



SLOVENSKI STANDARD

SIST EN 6049-006:2012

01-julij-2012

Aeronavtika - Električni kabli, namestitve - Zaščitna obojka iz meta-aramidnih vlaken - 006. del: Samoovojna zaščitna obojka, z vijavo, z možnostjo poznejše montaže - Standard za izdelek

Aerospace series - Electrical cables, installation - Protection sleeve in meta-aramid fibres
- Part 006: Self-wrapping protective sleeve, flexible post installation - Product standard

Luft- und Raumfahrt - Elektrische Leitungen, Installation - Schutzschläuche aus Meta-Aramidfasern - Teil 006: Selbstverschließender Schutzschlauch, flexibel, nachträglich montierbar - Produktnorm

Série aérospatiale - Câbles électriques, installation - Gaine de protection en fibres méta-aramides - Partie 006: Gaine de protection auto-fermable, souple après montage - Norme de produit

Ta slovenski standard je istoveten z: EN 6049-006:2012

ICS:

49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems
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SIST EN 6049-006:2012

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 6049-006

March 2012

ICS 49.060

English Version

Aerospace series - Electrical cables, installation - Protection sleeve in meta-aramid fibres - Part 006: Self-wrapping protective sleeve, flexible post installation - Product standard

Série aérospatiale - Câbles électriques, installation - Gaine de protection en fibres méta-aramides - Partie 006: Gaine de protection auto-fermable, souple après montage - Norme de produit

Luft- und Raumfahrt - Elektrische Leitungen, Installation - Schutzschläuche aus Meta-Aramidfasern - Teil 006: Selbstverschließender Schutzschlauch, flexibel, nachträglich montierbar - Produktnorm

This European Standard was approved by CEN on 23 December 2011.

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

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Foreword

This document (EN 6049-006:2012) 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 September 2012, and conflicting national standards shall be withdrawn at the latest by September 2012.

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, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 6049-006:2012 (E)

1 Scope

This European Standard specifies the characteristics of post installation flexible self-wrapping protection sleeves for electrical cable and cable bundles made from meta-aramid fibres and provided with a water repelled protection for aerospace application.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2825, *Aerospace series — Burning behaviour of non metallic materials under the influence of radiating heat and flames — Determination of smoke density*¹⁾

EN 2826, *Aerospace series — Burning behaviour of non metallic materials under the influence of radiating heat and flames — Determination of gas components in the smoke*¹⁾

EN 3844-1, *Aerospace series — Flammability of non metallic materials — Part 1: Small burner test, vertical — Determination of the vertical flame propagation*¹⁾

EN 6049-001, *Aerospace series — Electrical cables, installation — Protection sleeve in meta-aramid fibres — Part 001: Technical specification*¹⁾

EN 6059-100*, *Aerospace series — Electrical cables, installation — Protection sleeves — Test methods — Part 100: General*¹⁾

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

overlap angle

sleeve overlap angle for maximum bundle diameter

4 Required characteristics

4.1 Composition

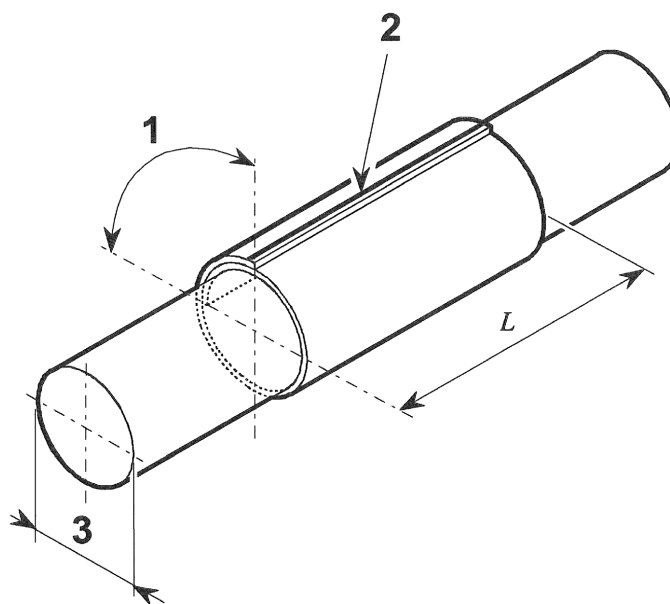
Is a textile openable, self-wrappable sleeving, made of a woven blend of textured meta-aramid yarn and PPS monofilament (polyphenylene sulfide). A specific feature avoids excessive fraying of the sleeving after cold cut.

* All its parts quoted in this standard.

1) Published as ASD-STAN pre-standard at the date of publication of this standard (www.asd-stan.org).

4.2 Dimensions and mass of the sleeve

See Figure 1 and Table 1.



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Key

- 1 Overlap angle
2 Tracer line (see 4.3.3)
3 Mandrel diameter = maximum bundle diameter. Indicated per internal ivory line for maximum permissible bundle diameter

Figure 1 — Configuration of openable protection sleeve

Table 1 — Dimensions and mass

Size code	Overlap angle measured on a mandrel (mandrel dia. = max. dia. bundle)		Wall thickness ± 0,1 mm	Diameters to be protected mm	Typical delivery length ^a <i>L</i> m	Maximum mass g/m
	min.	max.				
05	65°	130°	0,78	1 to 5	150	13
08				5 to 8	100	18
13				8 to 13	50	26
16				13 to 16	25	33
19	70°	110°		16 to 19		38
25				19 to 25		47
32				25 to 32		65
40				32 to 40		90

^a See Table 4 of EN 6049-001 for minimum length.

^a See Table 4 of EN 6049-001 for minimum length.

EN 6049-006:2012 (E)**4.3 Colour, materials and tracer line identification****4.3.1 Colour**

Colour shall be:

- Olive green, code 5;
- Orange, code 3 (for FTI application);
- Red, code 2 (for arm system).

4.3.2 Materials

The materials shall be multifilament fibres of meta-aramid and polyphenylene sulfide (PPS) monofilament and meet the requirements as specified in this standard.

4.3.3 Tracer line identification

The sleeve can be delivered with a "tracer line" marked to identify special wires:

- Dash (–): without tracer line;
- Code R: delivered with a red tracer line identification (3 mm) (arm systems);
- Code P: delivered with a pink tracer line identification (9 mm) (fuel systems).

4.4 Temperature range

The operation temperature of the protection sleeves shall be:

- maximum: 200 °C,
- minimum: – 55 °C.

5 Test methods in accordance with EN 6059-100

The tests shall be carried out as shown in Table 2.

For the number of samples to be tested, see EN 6049-001.

Table 2 — Test methods and details

Test method EN 6059-	Title	Details	
201	Visual inspection	See 4.1 and 4.2.1.	
202	Dimensions and mass	See 4.2.	
203	Coverage	Not applicable.	
301	Sun light exposure	For 40 h, the retention of the tensile strength shall be 45 % minimum.	
302	High temperature exposure	The specimen shall be within the overwrap tolerances, see Table 1 and tensile strength test, according to EN 6059-404, shall be carried out. The value shall not be less than 0,010 N per dTex.	
303	Resistance to fluids	The specimen must show no evidence of deformation swelling, shrinking, cracking or rupture and a tensile strength test according to EN 6059-404 shall be carried out. The value shall not be less than 0,010 N per dTex.	
EN 3844-1 B	Flammability	After burn length (average) shall not exceed 203 mm (8 inches). After flame time (average) shall not exceed 15 s. After flame time of drips (average) shall not exceed 5 s.	
305	Fluid absorption	The specimen shall repel water for 6 h after test according to EN 6059-302.	
306	Mould growth	There shall no external deterioration which would affect service use and no mould growth visible to the naked eye.	
401	Expansion range	Not applicable.	
402	Bending properties	Load shall be 10 N Number of cycles: 1 000.	
403	Scrape abrasion	Needle load shall be 10 N.	
404	Tensile strength	The tensile force to be applied per dTEX shall not be less than 0,02 N. Degradation of the tensile strength after environmental tests shall be within the limits as mentioned in the relevant paragraph. For this test, unweaved tows of the batch which have been used for weaving of the sleeves may be used.	
405	Dynamic cut through	The test shall be carried out at ambient temperature. Load shall be 30 N.	
406	Vibrations	After the endurance test performed in accordance with EN 6059-406, no evidence of wear or defect must be noticed on the wires.	
EN 2825 B	Smoke density	The test duration shall be 4 min. The maximum specific optical smoke density (average) shall not exceed. Ds = 200 (flaming mode) Ds = 150 (non flaming mode)	
EN 2826 B	Toxicity	Gas component Hydrogen fluoride HF Hydrogen chloride HCl Hydrogen cyanide HCN Sulfur dioxide SO₂/H₂S Nitrous Gases NO/NO₂ Carbon Monoxide CO	Limit of concentration (ppm) (duration 4 min) 100 150 150 100 100 1 000