



SLOVENSKI STANDARD
SIST EN 3719:2006
01-julij-2006

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Aerospace series - Aluminium or aluminium alloy conductors for electrical cables -
Product standard

Luft- und Raumfahrt - Leiter aus Aluminium oder Aluminiumlegierung in elektrische
Leitungen - Produktnorm

iTeh STANDARD PREVIEW

Série aérospatiale - Conducteurs (en aluminium ou en alliage d'aluminium pour câbles
électriques - Norme de produit

SIST EN 3719:2006

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Ta slovenski standard je istoveten z: EN 3719:2005

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en

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ICS 49.025.20

English Version

Aerospace series - Aluminium or aluminium alloy conductors for electrical cables - Product standard

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This European Standard was approved by CEN on 19 September 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This European Standard (EN 3719:2005) 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.

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1 Scope

This standard specifies the dimensions, linear resistance, mechanical characteristics, construction and mass of conductors in aluminium or aluminium alloy for electrical cables for aerospace applications.

It applies to stranded conductors with nominal cross-sections of 5 mm² to 107 mm² inclusive.

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

EN 3475-301, *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 301: Ohmic resistance per unit length.*

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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4 Conductor materials and construction

4.1 Materials

The conductors in accordance with this standard shall consist of individual annealed aluminium (EC grade 99,7 % AL) or aluminium alloy strands with the following composition defined in Table 1.

Table 1

%	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ga	Ti + V	B	Others		Al
											singly	together	
min.	–	0,50	–	–	0,08	–	–	–	–	–	–	–	99,1
max.	0,30	0,80	0,035	0,01	0,25	0,01	–	–	0,03	0,02	0,03	0,10	–

4.2 Material for individual strands and code

The individual strands may be:

- pure aluminium (code E);
- aluminium alloy (code A);
- aluminium alloy with tin plating (code B);
- aluminium alloy with silver plating (code C);
- aluminium alloy with nickel plating (code D).

Plating thickness shall be at least 1,0 µm for silver and 1,2 µm for nickel.

When tin plating is authorized, the thickness shall be sufficient to comply with the tests specified in EN 3475-100.

4.3 Aluminium or aluminium alloy

The maximum resistivity shall be: $3,0 \times 10^{-8} \Omega \cdot m$ ¹⁾.

The elongation at rupture for each individual strand shall be $\geq 6\%$.

The tensile strength of each individual strand shall be at least 125 MPa.

4.4 Construction of conductors

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4.4.1 Lay length <https://standards.iteh.ai/catalog/standards/sist/24d29dec-ebcc-4d33-8e49-fe1dd8035f16/sist-en-3719-2006>

Up to 9 mm² cross-section inclusive (code 090), concentric conductors are used. The lay for the strands of a concentric conductor, checked over the outside layer of a test piece 1 m long, shall be between eight times and 16 times the maximum diameter of this conductor.

For sectional areas between 14 mm² and 107 mm² (codes 140 to 107), the conductor comprises concentric or bunched conductors twisted together. The lay of the strands for the basic concentric or bunched conductors shall not exceed 30 times the diameter of the concentric or bunched conductor in question.

The lay for concentric (or bunched) conductors, measured over the outer layer of the conductor, shall be between eight times and 16 times the maximum conductor diameter.

In all cases the lay of the outer layer shall be left-hand.

4.4.2 Joints

The conductors shall be free from any joints. Each strand comprising the conductors may, however, include soldered or brazed joints. For strands with a diameter of 0,25 mm or greater, butt joints shall be used.

The distance between two joints in individual strands shall exceed 3 m, measured between different strands.

1) Or $30 \Omega \cdot mm^2/km$.

4.4.3 Compaction

Compaction of the conductor, causing deformation of the strands or damage to the plating, is not permitted.

5 Required characteristics

See Table 2.

Table 2

Code	Nominal cross-section mm ²	Number of strands mm	Nominal diameter of strands mm	Diameter of conductor mm		Resistance at 20 °C ^{a b} Ω/km max.	Mass max. ^b kg/km	AWG ^c	Number of missing single strands
				min.	max.				
050	5	27		2,70	3,10	5,80	15,4	10	0
090	9	41		3,50	3,90	3,80	25,4	8	0
140	14	7 × 10		4,75	5,25	2,20	45,0	6	0
220	22	7 × 15		5,80	6,40	1,50	67,6	4	0
280	28	7 × 19		6,50	7,10	1,18	77,0	3	0
340	34	7 × 24		7,40	8,00	0,94	108,1	2	2
420	42	7 × 30		8,30	8,90	0,75	135,3	1	2
530	53	19 × 14	0,51	9,70	10,30	0,60	171,3	0	3
680	68	19 × 18		11,10	11,70	0,43	220,3	00	3
850	85	19 × 22		12,40	13,00	0,36	269,2	000	4
		27 × 20							
		or							
107	107	Layer 1: 7 × 15 Layer 2: 12 × 15 Layer 3: 15 × 14 + 3 × 15		14,10	14,80	0,29	347,5	0000	5

^a For other temperatures this may be calculated using the formula shown in EN 3475-301.
^b Not taking into consideration metal platings, assuming that their effect is minimal.
^c AWG = closest American Wire Gage.

6 Test methods

See EN 3475-100.