SLOVENSKI STANDARD
SIST EN 6059-503:2017

01-oktober-2017

Nadomešča:
SIST EN 6059-503:2012

Aeronavtika - Električni kabli, namestitev - Zaščitne obojke - Preskusne metode - 503. del: Segrevanje obojke zaradi vnesenega naznačenega toka

Aerospace series - Electrical cables, installation - Protection sleeves - Test methods - Part 503: Temperature rise due to rated current injected on the sleeve

Luft- und Raumfahrt - Elektrische Leitungen, Installation - Schutzschläuche - Prüfverfahren - Teil 503: Erwärmung bei Nennstrom des Schutzschlauchs

Série aérospatiale - Câbles électriques, installation - Gaines de protection - Méthodes d'essais - Partie 503: Échauffement sous courant nominal

Ta slovenski standard je istoveten z: **EN 6059-503:2017**

ICS:

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

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

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Supersedes EN 6059-503:2012

English Version

Aerospace series - Electrical cables, installation - Protection sleeves - Test methods - Part 503: Temperature rise due to rated current injected on the sleeve

Série aérospatiale - Câbles électriques, installation - Gaines de protection - Méthodes d'essais - Partie 503 : Échauffement sous courant nominal

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This European Standard was approved by CEN on 12 June 2017.

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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 6059-503:2017) 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 European 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 2018, and conflicting national standards shall be withdrawn at the latest by February 2018.

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This document supersedes EN 6059-503:2012.

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 specifies a method of assessing the behaviour and temperature increase of EMI protection sleeves or conduits when subject to permanent and/or fault currents in the shielding of the conduit or sleeve material and their effect on the cables within the cable sleeve.

It shall be used together with EN 3475-100.

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 3475-100, *Aerospace series - Cables, electrical, aircraft use - Test methods - Part 100: General*

3 Preparation of specimens

3.1 General

Each specimen having 750 mm to 1 000 mm useful length between the supports, shall be installed horizontally in front of a screen and lightly stretched at the ends to avoid any slack during the test.

The test shall be carried out at ambient temperature T_a (typically 20 °C) in a chamber where the whole unit shall be sheltered from draughts. An extraction shall be provided but only operated after completion of the test.

To identify the appearance of smoke, a screen with black and white horizontal bands or any other device shall be used.

3.2 Preparation of specimens

Specimens will be installed horizontally in a box with a background striped in white and black.

To detect smoke appearance the box will be transparent in the front.

It will be closed to avoid any heat exchange.

An exhaust fan will be added above the box in case of toxic fume generation (it shall not function during the test but only at the end and this to not disrupts the heating).

As described below two (2) circuits are provided: the first one is for the connecting power and the second one is for the measurement.

3.3 Connecting system

3.3.1 General

To ensure that the contacts bringing the current consider all the strands of the shielding, the following mounting is to be assured:

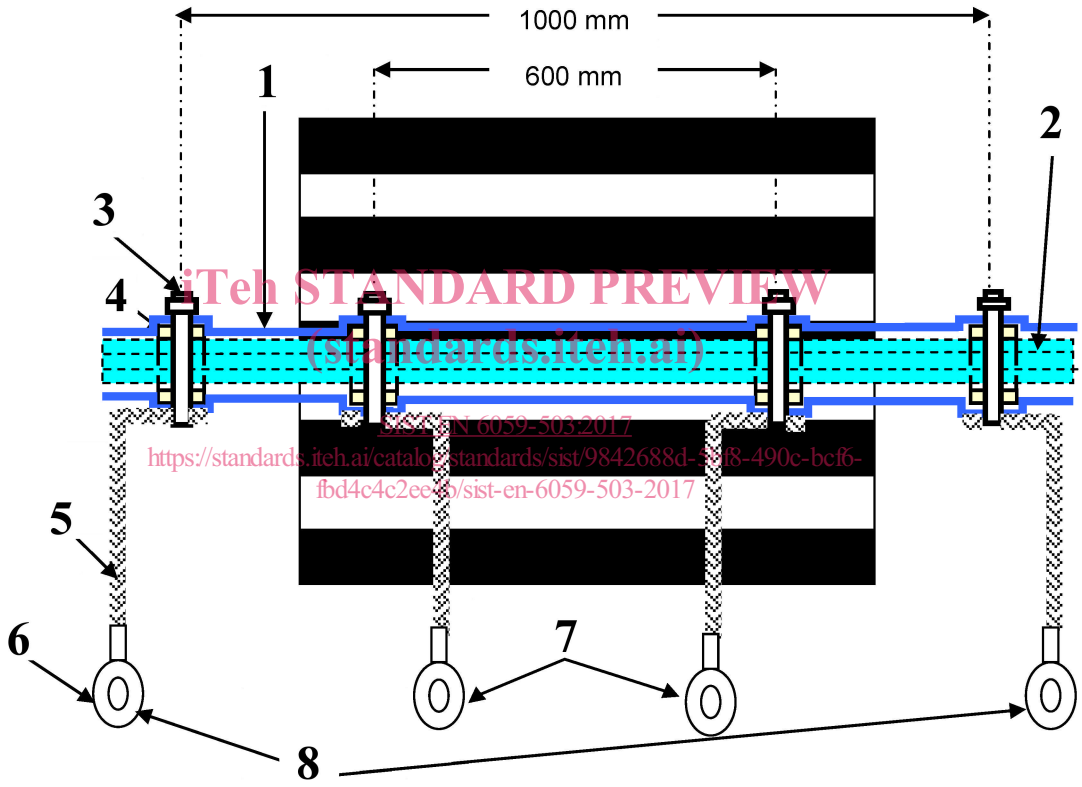
A split ring will be placed between the bundle ant the sleeve.

A CuNi flat braid of a section of 3,44 mm² will be connected to the sleeve with a metallic clamp.

Terminal lugs will be fixed at the flat braid extremities.

3.3.2 **First case** (Figure 1)

This proposition considers specimens without connectors at the ends.



Key

1 sleeve
2 cable bundle
3 band-it
4 split ring
5 flat braid
6 terminal lug
7 measurement branch
8 power branch

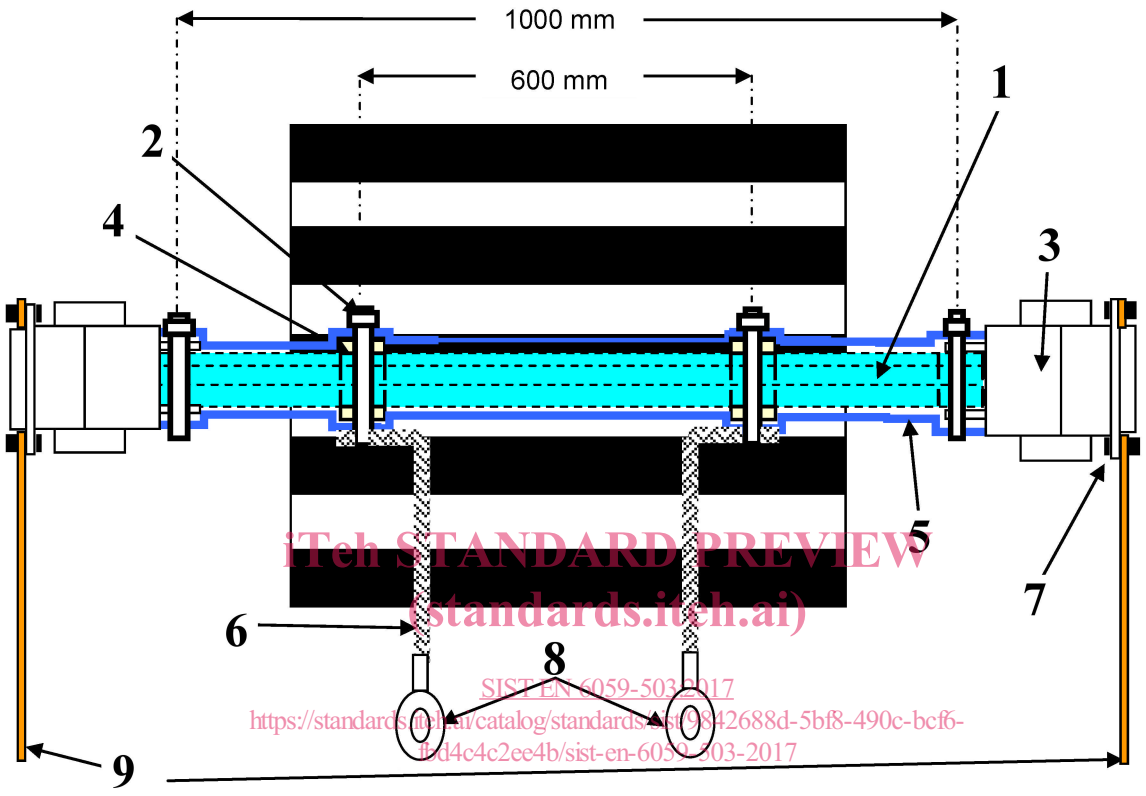
Figure 1

3.3.3 **Second case** (Figure 2)

This proposition considers specimens with connectors at the ends.

Connectors are placed at the specimens extremities.

Copper power bars are added.



Key

1 cable bundle
2 band-it
3 connector (backshell-plug/receptable)
4 split ring
5 sleeve
6 flat braid
7 screw/nut
8 measurement branch
9 copper power bars

Figure 2

4 Method

The purpose of this test shall be to check that there is no smoke emission excessive increase of temperature for the nominal current, bringing the conductor to a temperature RT, and that for an overload current bringing the conductor to a temperature (Max RT + 5 °C or Max RT + 10 °C) there is neither ignition nor disappearance of non conductive materials.

The test shall be performed with a current generator in DC or AC (400 Hz to 800 Hz RMS).

The test shall be performed on sizes as defined in the concerned specification or product standard.

The temperatures shall be determined by measuring the variation of the voltage drop in the central part of the cable (2/3 of the useful length maximum) between the voltage application points.

$$\frac{\Delta U_\theta}{\Delta U_{20}} = \frac{R_\theta}{R_{20}} = 1 + 0,004\,(\theta - 20) \qquad \text{when } T_a = 20\ °C$$

The current injection shall respect the curve shown in Figure 3.

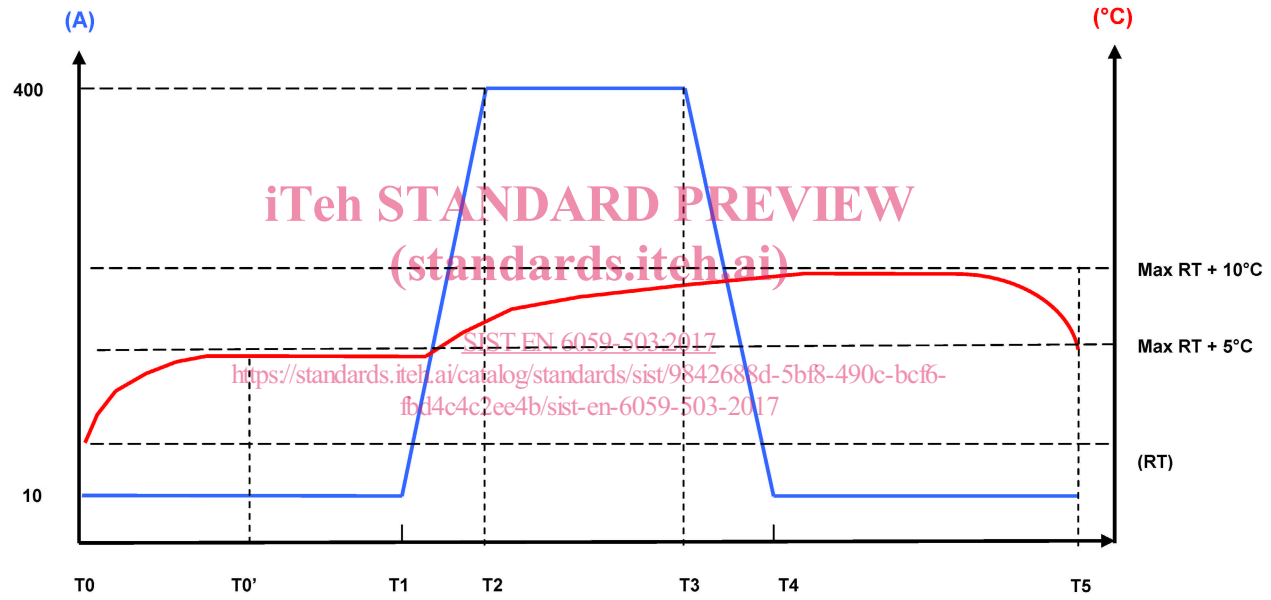


Figure 3

A = current

°C = temperature

RT = room temperature

T_0 to $T_{0'}$ = time to stabilization of temperature under initial current

T_1 = $T_{0'}$ + 1 min

T_2 = T_1 + 200 ms

T_3 = T_2 + 500 ms

T_4 = T_3 + 200 ms

T_4 to T_5 = time to decrease temperature at least to reach RT + 5 °C, if this value have been pass, if not during 1 min