SLOVENSKI STANDARD

SIST EN 3745-705:2008

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Aeronavtika - Optiļ na vlakna in kabli za uporabo v zraļ nih plovilih - Preskusne metode - 705. del: Meritev kontrasta

Aerospace series - Fibres and cables, optical, aircraft use - Test methods - Part 705: Contrast measurement

Luft- und Raumfahrt - Faseroptische Leitungen für Luftfahrzeuge - Prüfverfahren - Teil 705: Kontrastmessung

Série aérospatiale - Fibres et câbles optiques à usage aéronautique - Méthodes d'essais - Partie 705 : Mesure de contraste

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 3745-705:2007) 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of an identical text or by endorsement, at the latest by June 2008, and conflicting national standards shall be withdrawn at the latest by June 2008.

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1 Scope

This standard specifies the process to be applied for measuring different colour densities of cable identification markings. It is designed to define a reproducible process of contrast value determination.

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.

ISO 7724-1, *Paints and varnishes — Colorimetry — Part 1: Principles*

CIE 15, *Colorimetry* [1)]

3 Terms and definitions

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

3.1
contrast
ratio of reflecting light (here: reflecting light of cable identification marking and cable surface)

3.2
illuminance
reflection of visible light

3.3
measuring range
maximum effective range of measurement

4 Preparation of samples

The cable samples shall be identified in compliance with applicable manufacturing instruction using the power density specified in the technical specification. The surfaces of the cable samples shall be clean and without damage.

The identification markings to be measured shall even be in colour and shall have sharply defined marking edges i.e. marks are correctly focussed.

Before starting measurements clean the surfaces with a soft, lint-free cloth to avoid distortion of test results by a roughened surface or "deposits".

1) Published by CIE Central Bureau - Kegelgasse 27 - A-1030 Wien - Austria.

5 Test equipment

5.1 Components of the measuring device

The measuring device comprises a photometer, lighting equipment and a cable handling device. The whole set-up shall be designed to ensure that test results are not falsified by external influences. The photometer installation shall be stable and free from vibrations, and influences by external light and reflections from scattered light shall be excluded.

5.2 Equipment colour

The device for handling cable samples and accessories shall be designed in matt black colour to absorb scattered light.

5.3 Illuminance

Illuminance shall be determined with a calibrated electrical photometer. The manufacturer instructions concerning the measuring probe work range and operating instructions shall be observed. Measuring sensitivity of the photometer shall be in conformity with CIE-publication 15.

5.4 Diameter of measuring spot

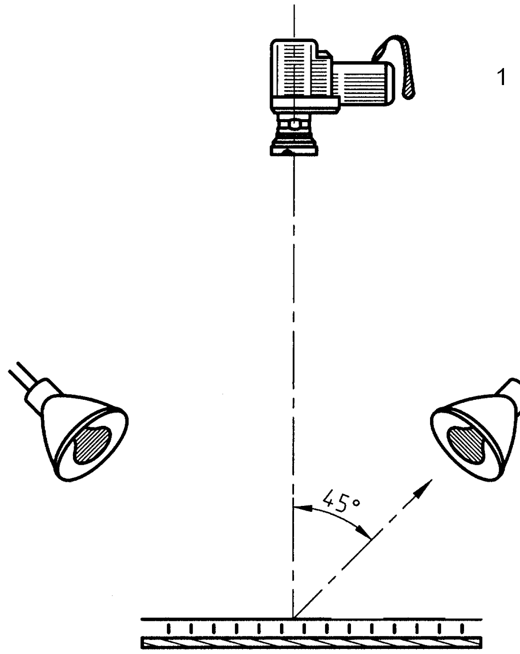
The admissible diameter of the measuring spot shall not exceed 75 % of the marking size (X and Y dimension). Measuring tolerance of the photometer shall be < 2 %.

5.5 Calibration

The photometer shall be calibrated by the manufacturer. The frequency of the calibrate-cycle depends on the guidelines of the equipment manufacturer.

5.6 Lighting equipment

The lighting equipment (see Figure 1) consists of two sources of light. The lamps illuminate a centred spot on the cable surface under an angle of 45°. The photometer is installed above the principal focus at a distance which depends on the objective's focal distance. It shall be adjusted before starting measurements and after every change of objective. The light cones shall illuminate the cable in longitudinal direction to avoid the formation of shadows.



Key

1 Photometer

2 Source of light

3 Marked cable

Figure 1 — Lighting equipment

Both sources of light shall be of identical power consumption. The lamps shall always be exchanged in pairs. Radiating light energy and colour temperature of the lamps shall be compatible with the work range of the photometer (see manufacturer instructions). Spectral distribution of light data shall be close to artificial light specifications according to light standard A, ISO 7724-1. Only gas-filled lamps with tungsten filaments shall be used. The colour temperature shall be (3 000 ± 500) K.

Voltage supply for the lamps shall be insensitive to line fluctuations. Stabilized d.c. power unit shall be used.

6 Process

6.1 Precaution measures

To prevent a heating up of test samples, measurement shall be taken rapidly. If necessary, remove the test samples from the handling device for cooling down and repeat measurements.

6.2 Picture definition

Adjust the picture definition to the cable identification marking surface. Measurement shall be taken vertically at a centre of the markings to be measured. Contrast measurements shall not be performed in areas with manufacturer identification, overlapping tapes, or cable surface irregularities.

6.3 Calculation of contrast value

Determination of a cable identification marking contrast value is done by calculating the average value of four contrast measurements taken according to 6.4.