SLOVENSKI STANDARD
SIST EN 4608-001:2019

01-september-2019

Nadomešča:
SIST EN 4608-001:2009

Aeronavtika - Električni ognjevzdržni kabli - Enožilni in večžilni prepleteni kabli, oklopljeni (opleteni) in oplaščeni - Delovne temperature med –65 °C in 260 °C - 001. del: Tehnična specifikacija

Aerospace series - Cable, electrical, fire resistant - Single and twisted multicore assembly, screened (braided) and jacketed - Operating temperatures between - 65 °C and 260 °C - Part 001: Technical specification

Luft- und Raumfahrt - Feuerbeständige elektrische Leitungen - Einzel- und mehradrig verdrillte Leitungen, geschirmt (Geflecht) und ummantelt - Betriebstemperaturen zwischen - 65 °C und 260 °C - Teil 001: Technische Lieferbedingungen

Série aérospatiale Câbles électriques blindés résistant au feu Simple et multifilaire blindé (tresse) gainé Températures de fonctionnement comprises entre 65 °C et 260 °C Partie 001 : Spécification technique

Ta slovenski standard je istoveten z: **EN 4608-001:2019**

ICS:

13.220.99	Drugi standardi v zvezi z varstvom pred požarom	Other standards related to protection against fire
29.060.20	Kabli	Cables
49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems

SIST EN 4608-001:2019 **en,fr,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 4608-001

June 2019

ICS 49.060

English Version

Aerospace series - Cable, electrical, fire resistant - Single and twisted multicore assembly, screened (braided) and jacketed - Operating temperatures between - 65 °C and 260 °C - Part 001: Technical specification

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This European Standard was approved by CEN on 14 January 2019.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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

Ref. No. EN 4608-001:2019 E

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European foreword

This document (EN 4608-001:2019) 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 December 2019, and conflicting national standards shall be withdrawn at the latest by December 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 4608-001:2006.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: 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, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This document specifies the required characteristics and test procedures for fire resistant or fire proof electrical cables for use in aircraft electrical systems. They shall be operated at a rated AC voltage of 600 V ac, a frequency of maximum 2 000 Hz and a long term temperature of up to 260 °C (ambient temperature plus temperatures rise in conductor).

These cables shall also maintain a specific dielectric strength when they are subjected to a flame of 1 100 °C after five (5) minutes (fire resistant) or 15 minutes (fire proof) exposure.

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 2234, Aerospace series — *Cable, electrical, fire resistant — Technical specification*

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

EN 3475-100 (all parts), *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*

EN 4608-002, *Aerospace series — Cable, electrical, fire resistant — Single and twisted multicore assembly, screened (braided) and jacketed — Operating temperatures between – 65 °C and 260 °C — Part 002: General*

EN 4608-005, *Aerospace series — Cable, electrical, fire resistant — Single and twisted multicore assembly, screened (braided) and jacketed — Operating temperatures between – 65 °C and 260 °C — Part 005: DW family — Lightweight two-core gauge 24 for data transmission — UV Laser printable — Product standard*

EN 9133, *Aerospace series — Quality Management Systems — Qualification Procedure for Aerospace Standard Products*

ISO 2574, *Aircraft — Electrical cables — Identification marking* [1)]

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

3 Terms and definitions

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

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

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

1) Published by : International Organization for Standardization (ISO), http://www.iso.ch/

2) Published as ASD-STAN Technical Report at the date of publication of this European Standard by AeroSpace and Defence industries Association of Europe - Standardization (ASD-STAN) (http://www.asd-stan.org/)

4 Materials and construction of cables

4.1 General

The individual cores shall conform to EN 2234 and applicable product standard.

4.1.1 Materials

The material shall conform to the applicable product standard.

The materials used shall have no corrosive effect upon the conductors and screens and shall not be susceptible to attack by mould and other micro-organisms.

4.1.2 Construction

The construction shall conform to EN 2234, 4.1.

4.2 Construction of cables

4.2.1 Assembly

The lay length of the outer layer shall not be less than eight (8) times and not more than 16 times the nominal diameter of the cabled cores. The cores shall not be spliced.

4.2.2 Screened cables

Shielding shall conform to EN 2235, 4.3.3.

Efficiency of shielding is not required during the flame exposure.

4.3 Colour

The colour of the outer layer and stripes shall be in accordance with EN 4608-002.

5 Required characteristics

The required characteristics for cables tested according to 6.1 shall conform to the values specified in the product standard or in this specification

6 Tests methods

See Table 1 (methods to be applied are compliant with EN 3475 specifications quoted hereafter).

Table 1 — Tests: methods, application, requirements *(1 of 5)*

§ No.	Tests							Requirements (and/or particulars)
	Description	EN 3475- (and/or particulars)	Qualification [a] (see 7.1).	First article inspection (see 7.1.5)	Each release		Periodic every three years (7.2.4)	
					On all cables (7.2.1 and 7.2.2)	Prior to delivery (7.2.1 and 7.2.3)		
6	Test conditions	100	X	X	X	X	X	
6.1	Coverage		3	3				4.2.3.
6.2	Spiral screening or braiding angle		3	3				4.2.3.
6.3	Visual examination [b]	201	3	3	X			Marking: Clause 8.
6.4	Mass	202 minimum length: 0,5 m	3	3		X		Product standard
6.5	Dimensions (all) [b] — outer diameter	203	3	3		X		Product standard
6.6	Electrical resistance per unit length	301	3	3		X		Product standard
6.7	Voltage proof test : — immersion test — dry test — dry impulse test — dielectric strength of cores	302 Alternative to dry test	3 X X	3 X X	X X			500 V ac 1,5 kV ac 5 kV peak voltage 1,5 kV ac
6.8	Insulation resistance at (20 ± 2) °C — dry test — immersion test at (95 ± 2) °C — immersion test	303	3	3		X		For a length of 1 km 1 500 MΩ 500 MΩ 1 MΩ
6.9	Surface resistance [b]	304	3				X	Minimum 1 250 MΩ.km
6.10	Overload resistance	305	NOT APPLICABLE					
6.11	Continuity of conductors	306	1	1	APPLICABLE			
6.12	Accelerated ageing	401 Mandrel diameter and test load: Table 2 Temperature: product standard	3	3			X	

Table 1 — Tests: methods, application, requirements *(2 of 5)*

§ No.	Tests							Requirements (and/or particulars)
	Description	**EN 3475-** (and/or particulars)	Qualification [a] (see 7.1).	First article inspection (see 7.1.5)	**Each release**		Periodic every three years (7.2.4)	
					On all cables (7.1 and 7.2.2)	Prior to delivery (7.1 and 7.2.3)		
6.13	Shrinkage and delamination	402 Temperature: product standard	3	3			X	Shrinkage length: Product standard
6.14	Delamination and blocking	403 Mandrel diameter: Table 2 Temperature: product standard	3	3			X	
6.15	Thermal shock	404 Temperature: product standard	3	3		X		Shrinkage length: Product standard
6.16	Bending at ambient temperature	405 Mandrel diameter: Table 2	3				X	
6.17	Cold bend test	406 Mandrel diameter and load: Product standard	3	3			X	Product standard
6.18	Flammability	407 Load: Product standard	3				X	Distance burnt and time of flame extinction: Product standard
6.19	Fire resistance	408 Load: Table 2	1 per fluid			X		Without fluid immersion for tests prior to delivery Test duration: product standard
6.20	Air-excluded ageing	409		NOT APPLICABLE				
6.21	Thermal endurance	410		NOT APPLICABLE				
6.22	Resistance to fluids	411	1 per fluid				X	Variation of diameter: see product standard
6.23	Humidity resistance	412		NOT APPLICABLE				
6.24	Wrap back test	413		NOT APPLICABLE				
6.25	Differential scanning calorimeter test (DSC)	414		NOT APPLICABLE				
6.26	Rapid change of temperature	415						Not applicable
6.27	Thermal stability	416						Not applicable