



SLOVENSKI STANDARD
SIST EN 3373-001:2008
01-februar-2008

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Aerospace series - Terminal lugs and in-line splices for crimping on electric conductors - Part 001: Technical specification

Luft- und Raumfahrt - Kabelschuhe und Stoßverbinder zum Crimpen von elektrischen Leitern - Teil 001: Technische Lieferbedingungen

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Série aérospatiale - Cosses et prolongateurs pour sertissage sur conducteurs électriques - Partie 001 : Spécification technique

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Ta slovenski standard je istoveten z: EN 3373-001:2007

ICS:

49.060 Š`cp` \`ãã` Á`^`[` ||b` \`æ Aerospace electric
 ^|\`dã` }`ã`]`!`^`{`ãã` Á`ã` c`{` ã equipment and systems

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ICS 49.060

English Version

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Crimpen von elektrischen Leitern - Teil 001: Technische
Lieferbedingungen

This European Standard was approved by CEN on 23 June 2007.

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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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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Contents

Page

Foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 General.....	4
4.1 Physical characteristics	4
4.2 Functional characteristics	5
4.2.1 Recommended cables	5
4.2.2 Crimping tools.....	5
5 Tests.....	5
5.1 General.....	5
5.2 Special tests	5
5.2.1 Crimping at low temperature	5
5.2.2 Sleeve strength	6
5.2.3 Sealing	6
5.2.4 Flammability	6
5.3 Qualification tests for crimped connections on copper cable.....	6
5.4 Qualification tests for crimped connections on aluminium cable.....	13
6 Quality assurance	15
6.1 General.....	15
6.2 Initial qualification conditions	15
6.2.1 General.....	15
6.2.2 Sampling and definition of samples	15
6.2.3 Preparation of specimens	16
6.2.4 Programme of qualification tests	23
6.3 Acceptance and inspection conditions	24
6.4 Quality control.....	24
6.5 Maintaining qualification.....	24

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SIST EN 3373-001:2008

<https://standards.it/en/ai/catalog/standards/sist/c987992a-e0b-464a-81b->

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Foreword

This document (EN 3373-001:2007) 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 April 2008, and conflicting national standards shall be withdrawn at the latest by April 2008.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This standard specifies the general characteristics, the conditions of qualification, acceptance and quality assurance, as well as the test programs and groups for terminal lugs and in-line splices designed for crimping on copper and copper alloy conductors and on aluminium and aluminium alloy conductors.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 60050-581, *International Electrotechnical Vocabulary — Chapter 581: Electromechanical components for electronic equipment*.

EN 2083, *Aerospace series — Copper or copper alloy conductors for electrical cables — Product standard*.

EN 2242, *Aerospace series — Control of tools used for crimping of electrical cables with conductors defined by EN 2083 and EN 2346*. *1)

EN 2591-*, *Aerospace series — Elements of electrical and optical connection — Test methods*.

EN 3719, *Aerospace series — Aluminium or aluminium alloy conductors for electrical cables — Product standard*.

EN 9133, *Aerospace series — Quality management systems — Qualification Procedure for aerospace standard parts*.

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-581 apply.

4 General

4.1 Physical characteristics

The forms and dimensions, masses, materials and operating temperature ranges are defined in the product standards.

* All its parts quoted in this standard.

1) Published as ASD Prestandard at the date of publication of this standard.

4.2 Functional characteristics

4.2.1 Recommended cables

The terminal lugs and in-line splices shall allow the correct connection (in accordance with EN 2242) of copper cables conforming to EN 2083 and of aluminium cables conforming to EN 3719.

4.2.2 Crimping tools

The tools which are referred to in the product standards regarding terminal lugs and in-line splices shall be designed so that:

- they ensure the correct positioning of the crimping area;
- they have a full closure mechanism which ensures that the crimping cycle is fully completed;
- the crimping operation does not damage the terminal lug or the in-line splice and does not cause any significant burring;
- a reference mark identifying the gauge is made in the crimping area, if possible.

5 Tests

5.1 General

Unless otherwise specified, the tests shall be selected from those in EN 2591. These tests are listed in Tables 1 and 3.

The tests shall be carried out on each combination of gauge, material and plating of the crimp barrel crimped on the appropriate section of each type of cable (material and plating), for each type of crimping tool.

When a crimping barrel is designed to accommodate a range of cables for a specific type of tool or for a type or size of die or stop, the tests shall be carried out on only the smallest and largest permitted cable sections.

To rationalise the test procedures and avoid confusion between the tests for copper and aluminium cables, the tests have been grouped together, and are defined as Group Cu 0, Cu 1, Cu 2, etc. for copper cables and Group Al 0, Al 1, Al 2, etc. for aluminium cables.

For the purposes of these groups, copper and copper alloy cables are included within test Groups Cu 0, Cu 1, Cu 2, etc. Likewise aluminium and aluminium alloy cables are included within the test Groups Al 0, Al 1, Al 2, etc.

5.2 Special tests

5.2.1 Crimping at low temperature

Keep the components (cable, terminal lugs or in-line splices and crimping tools) at a temperature of $(-15 \pm 2)^\circ\text{C}$ for 1 h, then crimp at that temperature.

Keep the specimens at a temperature of $(-65 \pm 2)^\circ\text{C}$ for 1 h.

Recover at $(20 \pm 5)^\circ\text{C}$ for 1 h.

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type of cable (material and plating)

5.2.2 Sleeve strength

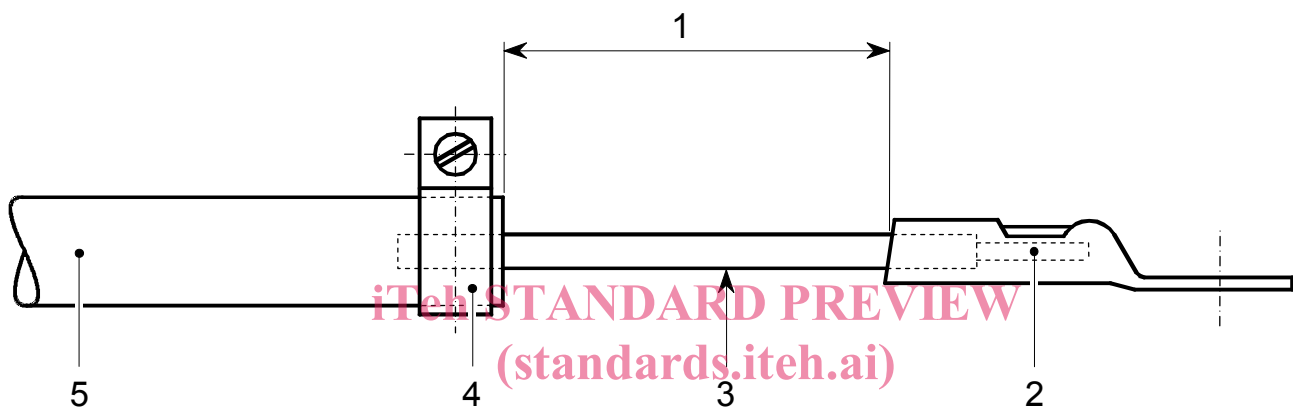
The insulating sleeve shall have a good grip on the terminal lug barrel before and after crimping and, when held by a fork passed around the crimping barrel, the displacement shall not be more than 1 mm under an axial load of 35 N.

5.2.3 Sealing

The cable shall be placed in a tube connected to a compressed air supply; the pressure shall be increased in $\times 10^5$ Pa stages every 5 min up to 2×10^5 Pa and maintained at this value for 1 h (see Figure 1).

The specimen shall be immersed with the end of the barrel approximately 50 mm below the water level.

There shall not be any leakage in the crimping area.



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Key

- 1 60 mm to 100 mm
- 2 Terminal lug
- 3 Cable
- 4 Collar clamp
- 5 Compressed air supply pipe

Figure 1 — Assembly for the sealing test

5.2.4 Flammability

The specimen shall be suspended in a still air chamber above a Bunsen burner with a 100 mm long tube and an internal diameter of $(9,5 \pm 0,5)$ mm.

The end of the 25 mm blue flame produced by the Bunsen burner shall be applied for 20 s to half the length of the insulation of the specimen.

There shall be no flame or incandescence 15 s after the flame is withdrawn.

5.3 Qualification tests for crimped connections on copper cable

See Table 1.

NOTE Where a requirement for an individual test is not quoted, see Table 7 for sequence of further tests.

Table 1

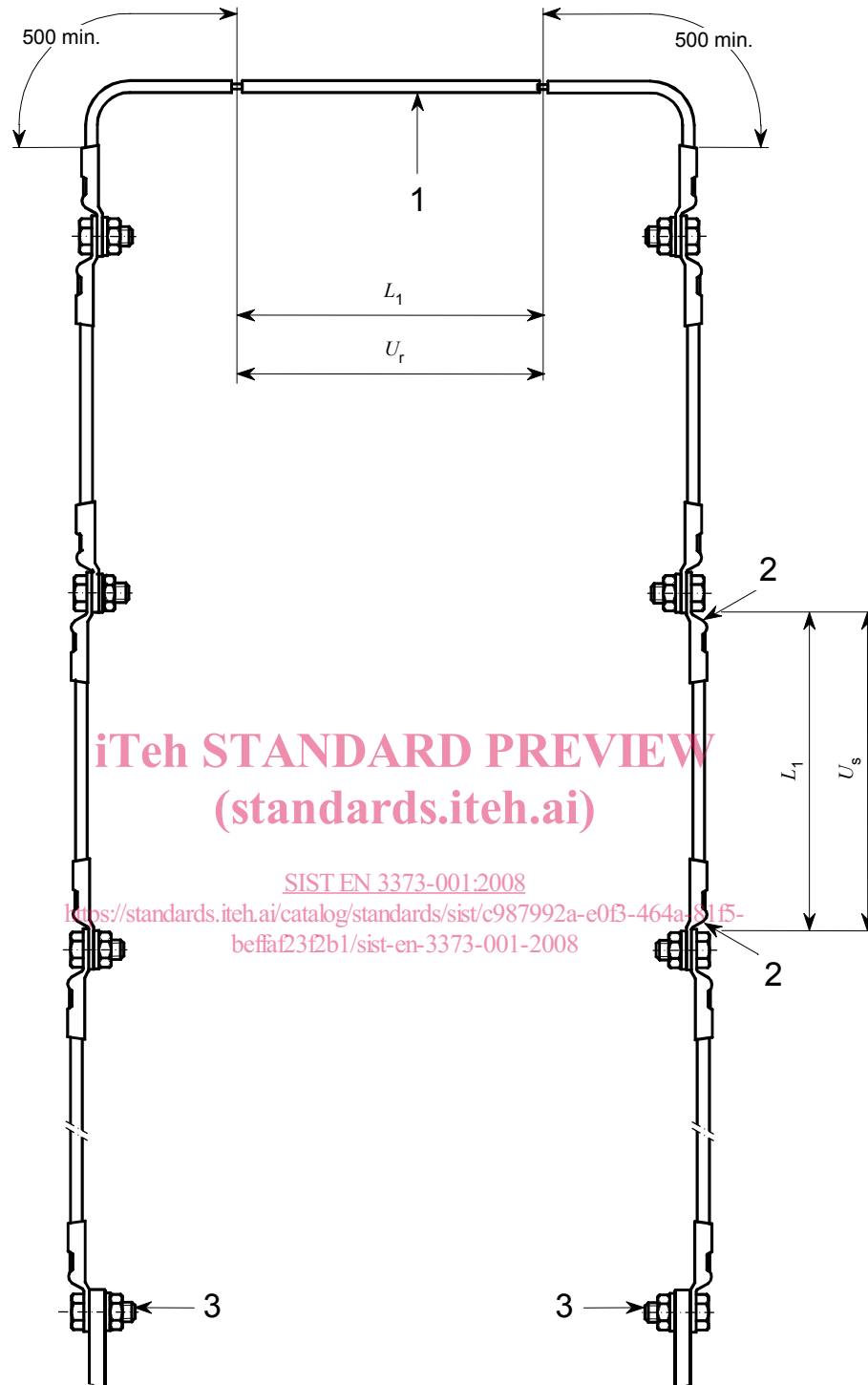
	Designation of the test	Details
EN 2591-101	Visual examination	With the naked or normally corrected eye on crimped specimens. An optical magnification of 6 to 10 may be used if required. Check that: — the combined section of cable/barrel size or in-line splice/crimping tool conforms; — the form and position of crimping are correct; — there are no major cracks or burrs on the barrel; — the cable core is correctly inserted in the barrel; — the cable core and insulation are not damaged; — the identification marks stamped on the crimp by the die are correct (if applicable).
EN 2591-102	Examination of dimensions and mass	Before crimping, dimensions and masses shall conform to the requirements of the product standard.
EN 2591-206	Measurement of insulation resistance	The insulation resistance measured between the outer surface of the insulating sleeve and the cable core shall be a minimum of 1 000 M Ω .
EN 2591-217	Voltage drop under specified current for terminal lugs and in-line splices	See Figures 2 and 3.
EN 2591-218	Ageing of terminal lugs and in-line splices by temperature and current cycling	Test current as per Table 2. Requirement: see EN 2591-218.
EN 2591-219	Voltage strength for insulated terminal lugs and in-line splices	Test applicable to terminal lugs and in-line splices with insulated barrels. Requirement: see EN 2591-219.
EN 2591-301	Endurance at temperature	Method B. 120 h in a dry heat chamber at a temperature 15 °C above the operating temperature of the terminal lug or in-line splice. Test applicable terminal lugs and in-line splices with insulated barrels.
EN 2591-305	Rapid change of temperature	T_A = operating temperature of the terminal lug or in-line splice plus 15 °C T_B = - 65 °C
EN 2591-307	Salt mist	48 h unless otherwise specified in the product standard. Check that no flaking of the protective treatment has occurred.

continued

Table 1 (concluded)

	Designation of the test	Details
EN 2591-314	Immersion at low air pressure	The in-line splice, fitted with its sealing accessories, shall be immersed in the solution. The ends of the cables shall protrude from the solution with neither the sealing accessories and the crimps being subjected to any stress. Pressure of chamber 4 kPa.
EN 2591-315	Fluid resistance	Test applicable to terminal lugs and in-line splices with insulated barrels.
EN 2591-403	Sinusoidal and random vibration	Method A. Assembly as per Figure 4. No sign of fracture. Applicable to terminal lugs only.
EN 2591-417	Tensile strength (crimped connection)	See Figure 5. The specimen shall not break at a value less than those specified in Table 2.
EN 3373-001	Crimping at low temperature	See 5.2.1.
EN 3373-001	Sleeve strength	See 5.2.2.
EN 3373-001	Flammability	See 5.2.4. Test applicable to terminal lugs and in-line splices with insulated barrels.

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**Key**

- 1 Reference cable
- 2 Measurement point
- 3 Supply terminal

**Figure 2 — Assembly for measuring the voltage drop in terminal lugs
in accordance with EN 2591-217**