# SLOVENSKI STANDARD
# SIST EN 6059-407:2019

**01-september-2019**

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**Aeronavtika - Električni kabli, namestitev - Zaščitne obojke - Preskusne metode - 407. del: Oprijemljivost oznak in obstojnost odtisov**

Aerospace series - Electrical cables, installation - Protection sleeves - Test methods - Part 407: Mark adherence and print permanence

Luft- und Raumfahrt - Elektrische Leitungen, Installation - Schutzschläuche - Prüfverfahren - Teil 407: Haftfestigkeit und Haltbarkeit der Kennzeichnung



Série aérospatiale - Câbles électriques, installation - Gaines de protection - Méthodes d'essais - Partie 407 : Adhérence de marquage et permanence de l'impression



**Ta slovenski standard je istoveten z:** **EN 6059-407:2019**

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**ICS:**

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

**SIST EN 6059-407:2019** **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 6059-407

June 2019

ICS 49.060

English Version

# Aerospace series - Electrical cables, installation - Protection sleeves - Test methods - Part 407: Mark adherence and print permanence

Série aérospatiale - Câbles électriques, installation - Gaines de protection - Méthodes d'essais - Partie 407 : Adhérence de marquage et permanence de l'impression

Luft- und Raumfahrt - Elektrische Leitungen, Installation - Schutzschläuche - Prüfverfahren - Teil 407: Haftfestigkeit und Haltbarkeit der Kennzeichnung

This European Standard was approved by CEN on 15 July 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

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

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## European foreword

This document (EN 6059-407:2019) 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 December 2019, and conflicting national standards shall be withdrawn at the latest by December 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.

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# 1 Scope

This document specifies the method and means for testing the mark adherence and print permanence characteristics of sleeves used to identify electrical cable and cable bundles for aerospace applications.

This test method evaluates the performance of printed samples produced by a specific supplier recommended print system. The print system will include: product, printer, printer ribbon and printer settings as applicable.

# 2 Normative references

There are no normative references in this document.

# 3 Terms and definitions

No terms and definitions are listed in this document.

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

# 4 Preparation of samples



The tube size for testing is 6 mm to 7 mm as supplied internal diameter; (however, this method can also be used for other tube sizes as required - the mark performance shall be as specified in the relevant product standard for the tested product size).



The samples shall be printed as specified by the supplier using the recommended ribbon and printer system.

For thermal transfer and Dot Matrix print systems use one line of text printed in the middle of the test sample using 10 pt Arial – bold font to achieve a minimum contrast of C8 as shown in Annex A.

For laser marked samples use Roman S 3,8 mm.

If testing samples in the recovered state the products shall undergo full unrestricted recovery at the times and temperatures specified in the product standard.

Unrecovered samples shall be tested flat.

All samples shall be tested in the unsupported state unless otherwise specified in the product standard.

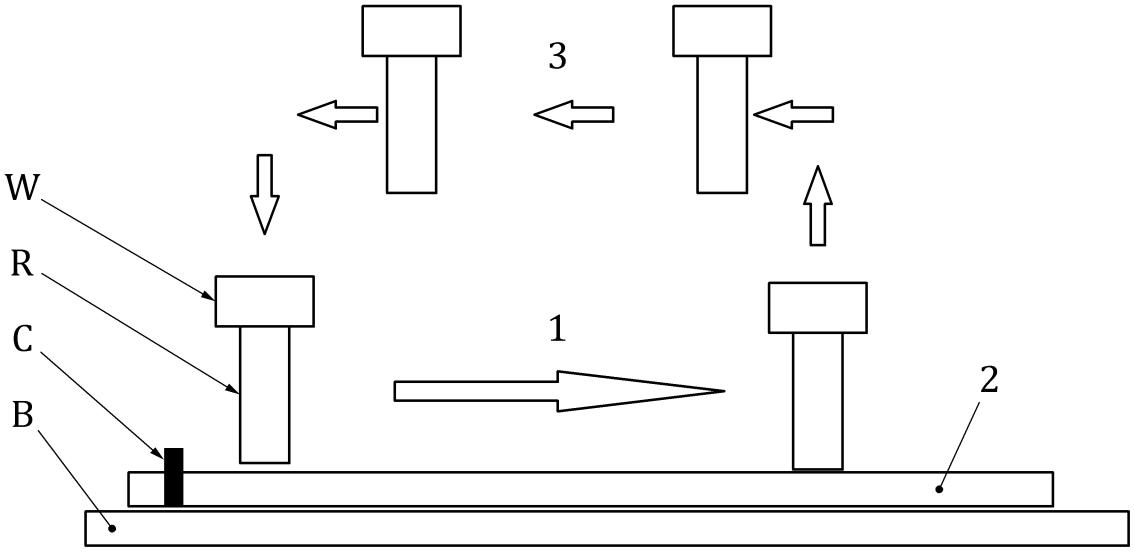
# 5 Apparatus

The apparatus shall be designed such that the rubbing member (eraser or cloth) can be securely attached to a moving arm that can be loaded with a specified weight.

The weighted arm with the rubbing member shall move as shown in Figure 1.

The speed of rub shall be approximately 1 (one) cycle every 2 (two) seconds.

The rubbing member shall be adjusted so that the rubbing face is parallel to the test piece.




**Key**

1 Rubbing stroke 30 mm to 40 mm
2 Test sample
3 Cyclic motion

B Base plate
C Sample
R Rubbing member
W Weight

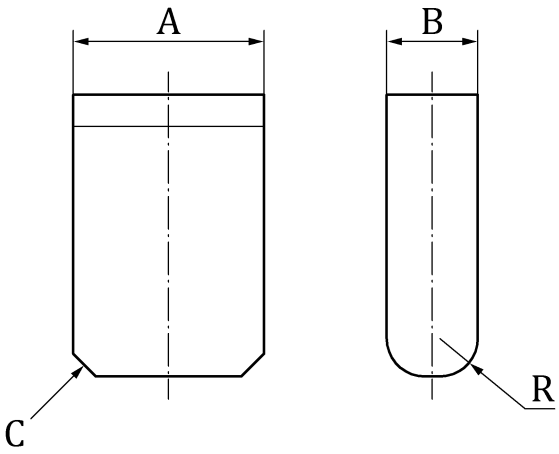


**Figure 1 — Motion path for rubbing member**

Rubbing members:

— Eraser of shore A, hardness range 50 to 75 and of dimensions (18 × 11) mm;

— Non-woven towel wipe consisting of 93 % fibre, 7 % binder using 70 % viscose/30 % polyester composition. Typical properties: weight 80 g/m$^2$, thickness 2,84 mm/4 (four) piles.




| *A* | *B* | *C*<br>Chamfer<br>mm | *R*<br>Radius<br>mm |
|---|---|---|---|
| 36,0 | 15,0 | 2 | 6 |

**Figure 2 — Plastic former for non-woven towel wipe**



## 6 Method

The Identification products shall be tested in each of the methods outlined below:



### 6.1 Test method A – Mark adherence

This method is used to demonstrate the quality and initial adherence of the chosen mark to the identification product. This method utilizes the eraser as specified in Clause 5 in an attempt to remove the dry mark from the product surface.

The samples shall be prepared as described in Clause 3.

The sample to be tested shall be clamped at one end of the test jig such that the rubbing member can be moved along the test piece surface without causing creasing.

All markers should be positioned directly under the rubbing member. The print shall be centrally positioned under the rubbing member.

The rubbing member shall be normally an eraser of shore A, hardness range 50 to 75 and dimensions (18 × 11) mm. (rub surface area)

— An alternative rubbing member (where specified) is non-woven towel wipe as specified in Clause 4.

The rubbing member shall be loaded to the specified weight.

— The standard minimum weight shall be 0,9 kg.

The rub test shall be conducted at ambient temperature: (23 ± 2) °C.

The number of cycles shall be as specified.

— The minimum number of cycles shall be 20.

After performing the rub test the sample shall be examined for print legibility. (see section 5.4).

## 6.2 Test method B print permanence – Dry wipe test

This method is used to demonstrate the resistance of the mark to a specified environment. After exposure to the environment the test sample is rubbed 'clean' by a specified number of rubs using a dry cloth and the clarity and quality of the mark examined.

The samples shall be prepared as described in Clause 3.

The samples shall be exposed to an environment as specified in the relevant product standard.

Following exposure the samples shall be left at ambient conditions prior to testing as specified in the relevant product standard. If no time is specified samples can be tested any time after completion of exposure.

All markers should be positioned directly under the rubbing member. The print shall be centrally positioned under the rubbing member.

The rubbing member shall be four layers of non-woven towel wipe cloth wrapped around a plastic former to the dimensions shown in Figure 2.



The rubbing member shall be loaded to the specified weight.



— The standard minimum weight shall be 0,9 kg.

The rub test shall be conducted at ambient temperature: (23 ± 2) °C.

The number of cycles shall be as specified.

— The minimum number of cycles shall be 20.

After performing the rub test the sample shall be examined for print legibility (see section 5.4).

When using the non-woven towel wipe cloth it should be changed after each test to prevent wear or contamination.

## 6.3 Test method C print permanence – Wet wipe test

This method is used to demonstrate the resistance of the mark when the product is cleaned. This is simulated by the dry sample being rubbed with a cloth soaked in the specified cleaning fluid following which the clarity and quality of the mark examined.

The samples shall be prepared as described in Clause 3.

All markers should be positioned directly under the rubbing member. The print shall be centrally positioned under the rubbing member.

The rubbing member shall be four layers of non-woven towel wipe cloth wrapped around a plastic former to the dimensions shown in Figure 2.