SLOVENSKI STANDARD
SIST EN 3475-514:2007

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Aeronavtika - Električni kabli za uporabo v zračnih plovilih - Preskusne metode - 514. del: Poroznost bakrene obloge na aluminijevih žicah

Aerospace series - Cables, electrical, aircraft use - Test methods - Part 514: Porosity of copper cladding on aluminium strands

Luft- und Raumfahrt - Elektrische Leitungen für Luftfahrtverwendung - Prüfverfahren - Teil 514: Porosität von Einzeldrähten aus Aluminium mit einer Kupferauflage

Série aérospatiale - Câbles électriques à usage aéronautique - Méthodes d'essais - Partie 514: Porosité d'un revetement cuivre sur des brins aluminium

Ta slovenski standard je istoveten z: **EN 3475-514:2007**

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Aerospace series - Cables, electrical, aircraft use - Test methods - Part 514: Porosity of copper cladding on aluminium strands

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 3475-514:2007) 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of an identical text or by endorsement, at the latest by February 2008, and conflicting national standards shall be withdrawn at the latest by February 2008.

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1 Scope

This standard specifies an assessment method of the copper porosity on copper clad aluminium strands with or without external coating or on Nickel or silver copper clad aluminium conductors.

It shall 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.*

ASTM B 298, *Standard specification for silver-coated soft or annealed copper wire.* [1)]

ASTM B 355, *Standard specification for nickel-coated soft or annealed copper wire.* [1)]

ASTM B 566-93, *Standard specification for copper-clad aluminum wire.* [1)]

3 Applicability

This test method is applicable to any copper-clad aluminium wire or strand, that is to say:

— applicable to any class of copper-clad aluminium wire (class as defined by ASTM B 566-93).

— applicable to:

  — a strand during its manufacturing process or before stranding;

  — a complete conductor;

  — a strand taken for a stranded conductor;

  — a strand taken from a member belonging to a rope-lay conductor.

— It is applicable to any nickel or silver-coating class (class as defined respectively by ASTM B 298 or ASTM B 355).

4 Preparation of specimens

Test specimen shall be of 2,30 ± 10 % meters length and shall not be touched with bare fingers.

The surface of the sample shall be free of oil or other contaminants. Degrease the specimen in a suitable organic solvent for at least 2 mn (such as alcohol/ether 50/50) without damaging it and dry it carefully in the air.

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1) Published by: American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, USA.

In order to limit curve stress, wrap it:

— on a mandrel of 40 mm for strands alone and then remove the mandrel, or

— around a minimum diameter of about 200 times its strand diameter for a stranded conductor.

The ends should be removed from the windings in a length of about 0,15 meter.

5 Method

NOTE This method is coming from works lead separately by the Company **FSP-one** and above all by **Drahtwerk Waidhaus GmbH** at the origin of the “equation” bubbles = troubles.

The 2 meters centre part of the specimen shall be immersed for 1 mn $\binom{+10}{0}$ s in a pure solution of hydrochloric acid which has a density of 1,088 g/cm^3 at 20 °C.

In no case the ends of the specimen must be immersed in the solution.

During the immersion the specimen shall be examined carefully with the naked eye.

If the copper is porous the hydrochloric acid solution will come in contact with the aluminium metal and, as consequence of an active reaction, bubbles will appear immediately rising from the specimen surface to the surface of the test solution.

The presence of some visible adherent bubbles on the conductor surface might already be caused by a bad handling of the samples or surface contaminant and is not enough evidence that the nickel and copper layers of the sample have been damaged down to the aluminium core.

6 Requirements

There shall be no bubbles rising from the specimen surface to the surface of the test solution.