



SLOVENSKI STANDARD
SIST EN 3745-405:2012

01-oktober-2012

Aeronavtika - Optična vlakna in kabli za uporabo v zračnih plovilih - Preskusne metode - 405. del: Upogibni preskus pri nizkih/visokih temperaturah

Aerospace series - Fibres and cables, optical, aircraft use - Test methods - Part 405: Low/High temperature bend test

Luft- und Raumfahrt - Faseroptische Leitungen für Luftfahrzeuge - Prüfverfahren - Teil 405: Biegeprüfung bei niedriger/hoher Temperatur

Série aérospatiale - Fibres et câbles optiques à usage aéronautique - Méthodes d'essais - Partie 405: Essai de courbure aux températures basse/haute

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Ta slovenski standard je istoveten z: EN 3745-405:2012

ICS:

49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems
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SIST EN 3745-405:2012

en,de

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EUROPEAN STANDARD

EN 3745-405

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2012

ICS 49.090

English Version

Aerospace series - Fibres and cables, optical, aircraft use - Test methods - Part 405: Low/High temperature bend test

Série aérospatiale - Fibres et câbles optiques à usage
aéronautique - Méthodes d'essais - Partie 405: Essai de
courbure aux températures basse/haute

Luft- und Raumfahrt - Faseroptische Leitungen für
Luftfahrzeuge - Prüfverfahren - Teil 405: Biegeprüfung bei
niedriger/hoher Temperatur

This European Standard was approved by CEN on 23 March 2012.

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-CENELEC 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-CENELEC 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 3745-405:2012) 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 2013, and conflicting national standards shall be withdrawn at the latest by January 2013.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 3745-405:2012 (E)

1 Scope

This European Standard specifies a method of determining the attenuation variation of an optical cable during mechanical bending under load at the maximum and minimum operating temperatures.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2591-100, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 100: General*

EN 3745-100, *Aerospace series — Fibres and cables, optical, aircraft use — Test methods — Part 100: General*

EN 3745-201, *Aerospace series — Fibres and cables, optical, aircraft use — Test methods — Part 201: Visual examination*

EN 3745-301, *Aerospace series — Fibres and cables, optical, aircraft use — Test methods — Part 301: Attenuation*

3 Preparation of specimens

3.1 If not at the standard test conditions, the specimens shall be subjected to standard test conditions and stabilized at these conditions for 24 h as defined in EN 3745-100.

3.2 The following details shall be specified if not already included in the product standard:

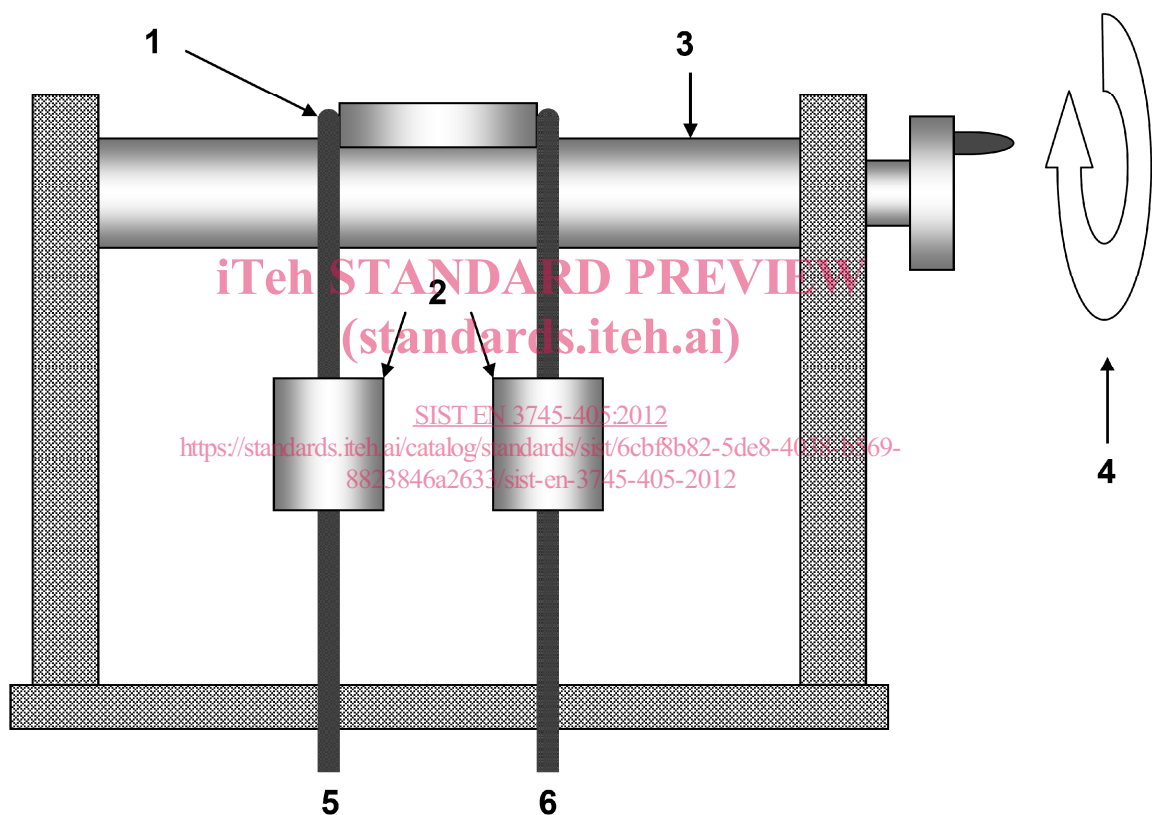
- The number and length of specimens;
- The upper and lower temperatures at which test is carried out;
- The mandrel diameter and number of wraps;
- The maximum permissible variation in attenuation;
- The required loads to be applied during the test;
- The wavelengths to be measured.

4 Apparatus

4.1 The apparatus shall comprise:

- A Light Launch System (LLS) as defined in EN 2591-100;
- A Light Detection System (LDS) as defined in EN 2591-100;
- A test fixture suitable for attaching the specimen with weights to a rotating mandrel;
- A suitable environmental chamber capable of meeting the specified temperatures ± 2 °C.

A typical arrangement is shown in Figure 1.



Key

- 1 Fibre optic cable
- 2 Loads
- 3 Mandrel
- 4 Winding direction
- 5 LLS
- 6 LDS

Figure 1

EN 3745-405:2012 (E)**5 Method****5.1 Procedure**

- 1) Connect the specimen to the LLS and LDS.
- 2) Place specimen in the environmental chamber and attach the specimen to the mandrel, in preparation for winding.
- 3) Attach loads to source and detection end of cable.
- 4) Measure the initial optical transmittance measurements at wavelengths according to the applicable product standard to establish a reference.
- 5) Condition the specimen for four (4) hours at the low temperature test condition specified in the applicable product standard.
- 6) Measure the optical transmittance values at the end of the four (4) hours conditioning at the low temperature test condition prior to winding on the mandrel.
- 7) After the four (4) hours conditioning period and while the cable is still at the test temperature, wind cable two turns on to the mandrel using a steady rate of two turns per minute. While specimen is still wrapped on the mandrel measure the optical transmittance.
- 8) Unwind the specimen and measure the optical transmittance.
- 9) Allow the specimen to come to room temperature.
- 10) Repeat steps 5) through to 9) at the high temperature test condition specified in the applicable product standard.

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5.2 Final measurements and requirements

The difference in attenuation of the conditioned specimen before and after mandrel winding at both temperatures shall be less than the specified value in the applicable product standard.

Perform a visual examination according to EN 3745-201.