SLOVENSKI STANDARD
SIST EN 2591-326:2018

01-november-2018

Aeronavtika - Električni in optični spojni elementi - Preskusne metode - 326. del: Preskus potapljanja v ogenj

Aerospace series - Elements of electrical and optical connection - Test methods - Part 326: Fire immersion test

Luft- und Raumfahrt - Elektrische und optische Verbindungselemente - Prüfverfahren - Teil 326: Feuereintauchtest

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Série aérospatiale - Organes de connexion électrique et optique - Méthodes d'essais - Partie 326 : Immersion au feu

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

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EUROPEAN STANDARD

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EN 2591-326

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Aerospace series - Elements of electrical and optical connection - Test methods - Part 326: Fire immersion test

Série aérospatiale - Organes de connexion électrique et optique - Méthodes d'essais - Partie 326 : Immersion au feu

Luft- und Raumfahrt - Elektrische und optische Verbindungselemente - Prüfverfahren - Teil 326: Feuereintauchtest

This European Standard was approved by CEN on 13 May 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 foreword

This document (EN 2591-326:2018) 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of an identical text or by endorsement, at the latest by February 2019, and conflicting national standards shall be withdrawn at the latest by February 2019.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.

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1 Scope

This European Standard specifies a method of determining a component's resistance to a liquid fuelled fire and the elements of connection.

It shall be used together with EN 2591-100.

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 2234, *Aerospace series — Cable, electrical, fire resistant — Technical specification*

EN 2591-100, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 100: General*

EN 2591-202, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 202: Contact resistance at rated current*

EN 2997 (all parts), *Aerospace series — Connectors, electrical, circular, coupled by threaded ring, fire-resistant or non fire-resistant, operating temperatures – 65 °C to 175 °C continuous, 200 °C continuous, 260 °C peak*

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EN 3645 (all parts), *Aerospace series — Connectors, electrical, circular, scoop proof, triple start threaded coupling, operating temperature 175 °C or 200 °C continuous*

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EN 3660 (all parts), *Aerospace series — Cable outlet accessories for circular and rectangular electrical and optical connectors*

ISO 2685, *Aircraft — Environmental test procedure for airborne equipment — Resistance to fire in designated fire zones*

3 Terms and definitions

No terms and definitions are listed in this document.

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 Test method

EN 2591-326 is composed of two tests on 2 sample groups:

1) Liquid fuelled fire immersion test:

The purpose of this test is to verify the ability of a couple of connectors installed in the same area, to sustain a fire for at least 5 min, without electrical discontinuity.

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2) Liquid fuelled fire containment test:

The purpose of this test is to verify the ability of a couple of connectors installed on a wall dividing 2 areas, to sustain a fire for at least 5 min, without electrical discontinuity and to contain the flame on the side exposed to fire for 20 min.

5 Preparation of specimens

5.1 Layout

For EN 2997:

— 8-06 for contact size 22;

— 10-06 for contacts size 20;

— 18-08 for contact size 12;

— 24-30 for contact size 16.

In case of non-availability of one or more of above mentioned layout, equivalent layouts will be assessed and justified by the mandated body representative.

For EN 3645:

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— 9-35 for contact size 22;

— 11-98 for contacts size 20;

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— 17-06 for contact size 12;

— 23-21 for contact size 16;

— 21-48 for contacts size 8.

In case of non-availability of one or more of above mentioned layout, equivalent layouts will be assessed and justified by the mandated body representative.

5.2 Specimen preparation

5.2.1 Model without integrated accessory

The connector shall be fitted with a straight backshell, unsealed with clamp strain relief type EN 3660-XXX or equivalent on both sides.

Cables in the area between the clamps and rear grommet shall be exposed to the flame without protection, see Figure 1 and Figure 2. Glass fibre sheath or equivalent shall be installed where the cables contact the clamp, to avoid any electrical breakdown in this area.

Cables shall be clamped between 200 mm to 250 mm of the rear of the grommet in both sides.

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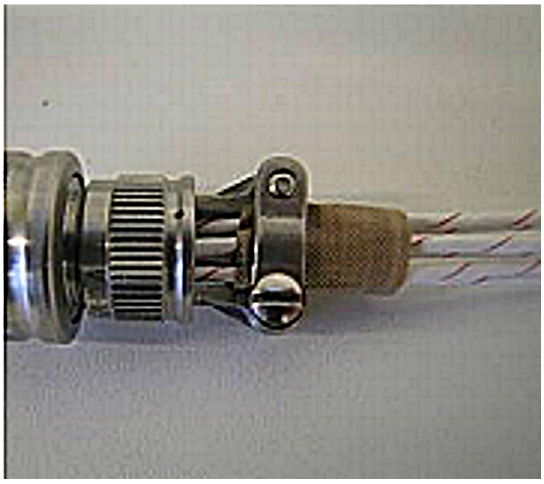

Figure 1

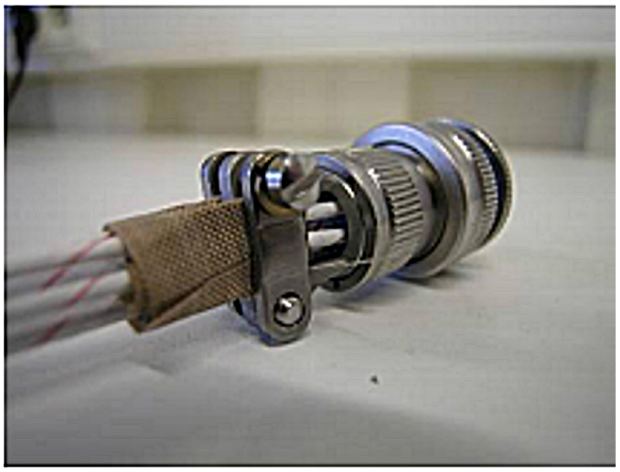

Figure 2

5.2.2 Model with integrated accessory

Cables and rear grommet shall be exposed to the flame without protection and without a metallic braid. See Figure 3.

Cables shall be clamped between 200 mm to 250 mm of the rear of the grommet in both sides of the test assembly.

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Figure 3

5.3 Wiring

Specimens shall be wired with cable bundles 450 mm min. in length. All cavities shall be fitted with wired contacts. Two circuits shall be connected in series, one using the even-numbered contacts and the other using the odd-numbered contacts, see Figure A.1.

In case of alphabetical identification of contact cavities, the following rule shall apply:

- A, C, E, G are considered odd number contacts;
- B, D, F, H are considered even number contacts.

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5.4 Recommendation

Unless specified in the technical specification, the following details shall be stated:

— mounting method, type of fire-resistant cable (EN 2234 or MIL qualified equivalent) and definition of specimen wiring;

— initial measurements (if applicable);

— value of leakage current (phase 1);

— nominal current to be applied to contacts (phase 1);

Angle and position of burner.

6 Apparatus

6.1 General

The rig shall allow movement/rotation of the burner between the calibration and test phases, without turning off the burner, nor modifying the intended distance and relative positioning of the specimen. See Figure 4.

The spatial positioning of the burner shall ensure that the centre of the temperature measuring tool and the centre of the heat flux measuring tool are within a tolerance from the centre of the expected impinged specimen surface.

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The distance “X” from the burner nozzle to the connector shall be calibrated according to ISO 2685 (see 5.2).

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Figure 4 — Example of fuel burner providing the standard flame

6.2 Burner calibration

6.2.1 General

The temperature calibration of the burner consists of adjusting the mixing ratio of air and combustible, until the flame is delivering a standard flame. A flame is characterized by its temperature and its heat flux. As the quantitative value is directly dependent on the instrumentation, it is necessary to respect a common tool to ensure uniformity between tests.