



SLOVENSKI STANDARD

SIST EN 6059-402:2019

01-junij-2019

Aeronavtika - Električni kabli, namestitvev - Zaščitne obojke - Preskusne metode - 402. del: Upogibne lastnosti

Aerospace Series - Electrical cables, installation - Protection sleeves - Test methods - Part 402: Bending properties

Luft- und Raumfahrt - Elektrische Leitungen, Installation - Schutzschläuche - Prüfverfahren - Teil 402: Biegeeigenschaften

Série aérospatiale - Câbles électriques, installation - Gainses de protection - Méthodes d'essais - Partie 402 : Aptitude à la flexion

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Ta slovenski standard je istoveten z: EN 6059-402:2019

ICS:

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

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en,fr,de

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EUROPEAN STANDARD

EN 6059-402

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2019

ICS 49.060

English Version

Aerospace Series - Electrical cables, installation - Protection sleeves - Test methods - Part 402: Bending properties

Série aérospatiale - Câbles électriques, installation -
Gaines de protection - Méthodes d'essais - Partie 402 :
Aptitude à la flexion

Luft- und Raumfahrt - Elektrische Leitungen,
Installation - Schutzschläuche - Prüfverfahren - Teil
402: Biegeeigenschaften

This European Standard was approved by CEN on 14 October 2018.

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.

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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.

CEN members are the national standards bodies of 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 United Kingdom.



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

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

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European foreword

This document (EN 6059-402:2019) 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 September 2019, and conflicting national standards shall be withdrawn at the latest by September 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.

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.

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EN 6059-402:2019 (E)**1 Scope**

This European Standard specifies a method to determine the bending properties of protection sleeve for electrical cable and cable bundles. It shall be used together with EN 6059-100.

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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 Preparation of specimens (standards.iteh.ai)

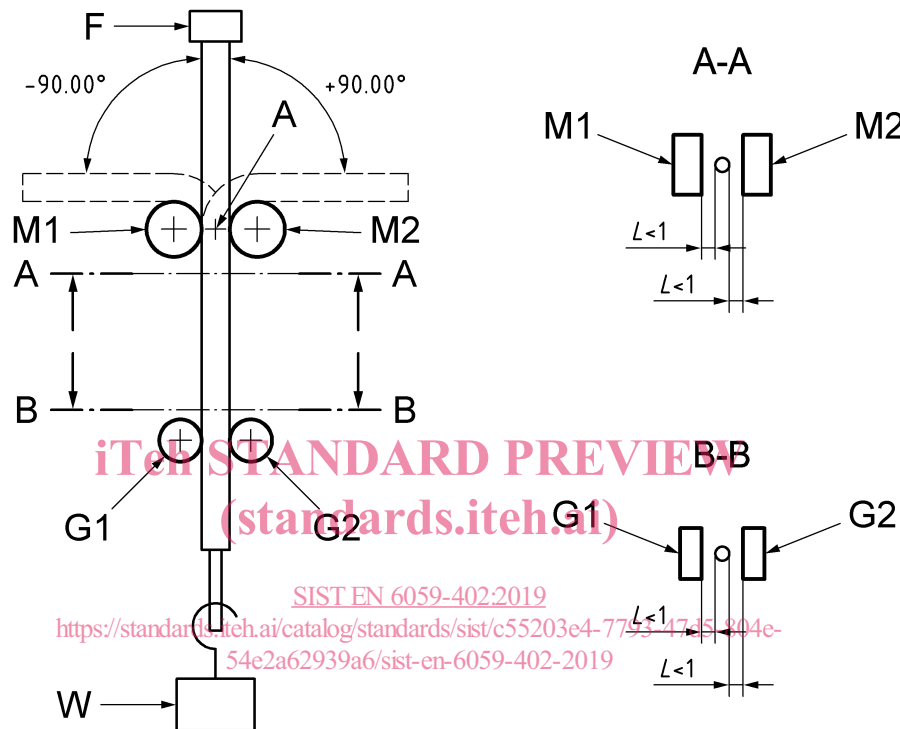
A specimen with a minimum length of 600 mm is taken from a finished sleeve.

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5 Apparatus

A spiral wrapped bending spring which has the nominal inner diameter of the specimen to be tested and capable of bending with a minimum radius (radius is specified as five times the nominal inner diameter, measured to the centerline of the spring) as specified in the product standard. The sleeve shall be applied between two mandrels to bend the sleeve to both sides at the minimum specified bend radius. The sleeve shall be bent by means of a lever with a rotation point just above the mandrels, see Figure 1. The applied mass shall be in accordance with the product standard. A counter to measure the cycles with an interface between lever and counter.



Key

- A Axis of rotation for flex arm
- F Flex arm
- M Mandrel
- G Guidance rod
- W Weight attached to cables
- A-A Section along the line A-A
- B-B Section along the line B-B

Figure 1 — Test set-up for bending properties of sleeves

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6 Method

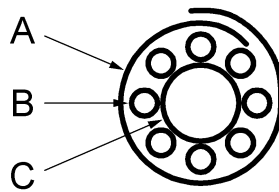
The specimen should be bent 90° to left and 90° to right.

The sleeve shall be applied between the two mandrels according to Figure 1. The number of cycles is specified in the product standard. The movement bent 90° to left and 90° to right is one cycle.

The axis of rotation for flex arm shall be at the same level or above the axis mandrels.

Guide rods and weight loaded on conductors can be used so as to avoid movement not relevant for this test.

For bundles whose diameter is larger than 32 mm, the use of convoluted conduit to reduce the weight of harness during the test cables shall be used so as to prevent contact between the convoluted conduit and the sleeve. See Figure 2.



Key

- A Protection sleeve
- B Cables arranged around conduit
- C Convoluted conduit

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Figure 2— Cable bundle with convoluted tube
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7 Requirements

The specimen shall be capable of bending to the minimum bend radius as specified in the product standard.

Closing mechanisms (if present) shall not be opened or damaged.

No damage or broken yarns/strand shall be found after the test.