SLOVENSKI STANDARD
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Aerospace series - Cables, electrical, aircraft use - Test methods - Part 412: Humidity resistance

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Luft- und Raumfahrt - Elektrische Leitungen für Luftfahrtverwendung - Prüfverfahren - Teil 412: Beständigkeit gegen Feuchte

Série aérospatiale - Câbles électriques à usage aéronautique - Méthodes d'essais - Partie 412: Résistance a l'humidité

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49.060	Letalska in vesoljska elektriļ na oprema in sistemi	Aerospace electric equipment and systems

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This European Standard was approved by CEN on 20 January 2002.

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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 2591-412:2002) has been prepared by the European Association of Aerospace Manufacturers (AECMA).

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 AECMA, 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of an identical text or by endorsement, at the latest by December 2002, and conflicting national standards shall be withdrawn at the latest by December 2002.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 specifies a method of assessing the capability of a cable to resist different hot and humid environments.

It shall be used together with EN 3475-100.

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 3475-100 Aerospace series – Cables, electrical, aircraft use – Test methods – Part 100: General

EN 3475-302 Aerospace series – Cables, electrical, aircraft use – Test methods – Part 302: Voltage proof test

EN 3475-303 Aerospace series – Cables, electrical, aircraft use – Test methods – Part 303: Insulation resistance

EN 3475-405 Aerospace series – Cables, electrical, aircraft use – Test methods – Part 405: Bending at ambient temperature

3 Classification of tests

Two levels of humidity resistance are defined together with their applicable test methods:

a) level 1 cables – These cables are generally located in pressurised areas at conventional relative humidity or at operating temperatures (ambient temperature and heating due to current) greater than 100 °C. For these cables, method A shall be used as specified in 6.

b) level 2 cables – These are cables exposed to severe environmental conditions, high humidity, extended exposure to different liquids, and where absorbed humidity is not normally displaced. For these cables, method B shall be used as specified in 7.

4 Preparation of specimens

4.1 Insulated conductors

Cut a length of cable appropriate to the requirements of the test as described in 6 or 7 (minimum length 750 mm). Strip 25 mm of insulation from each end of the specimen.

4.2 Screened and jacketed cables

Cut a length of cable appropriate to the requirements of the test as described in 6 or 7 (minimum length 750 mm). Strip 25 mm of the jacket from each end of the specimen.

5 Apparatus

A climatic chamber shall be required which is capable of close control of temperature and humidity. Only distilled or demineralised water shall be used to obtain the required humidity.

6 Method A

6.1 Procedure

6.1.1 Wind the specimen cable around the mandrel specified in EN 3475-405 for the bending test. Place the assembly in the chamber and condition at (71 ± 2) °C and (90 ± 5) % relative humidity for a period of 6 h.

6.1.2 At the end of the 6 h period, shut off the heat and allow the specimen to cool in the closed chamber to a temperature lower than 38 °C for a period of 16 h.

6.1.3 Re-apply the heat in order to stabilise the chamber at 71 °C in less than 2 h.

6.1.4 Repeat 6.1.2 and 6.1.3 for a total of 15 cycles as shown in figure 1.

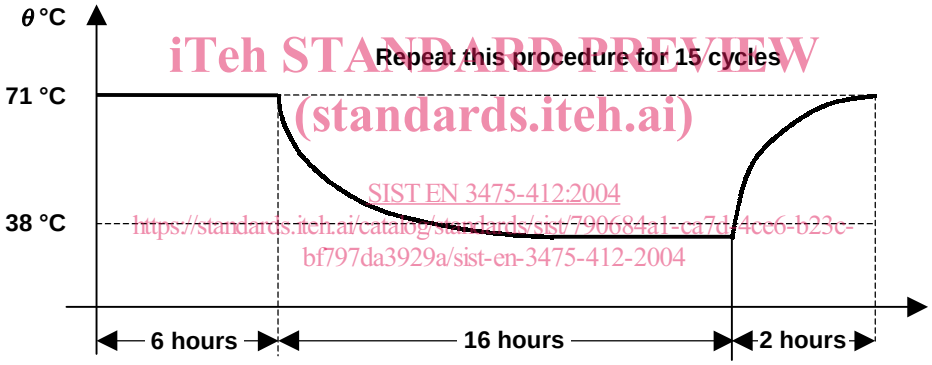

Figure 1 – Test cycles

6.2 Requirement

At the end of the 15th cycle, unwind the cable from the mandrel and subject it to the insulation resistance test specified in EN 3475-303.

The measured value obtained shall be greater than that specified in the product standard.

7 Method B

7.1 Procedure

7.1.1 Prepare a PTFE mandrel, or mandrel covered with PTFE, the diameter of which is 10 times (0, – 5) % the maximum specified outer diameter of the cable under test. Wind 5 turns of cable round the mandrel, ensuring that the cable is in close contact with the mandrel and with each adjacent turn for all 5 turns. Secure the cable in position on the mandrel, for example by tying or twisting the two free ends together.

7.1.2 Mount the specimen in the test chamber at the temperature defined in the individual cable product standard and (93^{+2}_{-3}) relative humidity. Heat the specimen to the test temperature before the humidity is raised in order to prevent condensation of the specimen. Maintain the specified temperature and humidity in the test chamber for the period given in the individual cable product standard.

7.2 Requirement

At the end of the test period, and after return to standard atmospheric conditions for a minimum of 1 h, or a maximum of 3 h, remove the specimen from the mandrel. The cable shall be subjected to, and meet, the requirements of the cable bending test at ambient temperature specified in EN 3475-405 and the voltage proof test specified in EN 3475-302.

NOTE The portion of cable tied or twisted together and stripped back shall not be included in the requirement.