Aerospace series - Cables, electrical, aircraft use - Test methods - Part 705: Contrast measurement

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 3475-705:2022 sisaldab Euroopa standardi EN 3475-705:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 3475-705:2022 consists of the English text of the European standard EN 3475-705:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 09.02.2022.	Date of Availability of the European standard is 09.02.2022.
Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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Aerospace series - Cables, electrical, aircraft use - Test methods - Part 705: Contrast measurement

Série aérospatiale - Câbles électriques à usage aéronautique - Méthodes d'essais - Partie 705: Mesure de contraste

Luft- und Raumfahrt - Elektrische Leitungen für Luftfahrtverwendung - Prüfverfahren - Teil 705: Kontrastmessung

This European Standard was approved by CEN on 8 November 2021.

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

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European foreword

This document (EN 3475-705:2022) 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 document has received the approval of the National Associations and the Official Services of the member countries of ASD-STAN, prior to its presentation to CEN.

This document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2022, and conflicting national standards shall be withdrawn at the latest by August 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

[This document supersedes EN 3475-705:2005.]

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this document: 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

It is a requirement within the aerospace industry that all wires and cables within an aircraft electrical system are identified with a circuit identification code at regular intervals down the length of the wire. Various marking methods are used for marking these identification codes on to the surface of electrical wires or cables including ink-based and laser-based processes. The legibility of the markings is dependent upon the process used and the insulation medium. Minimum standards of contrast are required to facilitate reading back of the identity codes.

NOTE It has been reported that there are instances where the contrast of marks on tape wrap wires is non-uniform and can cause problems in the contrast measurement process which might lead to a non-conformance. Care needs to be taken in such cases to establish a good average value of the contrast. This issue will be assessed in the next revision of the document.

1 Scope

This document specifies the process to be applied for measuring the contrast of wire and cable identification markings against the background of the unmarked wire insulation. It has been developed primarily to define a reproducible process of contrast value determination for use both to determine the intrinsic laser markability of wires at the time of manufacture or later, and to enable electrical wiring systems manufacturers to ensure that the whole process of wire marking is carried out to the required standard.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 3475-706, *Aerospace series - Cables, electrical, aircraft use - Test methods - Part 706: Laser markability*

EN 4650, *Aerospace series — Wire and cable marking process, UV Laser*

CIE 15, *Colorimetry*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at https://www.iso.org/obp
- IEC Electropedia: available at https://www.electropedia.org/

3.1
contrast
ratio of the difference in luminance between the marked and unmarked areas of the insulation divided by the luminance of the unmarked insulation

3.2
luminance
quantitative measurement of the visible light reflected from a surface, in this case the wire or cable insulation

3.3
laser
acronym for Light Amplification by the Stimulated Emission of Radiation

Note 1 to entry: Lasers are a source of intense monochromatic light in the ultraviolet, visible or infrared region of the spectrum.

3.4
ultraviolet
UV
electromagnetic radiation in a wavelength range from approximately 200 nm to 400 nm