



SLOVENSKI STANDARD

SIST EN 2591-318:2018

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**Aeronavtika - Električni in optični spojni elementi - Preskusne metode - 318. del:
Požarna odpornost**

Aerospace series - Elements of electrical and optical connection - Test methods - Part 318: Fire-resistance

Luft- und Raumfahrt - Elektrische und optische Verbindungselemente - Prüfverfahren - Teil 318: Feuerbeständigkeit

Série aérospatiale - Organes de connexion électrique et optique - Méthodes d'essais - Partie 318 : Résistance au feu

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49.060

Letalska in vesoljska
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Aerospace electric
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SIST EN 2591-318:2018

en,fr,de

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EUROPEAN STANDARD

EN 2591-318

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 49.060

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English Version

Aerospace series - Elements of electrical and optical connection - Test methods - Part 318: Fire-resistance

Série aérospatiale - Organes de connexion électrique et optique - Méthodes d'essais - Partie 318 : Résistance au feu

Luft- und Raumfahrt - Elektrische und optische Verbindungselemente - Prüfverfahren - Teil 318: Feuerbeständigkeit

This European Standard was approved by CEN on 13 May 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.

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 2591-318:2018) 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 2591-318:1998.

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 United Kingdom.

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EN 2591-318:2018 (E)**1 Scope**

This European Standard specifies a method of determining fire-resistance of 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 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*

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

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

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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 Preparation of specimens**4.1 Layouts**

For EN 2997:

- 8-06 for contact size 22;
- 10-06 for contact 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 mandated body representative.

For EN 3645:

- 9-35 for contact size 22;
- 11-98 for contact size 20;
- 17-06 for contact size 12;
- 21-48 for contact size 8;
- 23-21 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 mandated body representative.

4.2 Specimen preparation

4.2.1 Model without integrated accessory



Figure 1



Figure 2

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

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.

4.2.2 Model with integrated accessory

Cables and rear grommet shall be exposed to the flame without protection or metallic braid with no load or strain on the cable/contact assembly.

4.3 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 9.

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

$A = 1, B = 2$, etc.

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

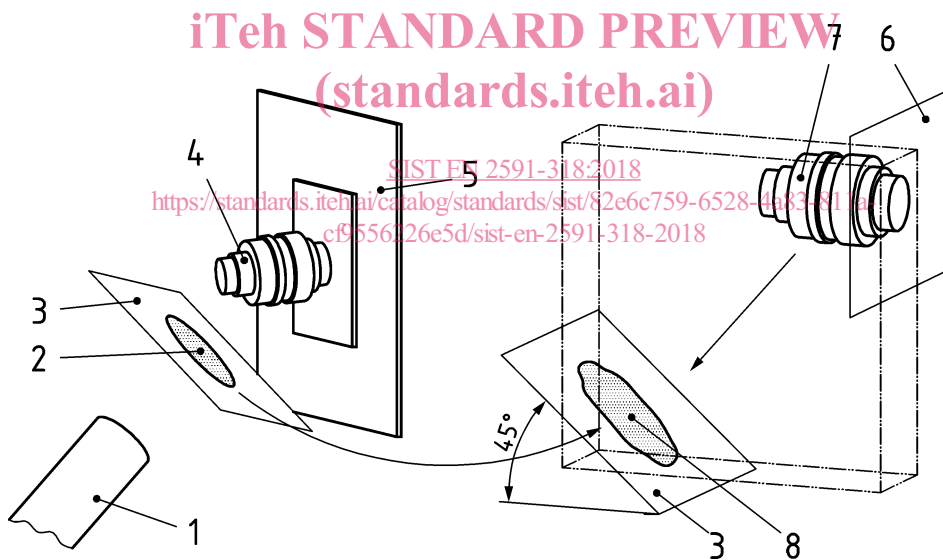
4.4 Test requirements

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

- mounting method, type of fire-resistant cable (e. g. EN 2234) and definition of specimen wiring;
- initial measurements (if applicable);
- value of leakage current (phase 1);
- nominal current to be applied to contacts (phase 1);
- position of burner, see Figure 4, Figure 5 and Figure 6;
- diameter " D ", see Table 1.

According to ISO 2685 the major cross section " A " and the area of the flame at the nozzle of the burner " B " are linked by the following formula: $A \leq 2B$

- for an illustration of the major cross section, see Figure 3.



Key

- 1 Burner diameter D
- 2 "Shadows" of specimen
- 3 Plane parallel to burner Nozzle
- 4 Specimen
- 5 Bracket
- 6 Support plate
- 7 Plug
- 8 Major cross section = A

Major cross section = Area of the specimen (plug) projected onto a plane placed at 45°.

Figure 3 — Major cross section

For burner diameter, see Table 1.

Table 1 — Minimum burner diameter vs major cross section

Connector type	Layout	Major cross section (connector shadow)	Burner diameter minimum
		A mm ²	D mm
EN 2997	8-06	577	19
	10-06	708	21
	18-08	1290	29
	24-30	1912	35
EN 3645	9-35	559	19
	11-98	689	21
	17-06	1221	28
	21-48	1495	31
	23-21	1727	33

For the cross section of connectors not called-up in Table 1, the minimum burner diameter shall be calculated and agreed with the Mandated Body prior to testing.

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5 Apparatus

5.1 General

The rig shall allow the burner to move/rotate between the calibration and the assembled test samples, without turning off the burner or modifying the intended distance and relative position of the test sample.

The distance from the burner nozzle to the connector dimension “ h ”, see Figure 4, shall be calibrated according to ISO 2685.

5.2 Setup

The mated specimens shall be rear mounted on a steel sheet representative of a firewall as shown in Figure 4, Figure 5 and Figure 6.

The assembly shall be rigidly secured to a vibration generator.

The circuits shall be connected to an electrical installation as shown in Figure 9.

The position of the thermocouple(s) relative to both the burner and test sample during the test period, shall be identical to the thermocouple position achieved relative to both the burner and calibration tube during calibration of the assembly.

The angle and direction of the burner and flame shall be the same as utilised during calibration. See Figure 4 and Figure 6.