SLOVENSKI STANDARD
SIST EN 3475-407:2009

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Nadomeġļa:
SIST EN 3475-407:2006

Aeronavtika - Elektriļ ni kabli za uporabo v zraļ nih plovilih - Preskusne metode - 407. del: Gorljivost

Aerospace series - Cables, electrical, aircraft use - Test methods - Part 407: Flammability

Luft- und Raumfahrt - Elektrische Leitungen für Luftfahrtverwendung - Prüfverfahren - Teil 407: Entflammbarkeit

Série aérospatiale - Câbles électriques à usage aéronautique - Méthodes d'essais - Partie 407: Tenue à la flamme

Ta slovenski standard je istoveten z: **EN 3475-407:2009**

ICS:

13.220.40	Sposobnost vžiga in obnašanje materialov in proizvodov pri gorenju	Ignitability and burning behaviour of materials and products
49.060	Letalska in vesoljska elektriļ na oprema in sistemi	Aerospace electric equipment and systems

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EUROPEAN STANDARD

NORME EUROPÉENNE

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English Version

Aerospace series - Cables, electrical, aircraft use - Test methods - Part 407: Flammability

Série aérospatiale - Câbles électriques à usage aéronautique - Méthodes d'essais - Partie 407 : Tenue à la flamme

Luft- und Raumfahrt - Elektrische Leitungen für Luftfahrtverwendung - Prüfverfahren - Teil 407: Entflammbarkeit

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 3475-407:2009) 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of an identical text or by endorsement, at the latest by February 2010, and conflicting national standards shall be withdrawn at the latest by February 2010.

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This document supersedes EN 3475-407:2005.

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1 Scope

This standard specifies two methods of determining the flammability characteristics of a finished cable.

It is intended to be used together with EN 3475-100.

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.

EN 3475-100, *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 100: General.*

FAR 25, *Airworthiness standards — Transport category airplanes.*

JAR 25, *Large aeroplanes*.

3 Equipment

The following equipment shall be required for these tests:

a) **Test chamber**: this shall be a chamber measuring not less than 700 mm high × 300 mm wide × 300 mm deep, open at the top, open at the front and situated in a draught-free environment but with sufficient air supply to provide normal combustion. General arrangements are shown in Figures 1 and 2.

b) **Bunsen type gas burner**: the burner shall have a 6 mm inlet, a needle valve in the base for gas adjustment, a nominal bore of 9 mm and a barrel of approximately 100 mm above the air inlets. The gas supply shall be capable of achieving the test requirements defined in 4.1.2 and 4.2.2.

WARNING — NOTE Care should be exercised in setting up and performing this test as toxic fumes may be given off during combustion. The test chamber shall be placed in a fume cabinet that will allow evacuation of gaseous products of combustion at the end of the test.

4 Procedures

4.1 Method 1

4.1.1 Preparation of test specimens

Cut two sets of three specimens each, approximately 900 mm in length, consecutively from the same coil. Strip each end and place them in an atmosphere of (50 ± 5) % relative humidity at a temperature of (21 ± 3) °C for a period of not less than 24 h. Keep the specimens in the conditioning area until just prior to testing.

4.1.2 Flame temperature

4.1.2.1 Adjust the Bunsen burner to produce a flame with an inner blue cone approximately one-third of the overall flame height. Insert a bare copper wire of (0,7 ± 0,025) mm diameter, and having a free length of not less than 100 mm, into the flame, the end of the wire being immediately above the tip of the inner cone.

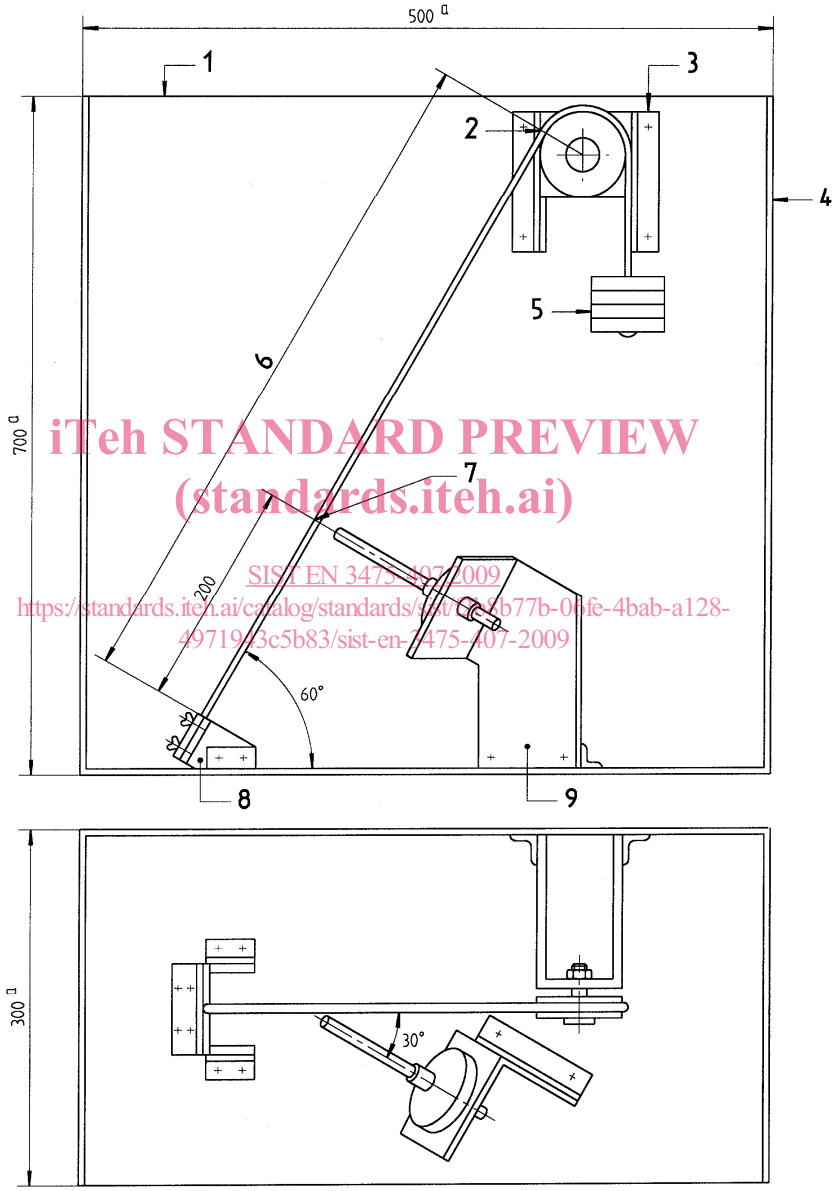
NOTE For initial setting-up purposes, an overall flame height of approximately 75 mm may be found suitable.

4.1.2.2 Adjust the burner so that the wire starts to melt within 4 s to 6 s of being inserted into the flame.

NOTE Alternatively for 4.1.2.1 and 4.1.2.2, a 0,8 mm to 0,81 mm diameter wire may be used in which case adjust the burner so that the wire starts to melt within 7 s to 9 s.

4.1.3 Mounting configuration

4.1.3.1 Mount the specimen in the test chamber as shown in Figure 1 at an angle of (60 ± 2)° to the horizontal, parallel to, and approximately 150 mm from the front end of the test chamber. Clamp the conductor at the bottom of the apparatus. Pass the cable over the upper pulley and attach it to a weight which is just sufficient to keep the specimen straight within the test zone.



Key

1 Box construction aluminium alloy 3,15 mm
2 Upper datum point
3 Pulley support bracket (low thermal conductivity)
4 Support frame open at front
5 Weights as required
6 600 - Distance between reference marks
7 Flame application point (flame centre datum)
8 Bottom clamp support (low thermal conductivity)
9 Bunsen burner support (low thermal conductivity)

[a] approx.

Figure 1 — Mounting configuration

4.1.3.2 Make a mark 200 mm above the lower clamp point and position the burner in the plane of this mark, perpendicular to the specimen and directed towards the specimen at an angle of 30° to the vertical plane as shown in Figure 1, i.e. at 90° to the axis of the cable such that the flame will impinge directly onto the 200 mm mark.

4.1.3.3 Set the distance of the burner from the specimen such that the tip of the inner cone of the flame is immediately below the specimen.

4.1.4 Flame application

Apply the flame to each specimen of a set for a period of 15 s and then immediately remove the burner. Apply the flame to each specimen of the second set for a period of 30 s and then immediately remove the burner.

NOTE 1 For thin wall insulation the time of 15 s is considered more severe, as all the insulation can be carbonized in less than 30 s.

NOTE 2 Nevertheless a test at 30 s is also necessary to assess FAR/JAR 25 requirements.

NOTE 3 The 15 s value was introduce in P2 issue when 30 s value was initially removed.

4.2 Method 2

4.2.1 Preparation of test specimens

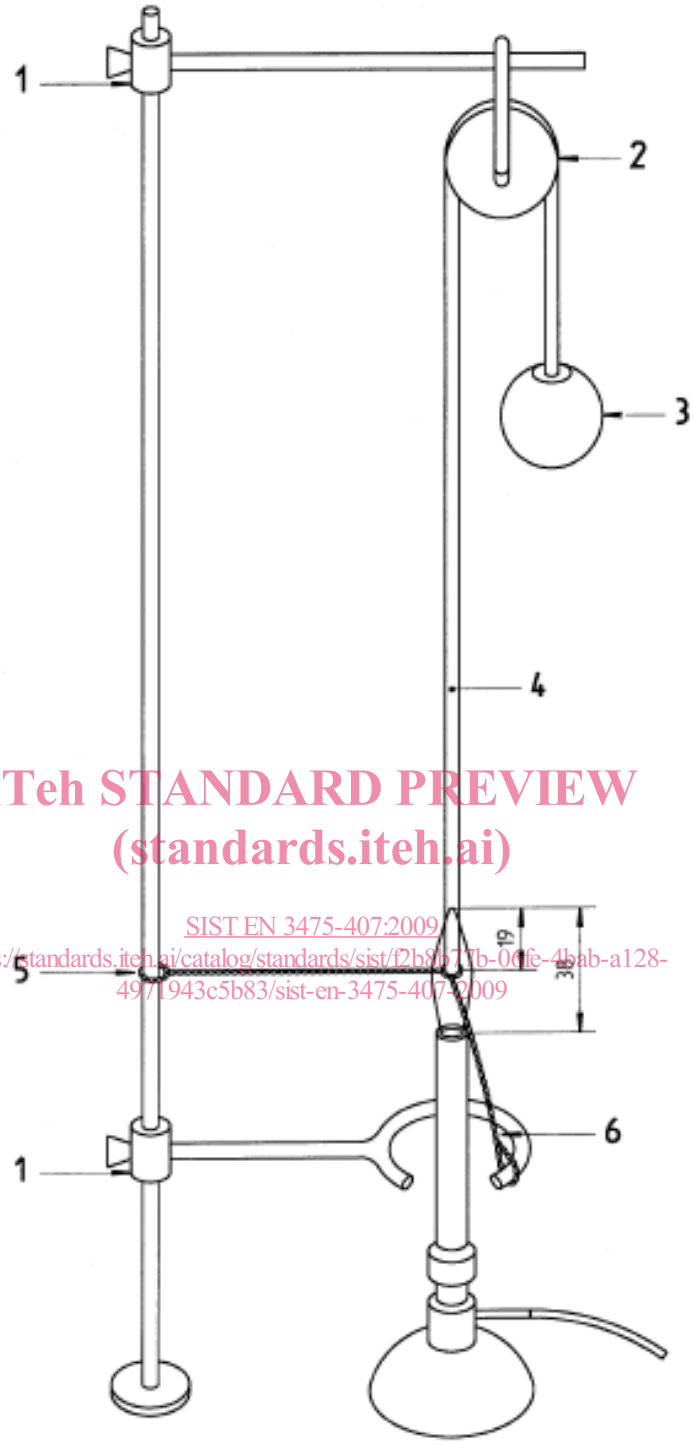
Cut three specimens, approximately 450 mm in length, consecutively from the same coil. Strip each end and place them in an atmosphere of (50 ± 5) % relative humidity at a temperature of (21 ± 3) °C for a period of not less than 24 h. Keep the specimens in the conditioning area until just prior to testing. Remove 50 mm of insulation from one end of the specimen and mount it as shown in Figure 2.

4.2.2 Flame temperature

Adjust the Bunsen burner to produce a 38 mm high soft yellow flame.

4.2.3 Mounting configuration

Mount the specimen vertically in the test chamber as shown in Figure 2. Fix the lower end of the conductor to the support bar and apply the fine wire to the conductor at the junction with the insulation. Pass the cable over the upper pulley and attach it to a weight which is just sufficient to keep the specimen straight within the test zone.



Key

1	Clamp	4	Specimen
2	Pulley	5	Fine wire
3	Weight	6	Stripped conductor 50 mm

Figure 1 — Alternative mounting configuration

Apply the 38 mm high yellow flame from the Bunsen burner to the specimen at the junction of the insulation and the bare conductor in such a manner that the lower end of the insulation is located half-way (19 mm) into the flame as shown in Figure 2.