the preceding layer.

Table 1

Code	AWG [a]	1st tape		2nd tape		Total minimum average thickness sealed material
		Nominal thickness Raw material µm	Min. % overlap	Nominal thickness Raw material µm	Min. % overlap	µm
001	26	65	67	–	–	100
002	24	56	67	–	–	120
004	22	56	67	–	–	120
006	20	76	67	–	–	150
010	18	65	51	65	51	180
012	16	65	67	76	51	250
020	14	65	67	76	51	250
030	12	65	67	76	51	250
051	10	65	67	76	51	250
090	8	100	67	65	51	300
140	6	100	67	65	51	300

[a] AWG = closest American Wire Gage.

4.2 Construction

See EN 4434 and Table 2.

Table 2

Code for nominal section	Nominal section mm²	AWG [a]	Linear resistance at 20 °C Ω/km max.	External diameter mm min.	External diameter mm max.	Mass kg/km max.
001	0,15	26	160,0	0,85	0,97	2,45
002	0,25	24	114,0	0,90	1,04	3,10
004	0,4	22	60,0	1,05	1,19	4,43
006	0,6	20	33,2	1,38	1,53	7,73
010	1	18	21,1	1,65	1,82	11,74
012	1,2	16	14,5	2,02	2,22	16,95
020	2	14	10,9	2,29	2,49	22,65
030	3	12	6,8	2,73	2,97	33,70
051	5	10	4,1	3,33	3,61	53,1
090	9	8	2,3	4,47	4,77	95,6
140	14	6	1,58	5,70	6,30	141,4

[a] AWG = closest American Wire Gage.

4.3 Number of cores

See EN 2267-002.

See EN 2235 for cabling.

4.4 Colour coding of cores

See EN 2267-002.

5 Required characteristics

According to EN 2084 and EN 3475-100.

See Table 3.

Table 3

EN 3475-	Test	Details
201	Visual examination	Applicable
202	Mass	Applicable; see Table 2.
203	Dimensions	Applicable; see Tables 1 and 2.
301	Ohmic resistance per unit length	Applicable; see Table 2.
302	Voltage proof test	Applicable
303	Insulation resistance	Applicable
304	Surface resistance	Applicable
305	Overload resistance	Applicable T_1 = (310 ± 5) °C; T_2 = (450 ± 5) °C
306	Continuity of conductors	Applicable
307	Corona extenction 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: — 0,15 mm² to 0,6 mm²: 0,8 mm — 1 mm² to 1,2 mm²: 1 mm — 2 mm² to 5 mm²: 1,2 mm — 9 mm²: 1,5 mm — 14 mm²: 2 mm
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: — 0,15 mm² to 0,6 mm²: 0,8 mm — 1 mm² to 1,2 mm²: 1 mm — 2 mm² to 5 mm²: 1,2 mm — 9 mm²: 1,5 mm — 14 mm²: 2 mm
405	Bending at ambient temperature	Applicable
406	Cold bend test	Applicable Temperature (– 65 ± 2) °C
407	Flammability	Applicable Extinguishing time: 3 s max.
408	Fire resistance	Not applicable

continued