SLOVENSKI STANDARD

SIST EN 3475-603:2007

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SIST EN 3475-603:2004

Aeronavtika - Elektriļ ni kabli za uporabo v zraļ nih plovilih - Preskusne metode - 603. del: Odpornost proti elektriļ nemu obloku v vlaģnih razmerah

Aerospace series - Cables, electrical, aircraft use - Test methods - Part 603: Resistance to wet arc tracking

Luft- und Raumfahrt - Elektrische Leitungen für Luftfahrtverwendung - Prüfverfahren - Teil 603: Lichtbogenfestigkeit, feucht

Série aérospatiale - Câbles électriques a usage aéronautique - Méthodes d'essais - Partie 603 : Résistance a l'amorçage et a la propagation d'arc électrique, essai humide

Ta slovenski standard je istoveten z: **EN 3475-603:2007**

ICS:

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

SIST EN 3475-603:2007 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 49.060

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English Version

Aerospace series - Cables, electrical, aircraft use - Test methods - Part 603: Resistance to wet arc tracking

Série aérospatiale - Câbles électriques à usage aéronautique - Méthodes d'essais - Partie 603 : Résistance à l'amorçage et à la propagation d'arc électrique, essai humide

Luft- und Raumfahrt - Elektrische Leitungen für Luftfahrtverwendung - Prüfverfahren - Teil 603: Lichtbogenfestigkeit, feucht

This European Standard was approved by CEN on 21 June 2007.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

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.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 3475-603:2007: E

Contents

Foreword

This document (EN 3475-603:2007) 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 February 2008, and conflicting national standards shall be withdrawn at the latest by February 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.

This document supersedes EN 3475-603:2002.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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.

1 Scope

This standard specifies a method of assessing the behaviour of cable insulation subject to an electric arc initiated by contaminating fluid along the surface of the insulation.

This Standard shall be used together with EN 3475-100.

The primary aim of this test is to produce, in a controlled fashion the failure effects, which are representative of those, which may occur in service when a typical cable bundle is damaged and subjected to aqueous fluid contamination. Electrical arcing occurs along the surface of the insulation between damage sites on adjacent cables.

Unless otherwise specified in the technical/product standard sizes 002, 006 and 020 cable shall be assessed.

Six levels of prospective fault current have been specified for cable sizes 001 to 050.

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 2350, *Aerospace series — Circuit breakers — Technical specification.*

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.*

A-A-52083, *Tape, lacing and tying, glass.* [1)]

3 Specimen requirements

Cables to be tested shall be of traceable origin and shall have passed the high voltage dielectric test defined in the product standard.

4 Preparation of specimen

4.1 Cut seven separate lengths approximately 0,5 m consecutively from one length of cable, and strip each of the ends of insulation to permit electrical connection. Clean each length of cable with a clean cloth moistened with propan-2-ol (isopropyl alcohol) fluid.

Damage two lengths of the cable by inflicting a cut around the total circumference at the mid-point of the length, taking care to ensure that the cut penetrates to the conductor around the full circumference and has a width of 0,5 mm to 1,0 mm.

1) Published by Department of Defense Industrial Supply Center, ATTN: DISC-BBEE, 700 Robbins Avenue, Philadelphia, PA 19111-5096 – USA.

4.2 Lay up the seven cables as follows:

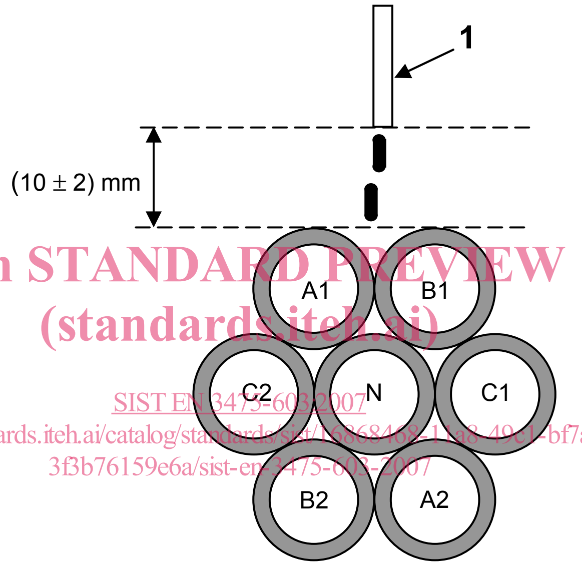
a) Form the cables in a six around one configuration as shown in Figure 1.

b) Displace the damaged cables longitudinally such that a separation of (10 ± 0,5) mm of undamaged insulation is provided as shown in Figure 2. This is called the test zone.

c) Ensure that cables are straight and geometrically parallel, and restrained by ties such that they are in continuous contact within the test zone.

d) Position the ties (4 ± 1,0) mm away from outer each notch and then at 15 mm to 20 mm spacing towards the ends of the specimen as show in Figure 2. The tie material used adjacent to the notch shall be PTFE glass lacing tape conforming to A-A-52083 type IV, finish D, size 3.

e) Number the cables as shown in Figure 1 such that the fault cables are numbers A1 and B1 and the centre is N. Cables C1, A2, B2 and C2 are grouped around N.



Key

1 Drop needle

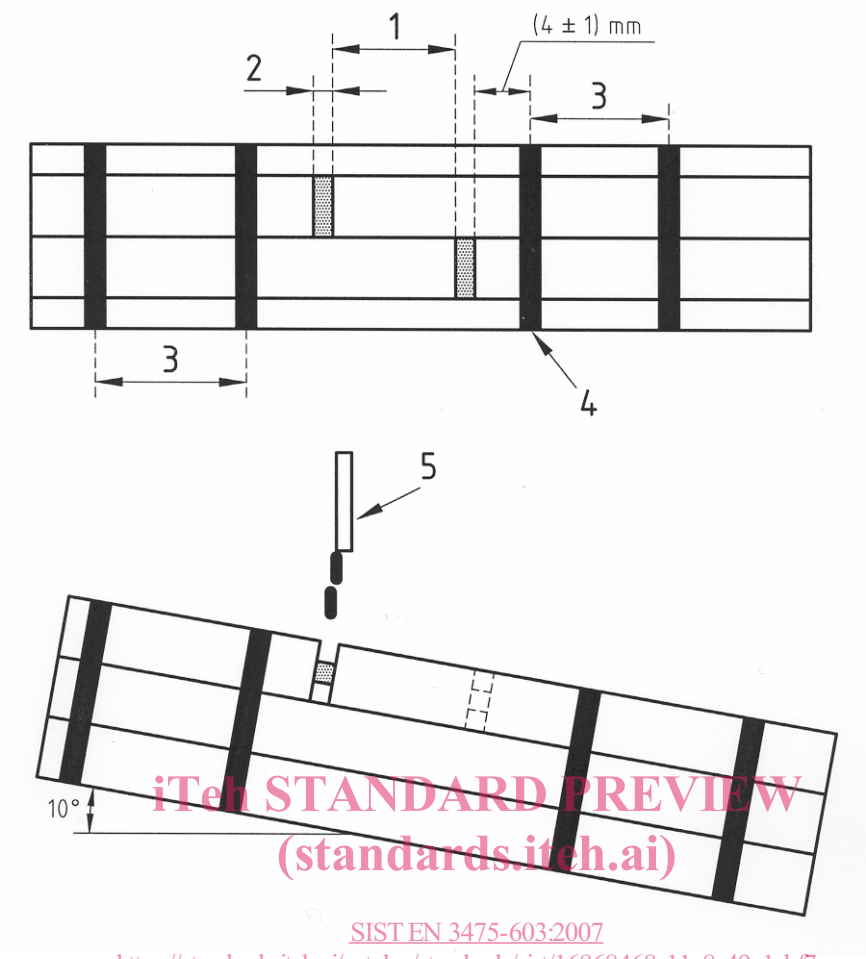
A1-A2 : Phase A

B1-B2 : Phase B

C1-C2 : Phase C

N : Neutral cable connected to earth

Figure 1 — Specimen configuration



Key

1 Test zone (10 ± 0,5) mm
2 Notch 0,5 mm to 1 mm
3 15 mm to 20 mm
4 Tape lacing
5 Drop needle

Figure 2 — Test configuration

5 Apparatus

5.1 Electrical equipment

Connect the seven cables of the test specimen within the circuit shown in Figure 3. This circuit shall have the following requirements:

a) The provision of adjustable levels of prospective fault currents for the six A, B and C cables and an electrical return path for the N cable.

b) A three phase 208/115 V 400 Hz star (Y) connected supply shall be derived from a dedicated rotary machine capable of sustaining the maximum prospective fault current given in Table 1 for at least sufficient time for the circuit protection to operate. The generator shall have a rating of 20 kVA. The (115 Ω - 115 W per phase) ballast resistors R1, are fitted in order to prevent over voltage during the arc extinction phases (opening of an inductive circuit).

c) Circuit breakers shall be single pole units rated at the values specified in Table 2. They shall have trip characteristics in accordance with EN 2350 or as required by the product specification.

NOTE In particular cases, other ratings of thermal breaker protection could be employed in accordance with aircraft rules.

d) The electrical power source shall be appropriately protected and should be established that no combination of test circuit events would activate this protection.

e) The resistors shall be non-inductive and have appropriate power rating. Care shall be taken to position all laboratory wiring such that inductive effects are reduced to a practical minimum. Supply cables shall be as short as possible.

f) Cables A, B and C shall be connected to indication and open circuit detectors (Rg) at the entry into the grounded star point. These components shall limit the standing current to no more than 10 % of the circuit breaker rating.

g) An automatic shut down facility shall be provided, which shall upon the detection of any open circuit during the test and after a 10 s delay, shutdown the flow of electrolyte and electrical power. An open circuit in this case means either a physical break in the specimen or a thermal breaker trip. The facility to override this shut down facility shall be provided so as to restore the power whilst still inhibiting the flow of electrolyte.

The physical break in the specimen is to be indicated by lamps in series with resistor Rg.

h) Appropriate instrumentation, recording and switching control shall be installed in accordance with good laboratory practice.

i) Adjust resistor Rg so that the current (I) in the circuit is 10 % of value of the circuit breaker rated current.

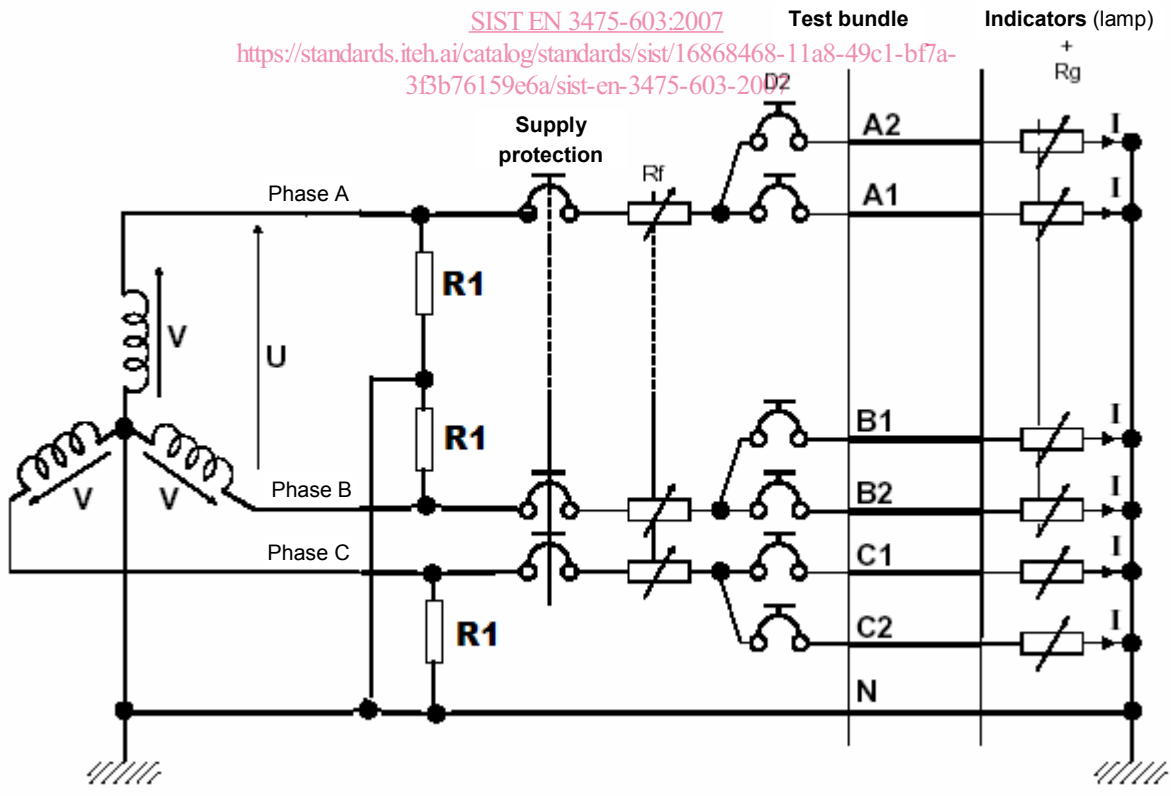


Figure 3 — Test schematic circuit