SLOVENSKI STANDARD

SIST EN 3475-408:2006

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Aeronavtika ï Elektriļ ni kabli za uporabo v zraļ nih plovilih ï Preskusne metode ï 408. del: Poģarna odpornost

Aerospace series - Cables, electrical, aircraft use - Test methods - Part 408: Fire resistance

Luft- und Raumfahrt - Elektrische Leitungen für Luftfahrtverwendung - Prüfverfahren - Teil 408: Feuerbeständigkeit

Série aérospatiale - Câbles électriques à usage aéronautique - Méthodes d'essais - Partie 408 : Résistance au feu

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English Version

Aerospace series - Cables, electrical, aircraft use - Test methods - Part 408: Fire resistance

Série aérospatiale - Câbles électriques à usage aéronautique - Méthodes d'essais - Partie 408 : Résistance au feu

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This European Standard was approved by CEN on 12 September 2005.

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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 Central Secretariat has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This European Standard (EN 3475-408:2005) has been prepared by the European Association of Aerospace Manufacturers - Standardization (AECMA-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 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of an identical text or by endorsement, at the latest by May 2006, and conflicting national standards shall be withdrawn at the latest by May 2006.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard specifies a method of testing the fire resistance of "fire-proof" electrical cables.

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.

ISO 2685:1998, *Aircraft — Environmental test procedure for airborne equipment — Resistance to fire in designated fire zones.*

EN 3909, *Aerospace series — Test fluids for electric components and sub-assemblies.* [1)]

3 Preparation of specimens

Six test specimens, 0,75 m minimum length, shall be selected at random from a quantity of cable.

4 Apparatus

4.1 List of apparatus

The following shall be required for this test: a burner, a test fixture, and test fluids.

4.2 Burner

The burner shall be as described in Annex A of ISO 2685 or any other burner or assembly of burners satisfying the following conditions:

— the minimum width of the burner shall be 50 mm;

— cable length exposed to the flame: 152 mm;

— diameter or width of the flame at the base of the burner(s) ≥ 2 D (D diameter of the cable under test);

— flame temperature: (1 100 ± 80) °C;

— heat flux density received by the calorimeter described in Annex B of ISO 2685: (116 ± 10) kW/m^2.

4.3 Test fixture

Refer to Figures 1 and 2. The distance between the burner nose and the cable under test shall be as specified in ISO 2685 Annex A. The frame of the test fixture shall be vibrated with the following characteristics:

— direction perpendicular to the axis of the cable;

— frequency: (30 ± 5) Hz;

— minimum acceleration: 4 g.

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

4.4 Fluids

The test fluids listed below shall be in accordance with EN 3909.

— aircraft fuel (kerosene);

— hydraulic fluid (phosphate base);

— lubricant (synthetic oil);

— cleaning product (isopropylic alcohol);

— de-icing fluid (ethylene glycol).

5 Method

5.1 Preparation

The test shall be conducted in still air.

The centre section of each of the specimens shall be immersed over a length of 0,5 m for 24 h at ambient temperature, one sample in each of the test fluids.

After removal from the test fluid any surplus fluid shall be removed with a lint free cloth. The sample shall stand for 1 h.

Each sample shall be mounted onto a frame as shown in Figure 1. Each sample shall be wrapped once around with two nickel-chrome ribbons with their inner edges spaced (25 ± 5) mm apart. The sample and test ribbons shall be weighted, as shown in Figure 1, and the test assembly adjusted so that the area wrapped by the ribbons is located at the appropriate distance above the burner where the temperature is 1 100 °C. After tensioning with weights, the samples and test ribbons shall be locked at the pulley position to avoid the weights giving high loading under vibration/resonant conditions.

Single core samples shall be connected to a circuit as shown in Figure 2.

Multi-core samples shall be connected to a circuit as shown in Figure 3.

Screen cables (metal braid) shall be connected to a circuit as shown in Figure 4.

5.2 Procedure

5.2.1 Note the line current (approximately 2 A);

5.2.2 Operate the switch and observe a 25 mA reading;

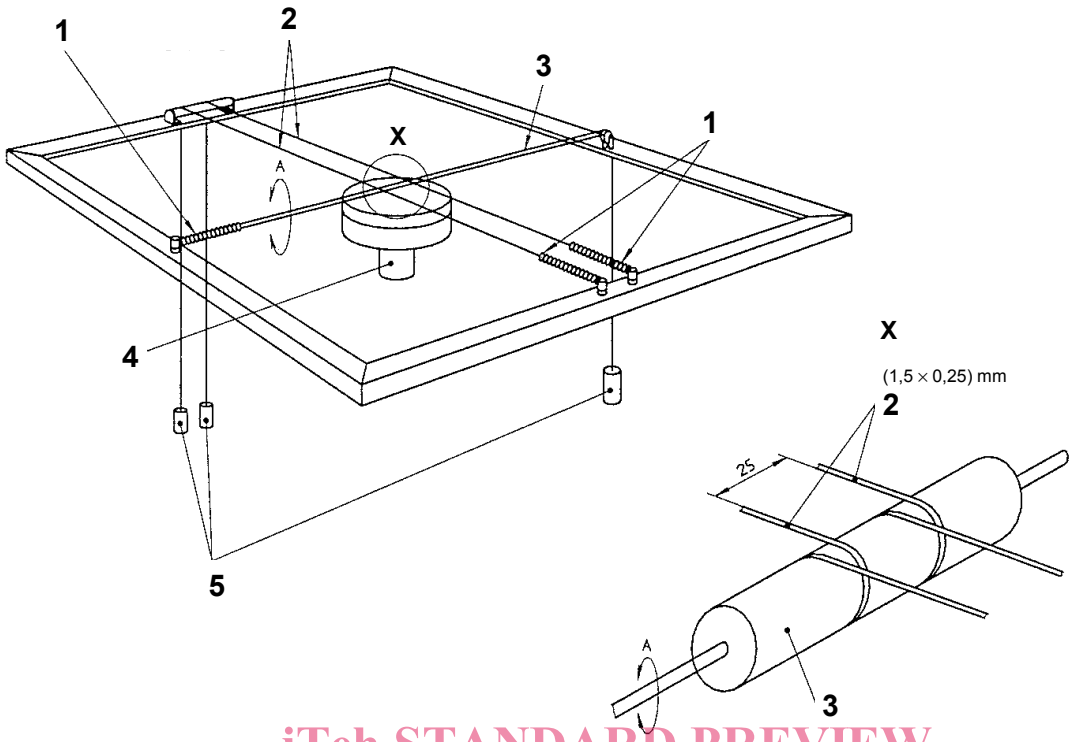
5.2.3 Leakage current flow shall not exceed 12,5 mA during the test period.

5.2.4 Sample continuity is shown when a current flow of 2 A is registered with the electrical supply switched on. The insulation degradation detection circuit shall be checked by depressing the test switch; an indication of 25 mA flow should be registered.

5.2.5 Each sample shall be simultaneously subjected to the combined flame and vibration test. The test duration shall be:

— 5 minutes for fire resistant cables;

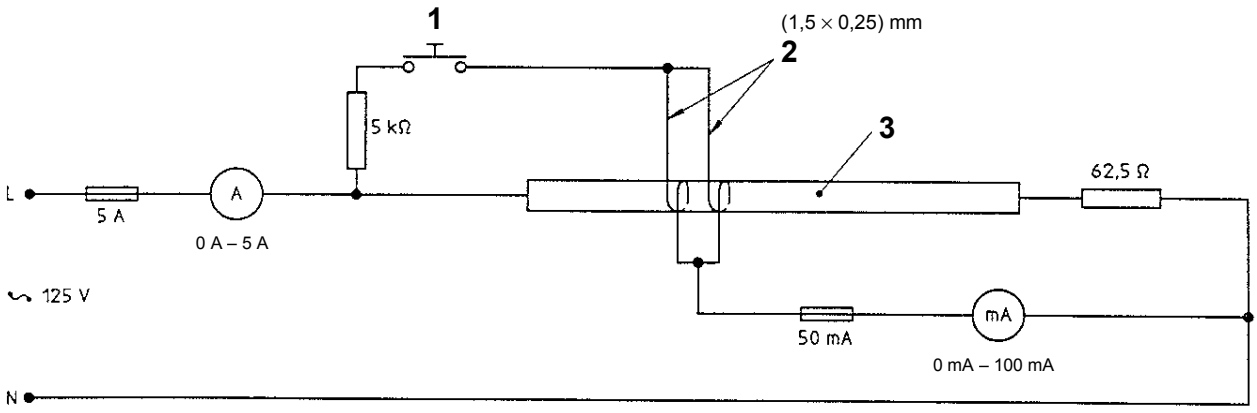
— 15 minutes for fire proof cables.



Key

1 Tensioning springs
2 Nickel-chrome ribbons
3 Cable test specimen
4 Test burner
5 Weights: cables 004 to 030: 170 g
cables 050 to 220: 340 g

Figure 1 — Test fixture



Key

1 Test switch
2 Nickel-chrome ribbons
3 Cable test specimen

Figure 2 — Circuit diagram for single core cables

Test 1 – Core-to-core integrity

Key

1 Cable test specimen
2 Test switch

Figure 3 — Circuit diagram for multi-core cables