SLOVENSKI STANDARD
SIST EN 6049-003:2018

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Nadomešča:
SIST EN 6049-003:2009

Aeronavtika - Električni kabli, namestitev - Zaščitna obojka iz metaaramidnih vlaken - 003. del: Opletena, cevasta, prožna - Standard za proizvod

Aerospace series - Electrical cables, installation - Protection sleeve in meta-aramid fibres - Part 003: Braided, tubular, expandable - Product standard

Luft- und Raumfahrt - Elektrische Leitungen, Installation - Schutzschläuche aus Meta-Aramidfasern - Teil 003: Geflecht, röhrenförmig, dehnbar - Produktnorm

Série aérospatiale - Câbles électriques, installation - Gaine de protection en fibres méta-aramides - Partie 003: Tresse, tubulaire, expansible - Norme de produit

Ta slovenski standard je istoveten z: **EN 6049-003:2018**

ICS:

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

SIST EN 6049-003:2018 **en,fr,de**

EUROPEAN STANDARD

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English Version

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This European Standard was approved by CEN on 18 January 2018.

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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

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European foreword

This document (EN 6049-003:2018) 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of an identical text or by endorsement, at the latest by February 2019, and conflicting national standards shall be withdrawn at the latest by February 2019.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 6049-003:2009.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard defines the characteristics of tubular braided expandable mechanical protection sleeves for electrical cable and cable bundles made from meta-aramid fibres and provided with a water repelled protection.

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

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*

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

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

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 terms and definitions given in EN 6049-001 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

4 Composition, dimensions and mass

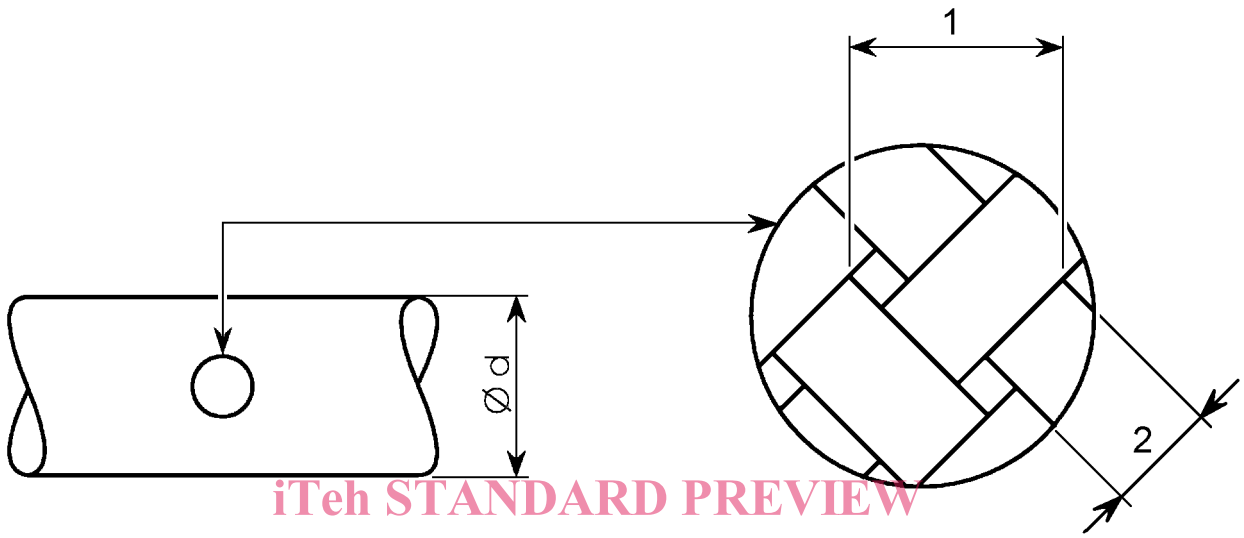
4.1.1 Composition of the tows

Each tow shall be built-up of several groups of multifilament fibres made from Meta-aramid. The number of groups which forms a tow and the width of the tow depends on the braiding configuration (braiding Figure 1 and braiding angle) of the sleeve, see 4.1.2. The thickness of the tow shall be so that the finished sleeve meet the mechanical and environmental requirements. One length of sleeve shall be built-up of one type of tow.

1) All parts quoted in this document.

4.1.2 Composition, dimensions and mass of the sleeve

The composition of the sleeve (braiding Figure 1, braiding angle and tow width) shall be so that the sleeve meet the requirements for dimensions, coverage, expansion range and mass. The coverage shall be 80 % minimum. The braiding Figure 1 shall consist of two groups of tows in two directions. The braiding angle between the two groups shall be equal over the length of the sleeve. The maximum difference measured on a mandrel with the delivered diameter in accordance with EN 6059-202 is ± 3 %. Figure 2 and Table 2 give the composition and the dimensions of the sleeve.



Braiding pattern

Key

1 Pitch

2 One tow

d = Inner diameter

Figure 1 — Composition of the sleeve

Table 1 — Dimensions and mass

Size code	*d*				Mass
	Delivered mm	min. mm	max. mm	Nominal [a] mm	max. [b] g/m
02	1	1	2	2	3
04	2	2	4	4	4
06	4	4	8	6	8,5
08	6	6	12	8	11,5
10	8	8	16	10	14
15	10	10	20	15	17,5
20	12	12	24	20	22
25	15	15	30	25	32,5
30	20	20	40	30	39,5

[a] In practice approximately the maximum diameter of a cable bundle.

[b] At the delivered diameter.

4.2 Color and materials

4.2.1 Color

Color shall be olive green, code 5 (preferential), or ivory, code 9.

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

4.2.2 Materials

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

4.3 Mechanical properties

4.3.1 Sun light exposure

After testing according to EN 6059-301 for 40 hours, the retention of the tensile strength shall be 45 % minimum with respect to the determined values of non-tested tows.

4.3.2 Temperature range

The operation temperature of the protection sleeves shall be:

a) Maximum: 240 °C;

b) Minimum: – 55 °C.

NOTE Above 175 °C: loss of water repellent properties.

4.3.3 Resistance to fluids range

After testing according to EN 6059-303, the retention of the tensile strength shall be 90 % minimum with respect to the determined values of non-tested tows.

4.3.4 Water absorption

To fulfil the requirements for water absorption, the sleeve shall repel water as tested in EN 6059-305 for 6 hours. This test shall be executed after a high temperature exposure test according to EN 6059-302 at 175 °C.

4.3.5 Mould growth

After testing according to EN 6059-306, there shall no external deterioration which would affect service use and no mould growth visible to the naked eye.

4.3.6 Tensile strength of tows

The tensile force to be applied per dTEX shall not be less than 0,03 N. Degradation of the tensile strength after environmental tests shall be within the limits as mentioned in the relevant paragraph. For this test, unbraided tows of the batch which have been used for braiding of the sleeves may be used.

5 Test methods

The tests shall be carried out as shown in Table 2. For the number of samples, see EN 6049-001.