
Aeronavtika - Kabli, električni, za splošne namene, z vodniki iz aluminija ali pobakrenega aluminija - 002. del: Splošno

Aerospace series - Cables, electric, general purpose, with conductors in aluminium or copper-clad aluminium - Part 002: General

Luft- und Raumfahrt - Elektrische Leitungen, zur allgemeinen Verwendung, mit Leitern aus Aluminium oder kupferbeschichtetem Aluminium - Teil 002: Allgemeines

Série aérospatiale - Câbles électriques, d'usage général, avec conducteurs en aluminium ou en aluminium chemisé cuivre - Partie 002 : Généralités

Ta slovenski standard je istoveten z: prEN 4681-002

ICS:

29.060.20	Kabli	Cables
49.025.20	Aluminij	Aluminium
49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems

oSIST prEN 4681-002 rev:2023

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 4681-002

February 2023

ICS 49.060

Will supersede EN 4681-002:2012

English Version

Aerospace series - Cables, electric, general purpose, with conductors in aluminium or copper-clad aluminium - Part 002: General

Série aérospatiale - Câbles électriques, d'usage général,
avec conducteurs en aluminium ou en aluminium
chemisé cuivre - Partie 002 : Généralités

Luft- und Raumfahrt - Elektrische Leitungen, zur
allgemeinen Verwendung, mit Leitern aus Aluminium
oder kupferbeschichtetem Aluminium - Teil 002:
Allgemeines

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee ASD-STAN.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents		Page
European foreword		3
1	Scope	4
2	Normative references	4
3	Terms, definitions and symbols	5
4	List of product standards	5
5	Materials and construction	5
5.1	Materials	5
5.2	Construction	5
5.2.1	Number of cores	5
5.2.2	Colour coding of single core cables	6
5.2.3	Colour coding of unscreened, multicore cables	6
6	Identification and marking	7
6.1	General	7
6.2	Single core	8
6.3	Multicore	8
6.4	Designation	9
6.5	Manufacturer identification marking	10
7	Technical specification	10

oSIST prEN 4681-002 rev:2023

<https://standards.iteh.ai/catalog/standards/sist/b0d974ba-22bc-4b7b-ab60-5264f796d1a1/osist-pren-4681-002-rev-2023>

European foreword

This document (prEN 4681-002:2023) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 4681-002:2012.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/b0d974ba-22bc-4b7b-ab60-5264f796d1a1/osist-pren-4681-002-rev-2023>

1 Scope

This document specifies the list of product standards and common characteristics of electrical cables for general purpose with conductors in aluminium or copper-clad aluminium, intended for installation in aircraft electrical systems.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 3719, *Aerospace series - Aluminium or aluminium alloy conductors for electrical cables - Product standard*

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

EN 4651, *Aerospace series - Copper-clad aluminium alloy conductors for electrical cables - Product standard*

EN 4681-001, *Aerospace series - Cables, electric, general purpose, with conductors in aluminium or copper-clad aluminium - Part 001: Technical specification*

EN 4681-003,¹ *Aerospace series — Cables, electric, general purpose, with conductors in aluminium or copper-clad aluminium — Part 003: AD family, single, UV laser printable — Product standard*

EN 4681-004,¹ *Aerospace series — Cables, electric, general purpose, with conductors in aluminium or copper-clad aluminium — Part 004: ADA family, single and multicore assembly — Product standard*

EN 4681-005, *Aerospace series - Cables, electric, general purpose, with conductors in aluminium or copper-clad aluminium - Part 005: AZ family, single, for use in low pressure atmosphere - Product standard*

EN 4681-006, *Aerospace series - Cables, electric, general purpose, with conductors in aluminium or copper-clad aluminium - Part 006: AZA family, single and multicore assembly, for use in low pressure atmosphere - Product standard*

ISO 2574, *Aircraft — Electrical cables — Identification marking*

TR 4684,¹ *Aerospace series — Electrical technology and component definitions*

TR 6058,² *Aerospace series — Cable code identification list*

¹ In study at the date of publication of this standard.

² Published as ASD-STAN Technical Report at the date of publication of this standard (www.asd-stan.org).

3 Terms, definitions and symbols

For the purposes of this document, the terms, definitions and symbols given in TR 4684 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 List of product standards

EN 4681-003, *Aerospace series — Cables, electric, general purpose, with conductors in aluminium or copper-clad aluminium — Part 003: AD family, single, UV laser printable — Product standard*

EN 4681-004, *Aerospace series — Cables, electric, general purpose, with conductors in aluminium or copper-clad aluminium — Part 004: ADA family, single and multicore assembly — Product standard*

EN 4681-005, *Aerospace series - Cables, electric, general purpose, with conductors in aluminium or copper-clad aluminium - Part 005: AZ family, single, for use in low pressure atmosphere - Product standard*

EN 4681-006, *Aerospace series - Cables, electric, general purpose, with conductors in aluminium or copper-clad aluminium - Part 006: AZA family, single and multicore assembly, for use in low pressure atmosphere - Product standard*

5 Materials and construction

5.1 Materials

These cable conductors shall be made of aluminium or copper clad aluminium and nickel-plated according to EN 3719 or EN 4651 code D (except otherwise specified in product standards).

5.2 Construction

5.2.1 Number of cores

According to Table 1.

Table 1 — Number of cores

Number of cores	1	2	3	4	5
Code	A	B	C	D	E
Factor for overall dimensions	1	2,00	2,15	2,40	2,70

For two cores or more:

- The lay length of the outer lay shall not be less than eight times and not more than 16 times the nominal diameter of the cabled cores.
- The core shall not be spliced.

prEN 4681-002:2023 (E)

Where filler cores are used, on 4 (four) cores and 5 (five) cores assembly, materials shall be compliant with the operating temperatures.

- factor for mass: 1,03;
- factor for ohmic resistance: 1,03.

5.2.2 Colour coding of single core cables

For differentiation with copper cables, all single core cables shall be of Light GREY – colour code K as defined in Table 2, and markings shall be as defined in Clause 6.

Table 2 — Colour code

Code	Colour ^a
A	Red (2)
B	Blue (6)
C	Yellow (4)
D	Green (5)
E	White (9)
F	Black (0)
G	Brown (1)
H	Orange (3)
J	Violet (7)
K	Grey (8)
^a For information: international colour code.	

5.2.3 Colour coding of unshielded, multicore cables

According to Table 3, differentiation with copper cables shall be given by markings as defined in Clause 6.

Table 3 — Code P

Number of cores in cables	Colours (light colours acceptable)									
	2	Red	Blue							
3	Red	Blue	Yellow							
4	Red	Blue	Yellow	Green						
5	Red	Blue	Yellow	Green	White					
NOTE Jacket (if requested): Light grey, manufacturer markings according to Table 4.										

Table 4 — Colour of manufacturer identification markings

Colours	Nominal conductor cross-section mm ²	AWG ^a
Blue	0,25	24
	0,6	20
	1,2	16
	3	12
	9	8
	22	4
Green	0,15	26
	0,4	22
	1	18
	2	14
	5	10
	14	6
Black	28	3
	107	0 000

^a AWG = Closest American Wire Gage.

6 Identification and marking

6.1 General

The identification and marking of cables by the manufacturer shall be in accordance with ISO 2574 and this standard.

As the designation, required for orders, is generally too long for use in electrical drawings, a shorter cross designation (without colour information) is given in TR 6058 plus the corresponding nearest AWG (gauge code).

To facilitate further manufacturing operations and differentiate these aluminium cables from copper cables, markings are necessary on both core(s) and jacket (when there is a jacket).

Dark spots are not necessary on jacket.

prEN 4681-002:2023 (E)

6.2 Single core

For differentiation with copper cables, colour of manufacturer identification markings shall be in accordance with Table 5 for size 24 to size 4/0.

Table 5 — Colour of manufacturer identification markings

Family	Colours
AD	Orange or Red
AZ	—

For size 22, some dashes are positioned between adjacent manufacturer markings.

NOTE From size 24 to size 12, dark spots will be added during markings applied by the users.

6.3 Multicore

For differentiation with copper cables, colour of manufacturer identification markings shall be in accordance with Table 4 for core size 24 to size 4/0.

From core size 24 to size 4, in addition to cable manufacturer identification markings, dark spots are positioned all along according to the definition described hereafter and in Figure 1 and Table 6.

NOTE These dark spots are necessary to facilitate further manufacturing operations.

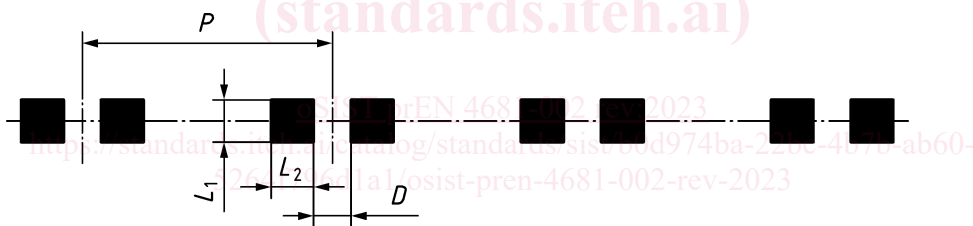


Figure 1 — Positioning of dark spots on the cable