



# SLOVENSKI STANDARD

## SIST EN 3838:2010

01-september-2010

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**Aeronavtika - Zahteve in preskusi pri označevanju električnih kablov v zračnih plovilih za uporabnike**

Aerospace series - Requirements and tests on user-applied markings on aircraft electrical cables

Luft- und Raumfahrt - Anforderungen und Prüfungen der Anwenderkennzeichnung auf elektrischen Luftfahrzeugleitungen

Série aérospatiale - Exigences et méthodes d'essais sur les marquages utilisateurs de câbles électriques aéronautiques

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**ICS:**

49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems
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EUROPEAN STANDARD

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NORME EUROPÉENNE

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## Aerospace series - Requirements and tests on user-applied markings on aircraft electrical cables

Série aérospatiale - Exigences et méthodes d'essais sur les marquages utilisateurs de câbles électriques aéronautiques

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This European Standard was approved by CEN on 5 May 2010.

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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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, 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.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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## Foreword

This document (EN 3838:2010) 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 January 2011, and conflicting national standards shall be withdrawn at the latest by January 2011.

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, Bulgaria, Croatia, 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.

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## Introduction

Durability of function-related marking of aircraft electrical cables is of great importance throughout the life of an aircraft, during initial assembly, operation and maintenance operations in service.

Markings should, therefore, be made to a sufficiently high standard to satisfy requirements initially and for the remainder of the expected life marked cable or equipment containing it.

Markings are applied by the user to the cable insulation, jacket or sheath and should not degrade the performance of the cable. They should be applied in accordance with design requirements using a process approved by the Design Authority.

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## 1 Scope

This standard specifies tests that should be performed on markings applied by the user to ensure that their durability is satisfactory and that, after application of markings directly to the cable insulation, jacket or sheath, the cable will meet the performance requirements laid down.

## 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*

EN 3475-201, *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 201: Visual examination*

EN 3475-302:2006, *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 302: Voltage proof test*

EN 3475-401:2002, *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 401: Accelerated ageing*

EN 3475-405:2002, *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 405: Bending at ambient temperature*

EN 3475-411, *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 411: Resistance to fluids*

EN 3475-703:2002, *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 703: Permanence of manufacturer's marking*

EN 3475-705, *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 705: Contrast measurement*

EN ISO 4892-3:2006, *Plastics — Methods of exposure to laboratory light sources — Part 3: Fluorescent UV lamps (ISO 4892-3:2006)*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply. For other definitions see EN 3475-100.

### 3.1 marking

identification mark applied directly to the cable insulation, jacket or sheath by any process that meets the requirements of this standard

NOTE The markings should be in accordance with the design requirements.

### 3.2 aggressive marking system

marking which can deform or damage the insulating layer of a cable

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NOTE Hot-stamp is defined as such a method. Other methods of marking may be defined as aggressive by the Official Services.

**4 Qualification tests****4.1 Tests**

The tests in Table 1 shall be performed at the introduction of the marking process, at every change in technology or processing technique affecting the cable insulation, jacket or sheath or as required by the Official Services.

Tests shall be performed on the sizes for qualification defined in the cable specification for each colour, material and construction of cable, jacket and sheath which will be directly marked.

Before the tests defined in Table 1 are performed on specimens of user marked cable, ensure that the specimens have been subjected to any post marking curing which is normal for the defined marking process.

**Table 1**

<b>Title</b>	<b>Subclause</b>
Visual examination of markings	6.1
Permanence of markings	6.2
Resistance to fluids	6.3
Heat ageing	6.4
Exposure to light	6.5
Marking contrast	6.6
Bending at ambient temperature	6.7

**4.2 Test sequence**

The number of specimens for each test and the sequence of testing shall be as laid down in Table 2.

Each specimen shall be taken sequentially from a continuous length of cable.



Table 2

Group	Number of specimens	Tests	
		Title	Subclause
1	5	Visual examination of markings	6.1
		Marking contrast	6.6
		Permanence of markings	6.2
2	1 per fluid	Visual examination of markings	6.1
		Resistance to fluids	6.3
		Marking contrast	6.6
3	3	Visual examination of markings	6.1
		Heat ageing	6.4
		Marking contrast	6.6
4	3	Visual examination of markings	6.1
		Exposure to light	6.5
		Visual examination of markings	6.1
5 <sup>a</sup>	3	Visual examination of markings	6.1
		Bending at ambient temperature	6.7

<sup>a</sup> Group 5 tests only performed on markings made by aggressive marking systems.

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## 5 Acceptance tests

The tests in Table 3 shall be performed on each production batch of markings. Visual examination shall be made on specimens taken each time production is started (e.g. at start of day or shift), at the beginning and end of each production run and at intervals not exceeding 10 000 m for single core cables and 800 m for multicore and screened cables.

Table 3

Title	Subclause	Applicable
Visual examination of markings	6.1	All marking systems
Voltage test	6.8 6.8.4.1 or 6.8.4.2 continuously	Tests on aggressive marking systems