SLOVENSKI STANDARD
SIST EN 6049-007:2012

01-september-2012

Aeronavtika - Električni kabli, namestitev - Zaščitna obojka iz meta-aramidnih vlaken - 007. del: Samoovojna zaščitna obojka, fleksibilna, z možnostjo poznejše montaže, obratovalna temperatura od -55 °C do 260 °C - Standard za izdelek

Aerospace series - Electrical cables, installation - Protection sleeve in meta-aramid fibres - Part 007: Self-wrapping protective sleeve, flexible post installation operating temperature from - 55 °C to 260 °C - Product standard

Luft- und Raumfahrt - Elektrische Leitungen, Installation - Schutzschläuche aus Meta-Aramidfasern - Teil 007: Selbstverschließender Schutzschlauch, flexibel, nachträglich montierbar, Betriebstemperatur von -55 °C bis 260 °C - Produktnorm

Série aérospatiale - Câbles électriques, installation - Gaine de protection en fibres méta-aramides - Partie 007: Gaine de protection auto-fermable, souple après montage température d'utilisation - 55 °C à 260 °C - Norme de produit

Ta slovenski standard je istoveten z: **EN 6049-007:2012**

ICS:

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

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English Version

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

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 6049-007:2012) 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of an identical text or by endorsement, at the latest by September 2012, and conflicting national standards shall be withdrawn at the latest by September 2012.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.

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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 repellent protection for aerospace application. This self-wrapping protection sleeve can be also used as an electrical protection under specified conditions. (115 VAC/400 Hz, 15 A max per conductor – as per test EN 6059-502).

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)]

EN 9133, *Aerospace series — Quality management systems — Qualification procedure for aerospace standard parts*

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 wires bundle diameter

4 Required characteristics

4.1 Composition

A textile openable, self-wrappable sleeving made of a woven blend of textured meta-aramid continuous yarn and polyetheretherketone (PEEK) monofilament. A specific feature avoids excessive fraying of the sleeving after cold cutting.

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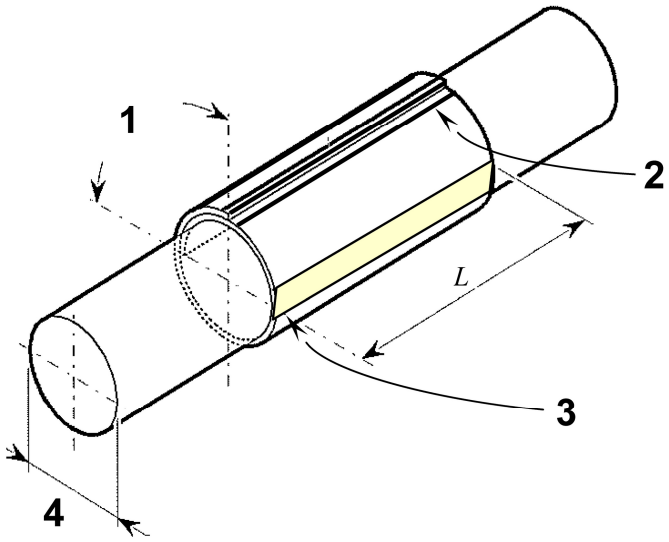
* All its parts quoted in this standard.

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.



Key

1 overlap angle
2 ivory tracer indicating the maximum operating diameter
3 ivory tracer line identification (9 mm width) located in the middle of the sleeve
4 Mandrel diameter = maximum bundle diameter

Figure 1 — Configuration

Table 1 — Dimensions and mass

Size code	Overlap angle measured on a mandrel (mandrel dia. = max. dia. bundle)		Wall thickness ± 0,1	Diameters to be protected	Mass g/m	
	min.	max.	mm	mm	min.	max.
05	65°	130°	0,78	1 to 5	15	20
08				5 to 8	20	27
13				8 to 13	29	39
19	70°	110°		13 to 19	45	60
25				19 to 25	55	73
32				25 to 32	70	93
40				32 to 40	87	116

4.3 Colour and materials

4.3.1 Colour

Colour shall be light olive green, code 5.

4.3.2 Materials

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

4.4 Temperature range

The operation temperature of the protection sleeves shall be:

— maximum: 260 °C,

— minimum: – 55 °C.

This sleeve is identified by 9mm ivory tracer in the middle of the sleeve.

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.
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 0,010N per dTex.

continued

Table 2 — Test methods and details *(concluded)*

Test method EN 6059-	Title	Details	
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 that would affect service use and no mould growth visible to the naked eye.	
401	Expansion range	Not applicable.	
402	Bending properties	A medium size specimen installed on aerospace cable, twisted 3 (three) turns per meter tied every 15 cm, loaded with 10 N must not show any evidence of deformation, swelling, cracking or rupture after 1 000 cycles, before and after 168 h at the maximum temperature.	
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, unwoven 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.	
501	Voltage proof test	Each specimen shall withstand 1 500 VAC.	
502	Resistance to electrical arcs	*I*n = 15 A. under 115 VAC. Pass criteria: Cables from the harness to be protected shall remain functional with electrical continuity and dielectric resistance in accordance with concerned cable specification.	
EN2825 B	Smoke density	The test duration shall be 4 m. 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**	**Limit of concentration** (ppm) (duration 4 min)
		Hydrogen fluoride HF	100
		Hydrogen chloride HCl	150
		Hydrogen cyanide HCN	150
		Sulphur dioxide SO_2/H_2S	100
		Nitrous Gases NO/NO_2	100
		Carbon Monoxide CO	1 000