SLOVENSKI STANDARD
SIST EN 4199-003:2009

01-oktober-2009

Aeronavtika - Ozemljitvene zbiralke za letala - 003. del: Ozemljitvene zbiralke iz ploģļ atih pletenih bakrenih vodnikov, pocinkane od -65 ÁC do vkljuļ no 150 ÁC in ponikljane od -65 ÁC do vkljuļ no 260 ÁC - Standard za proizvod

Aerospace series - Bonding straps for aircraft - Part 003: Bonding strap assemblies with flat braided conductor copper, tin plated - 65 °C up to 150 °C and copper, nickel plated - 65 °C up to 260 °C - Product standard

Luft- und Raumfahrt - Masseverbinder für Luftfahrzeuge - Teil 003: Masseverbinder, konfektioniert, flache Geflechtleiter Kupfer, verzinnt - 65 °C bis 150 °C und Kupfer, vernickelt - 65 °C bis 260 °C - Produktnorm

Série aérospatiale - Tresses de métallisation pour avion - Partie 003 : Tresses assemblées à conducteur plat pour utilisation de - 65 °C à 150 °C en cuivre étamé et de - 65 °C à 260 °C en cuivre nickelé - Norme de produit

Ta slovenski standard je istoveten z: **EN 4199-003:2009**

ICS:

49.060	Letalska in vesoljska elektriļna oprema in sistemi	Aerospace electric equipment and systems

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EUROPEAN STANDARD

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English Version

Aerospace series - Bonding straps for aircraft - Part 003: Bonding strap assemblies with flat braided conductor copper, tin plated - 65 °C up to 150 °C and copper, nickel plated - 65 °C up to 260 °C - Product standard

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This European Standard was approved by CEN on 19 March 2009.

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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 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

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Foreword

This document (EN 4199-003:2009) 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 January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.

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.

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1 Scope

This standard defines the characteristics of bonding straps with flat braided copper conductors tin or nickel plated and terminal lugs tin or nickel plated, crimped on both ends for use on aircraft. When using bonding straps on equipment or installations generating or processing frequencies greater than 100 kHz, care shall be taken not to exceed a length to width ratio 5 to 1 for reasons of electromagnetic compatibility. This standard shall be used together with EN 4199-001.

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 2424, *Aerospace series — Marking of aerospace products*

EN 4199-001:2006, *Aerospace series — Bonding straps for aircraft — Part 001: Technical specification*

EN 4199-005, *Aerospace series — Bonding straps for aircraft — Part 005: Flat braid conductors copper, tin plated – 65 °C up to 150 °C and copper, nickel plated – 65 °C up to 260 °C — Product standard* [1]

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 4199-001:2006 apply.

4 Characteristics

4.1 Temperature rating

Flat braid copper conductors for bonding straps.

Tin plated copper braid conductor and tin plated copper terminal lugs – 65 °C up to 150 °C.

Nickel plated copper braid conductor and nickel plated copper terminal lugs – 65 °C up to 260 °C.

4.2 Material and finish

For flat braid copper conductor, see EN 4199-005.

Flat braid copper conductor and terminal lugs shall have the same finish.

Terminal lugs tin plated copper (Table 1) or nickel plated copper (Table 2).

5 Dimensions and mass

Dimensions and tolerances are in millimetres.

For dimensions and mass, see Figure 1 and Tables 1, 2 and 3.

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

Dimension ∅ : hole size to be compatible with stud size (∅) shown in Tables 1 and 2.

Dimension *d* : see Tables 1 and 2 for maximum terminal lug tongue.

Dimension *L* : see Table 3 for length.

Dimension *b* : see Table 3 and EN 4199-005 for braid width.

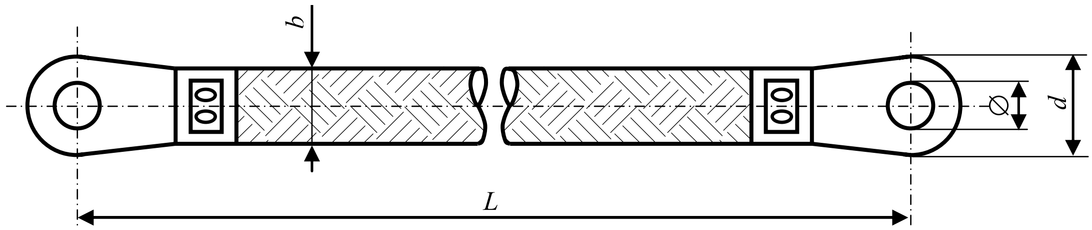

Figure 1

Table 1 — Combination codes for tin plated conductors/terminal lugs

Combination code for tin plated terminal lugs	Braid section mm^2	Cross section code	Terminal lugs					
			Terminal 1			Terminal 2		
			Stud size	∅	*d* max.	Stud size	∅	*d* max.
S						# 10	4,83	10
C	4	A	# 10	4,83	10	1/4	6,35	14
D						5/16	7,94	14
S	6	B	1/4	6,35	12	1/4	6,35	12
E						5/16	7,94	16
S	10	C	1/4	6,35	12	1/4	6,35	12
F						5/16	7,94	16
S	16	D	5/16	7,94	17	5/16	7,94	17
S	25	E	5/16	7,94	17	5/16	7,94	17

NOTE **S** specifies same (identical) terminal lugs on both ends.

Table 2 — Combination codes for nickel plated conductors / terminal lugs

Combination code for tin plated terminal lugs	Braid section	Cross section code	Terminal lugs					
			Terminal 1			Terminal 2		
	mm²		Stud size	∅	*d* max.	Stud size	∅	*d* max.
S	4	A	# 10	4,83	10	# 10	4,83	10
C						1/4	6,35	14
D						5/16	8,33	14
S	6	B	1/4	6,35	12	1/4	6,35	12
E						5/16	7,94	15
S	10	C	1/4	6,35	12	1/4	6,35	12
F						5/16	7,94	16
S	16	D	5/16	7,94	16	5/16	7,94	16
S	25	E	5/16	7,94	16	5/16	7,94	16

NOTE **S** specifies same (identical) terminal lugs on both ends.

Table 3 — Mass

Combination code for terminal lugs	Width *b* of straps	Braid	Length code							
			N	**P**	**R**	**T**	**U**	**V**	**W**	**Y**
			Length *L* (mm)							
			60	80	100	125	160	200	250	300
			Tolerance (mm)							
			$^{+5}_{0}$			$^{+10}_{0}$				
	mm	mm²	**Mass** max. (g)							
S ; C ; D	8,2	4	5	6	7	8	9	11	13	15
S ; E	10,0	6	9	10	12	13	15	18	21	24
S ; F	14,0	10	–	19	22	25	29	33	39	45
S	17,5	16	–	31	34	38	44	50	58	66
S	21,0	25	–	–	–	57	67	77	90	103

6 Voltage drop and tensile strength

See Tables 4 and 5.

Table 4 — Resistance for tin and nickel plated bonding straps

Combination code for terminal lugs	Braid	Test current	Length code							
			N	P	R	T	U	V	W	Y
			Length L (mm)							
			60	80	100	125	160	200	250	300
	mm^2	A	Resistance max. (mΩ)							
S ; C ; D	4	48	0,35	0,45	0,54	0,68	0,85	1,03	1,27	1,50
S ; E	6	66	0,25	0,32	0,39	0,49	0,61	0,74	0,91	1,08
S ; F	10	81	–	0,20	0,23	0,29	0,36	0,44	0,54	0,63
S	16	115	–	0,13	0,15	0,19	0,24	0,29	0,35	0,41
S	25	153	–	–	–	0,12	0,15	0,18	0,22	0,25

Table 5 — Tensile strength

Braid conductor mm^2	Minimum tensile strength (lug to lug) N
4	570
6	820
10	1 200
16	1 760
25	2 250

7 Quality assurance

See EN 4199-001.

Number of cycles for mechanical fatigue shall be 50 000 cycles.

8 Designation

EXAMPLE

Description block	Identity block
BONDING STRAP FLAT	EN4199-003SANT

Number of this standard

Combination code (see Tables 1 and 2)

Cross section code (see Tables 1 and 2)

Length code (see Table 3)

Finish (T = tin plated or N = nickel plated)

NOTE If necessary, the code I9005 should be placed between the description block and the identity block.