



**SLOVENSKI STANDARD**  
**SIST EN 3475-100:2004**  
**01-maj-2004**

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

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

Luft- und Raumfahrt - Elektrische Leitungen für Luftfahrt, Verwendung - Prüfverfahren - Teil 100: Allgemeines

**iTeh STANDARD PREVIEW**

Série aérospatiale - Câbles électriques à usage aéronautique - Méthodes d'essais - Partie 100 : Généralités

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**Ta slovenski standard je istoveten z: EN 3475-100:2002**

**ICS:**

49.060 Štejni inštrumenti in oprema za letalstvo in zrakoplovstvo  
 Aerospace electric equipment and systems

**SIST EN 3475-100:2004 en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 3475-100**

February 2002

ICS 49.060

English version

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

Série aérospatiale - Câbles électriques à usage  
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Verwendung - Prüfverfahren - Teil 100: Allgemeines

This European Standard was approved by CEN on 5 August 2001.

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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 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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## Foreword

This document (EN 3475-100:2002) has been prepared by the European Association of Aerospace Manufacturers (AECMA).

After inquiries 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 AECMA, prior to its presentation to CEN.

This European Standard shall be given the status of a national standards, either by publication of an identical text or by endorsement, at the latest by August 2002, and conflicting national standards shall be withdrawn at the latest by August 2002.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## 1 Scope

This standard gives general information and the list of test methods for the different characteristics required for cables used in aircraft electrical circuits.

## 2 Normative references

This European Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 3475 \*      Aerospace series – Cables, electrical, aircraft use – Test methods

## 3 Definitions and symbols

### 3.1 Definitions

For the purposes of this standard, the following definitions apply:

#### 3.1.1

##### **conductor**

the conducting element of a cable formed from one or more strands

#### 3.1.2

##### **strand**

metallic cylindrical component of uniform section used to form the conductor or shielding

#### 3.1.3

##### **plated strand**

strand covered by a thin metallic layer in order to improve performance or facilitate connections

#### 3.1.4

##### **jacket**

external covering of a cable containing one or more screened or unscreened conductor(s)

#### 3.1.5

##### **insulation**

the part of the cable surrounding the conductor and consisting of insulating material

#### 3.1.6

##### **sheath**

protective envelope added to the insulated conductor when necessary to improve its properties of mechanical resistance or resistance to fluids

NOTE      It may also be added to provide a surface to facilitate marking.

#### 3.1.7

##### **screen**

conducting envelope applied to the cable or conductors so as to reduce electromagnetic or electrostatic interference

\* All parts quoted in this standard

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**3.1.8****concentric conductor**

assembly comprising several strands, all arranged in the form of a spiral, in regular layers

NOTE The directions of lay of the strand, passing from one stranded layer to the next layer is either alternate or the same. The lay for the various layers may be different or the same.

**3.1.9****bunched conductor**

assembly of several strands, all arranged in the form of a spiral, in the same direction and with the same lay

**3.1.10****rope stranded conductor**

assembly comprising a certain number of concentric or bunched conductors arranged in the form of a spiral and in regular layers, the different layers being laid in opposite directions

**3.1.11****specimen**

a portion of conductor or cable of defined length, taken from a particular section of cable

**3.1.12****insulated conductor**

the whole of the conductor and its insulation which makes up a complete cable with one or more conductors

**3.1.13****cable, electrical**

an assembly consisting of conductor, insulation and, where applicable, sheath, screen and jacket

**3.1.14****airframe cable**

cable suitable for open aircraft wiring and engine compartments without additional protection

**3.1.15****fire-resistant cable**

cable which is capable of maintaining a defined performance during the application of a standard 1100 °C flame for a period of 5 min

**3.1.16****fire proof cable**

cable which is capable of maintaining a defined performance during the application of a standard 1100 °C flame for a period of 15 min

**3.1.17****conductor cross-sectional areas**

the sums of the cross-sectional areas of the component strands of the conductor

**3.1.18****conductor size**

number used to define the gauge of the conductor, this number corresponds approximately to the American Wire Gauge number

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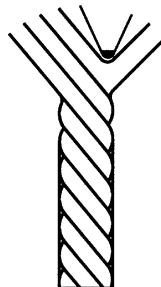
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3.1.19

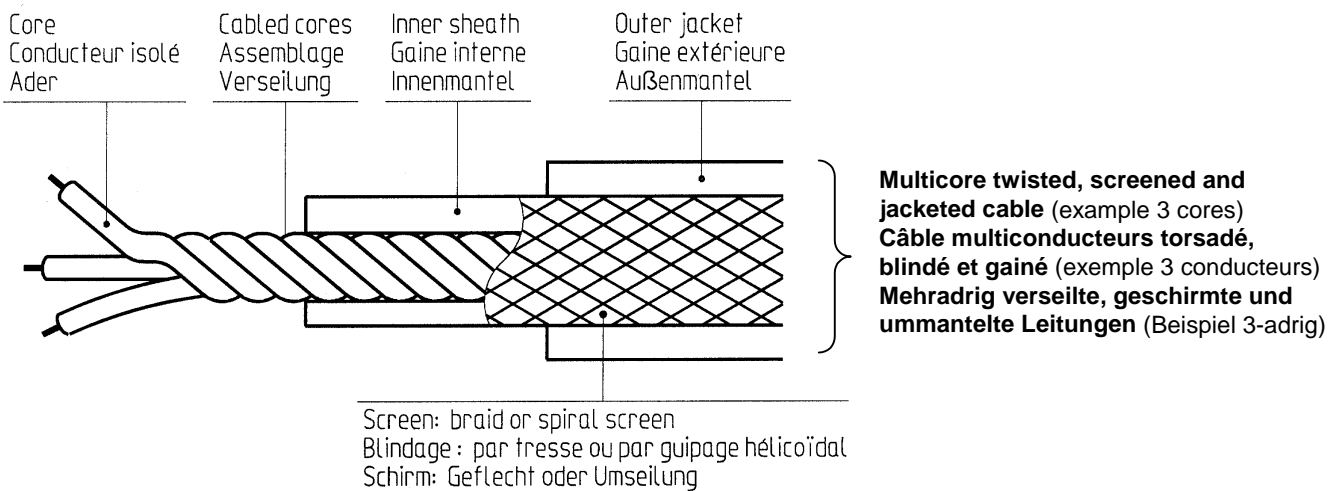
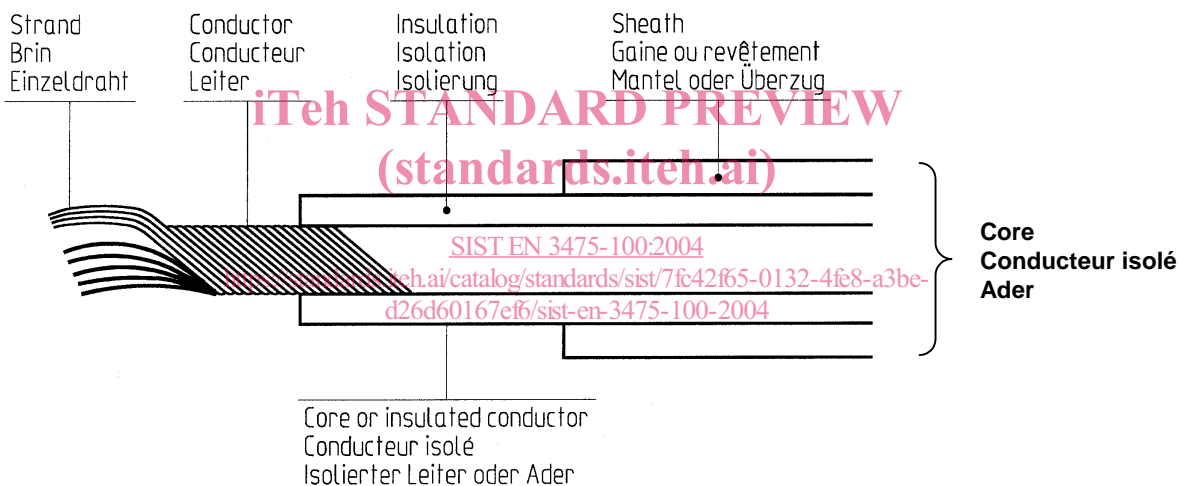
**direction of cabling (or lay)**

a "lefthand" direction of lay is shown in the sketch below

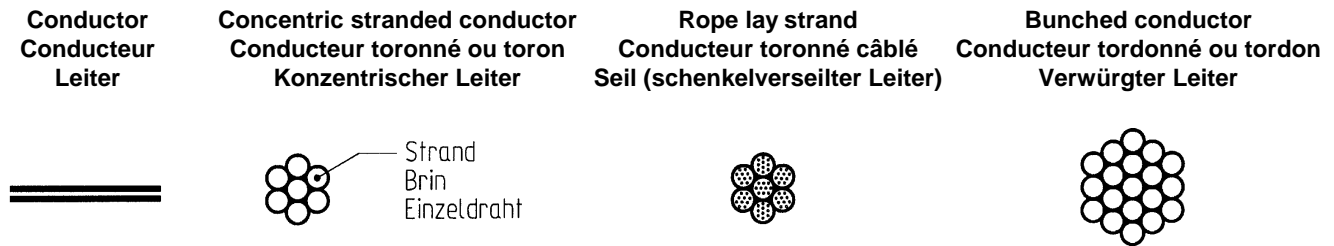


Lefthand lay

**Equivalence of terms and designations**



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### 3.2 Symbols

- $\theta$  = numerical value of Celsius temperature for which  $R_{\theta}$  will be calculated
- $R_{\theta}$  = resistance per unit length at  $\theta$  °C
- $R_{20}$  = resistance per unit length at 20 °C (reference value)
- $U_{\theta}$  = voltage drop at  $\theta$  °C
- $U_{20}$  = voltage drop at 20 °C
- $T_1, T_2, \text{ etc.}$  = successive temperatures mentioned in a test procedure method
- $I_1, I_2, \text{ etc.}$  = currents mentioned in a test procedure method

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## 4 Test conditions

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Unless otherwise stated in the test method, the technical specification, or the product standard, the test conditions shall be:

- temperature:  $(20 \pm 5)$  °C;
- atmospheric pressure: 86 kPa to 106 kPa (860 mbar to 1060 mbar);
- relative humidity: 45 % to 75 %.

The temperature and humidity shall remain constant during a series of measurements.

## 5 List of test methods

See tables 1 to 7.

**Table 1 – General tests**

EN 3475-	Designation of the test
201	Visual examination
202	Mass
203 <sup>a</sup>	Dimensions
<sup>a</sup> Published at AECMA Prestandard at the date of publication of this standard	



Table 2 – Electrical tests

EN 3475-	Designation of the test
301	Electrical resistance per unit length
302	Voltage proof test
303	Insulation resistance
304	Surface resistance
305	Overload resistance

Table 3 – Environmental tests

EN 3475-	Designation of the test
401	Accelerated ageing
402	Shrinkage and delamination
403	Delamination and blocking
404	Thermal shock
405	Bending at ambient temperature
406	Cold bend test
407	Flammability
408 <sup>a</sup>	Fire resistance sheath and jacket material
409	Air-excluded ageing
410	Thermal endurance
411 <sup>b</sup>	Resistance to fluids
412 <sup>b</sup>	Humidity resistance sheath and jacket material
413 <sup>b</sup>	Wrap back test
414 <sup>b</sup>	Differential scanning calorimeter (DSC test)
<sup>a</sup>	In preparation at the date of publication of this standard
<sup>b</sup>	Published at AECMA Prestandard at the date of publication of this standard

Table 4 – Mechanical tests

EN 3475-	Designation of the test
501	Dynamic cut-through
502	Notch propagation
503	Scrape abrasion
504	Torsion
505	Tensile test on conductors and strands
506	Plating continuity
507	Adherence of plating
508 <sup>a</sup>	Plating thickness
509 <sup>a</sup>	Solderability
510 <sup>a</sup>	Tensile strength and elongation of extruded insulation, sheath and jacket material
511 <sup>a</sup>	Cable to cable abrasion
512 <sup>a</sup>	Flexure endurance
<sup>a</sup>	Published at AECMA Prestandard at the date of publication of this standard