



# SLOVENSKI STANDARD

## SIST EN 3745-516:2012

01-oktober-2012

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**Aeronavtika - Optična vlakna in kabli za uporabo v zračnih plovilih - Preskusne metode - 516. del: Upogibni preskus kabla**

Aerospace series - Fibres and cables, optical, aircraft use - Test methods - Part 516: Severe cable bend test

Luft- und Raumfahrt - Faseroptische Leitungen für Luftfahrzeuge - Prüfverfahren - Teil 516: Kabelbiegeprüfung

Série aérospatiale - Fibres et câbles optiques à usage aéronautique - Méthodes d'essais - Partie 516 : Essai de courbure sévère

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**Ta slovenski standard je istoveten z: EN 3745-516:2012**

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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  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 3745-516**

July 2012

ICS 49.090

English Version

**Aerospace series - Fibres and cables, optical, aircraft use - Test  
methods - Part 516: Severe cable bend test**

Série aérospatiale - Fibres et câbles optiques à usage  
aéronautique - Méthodes d'essais - Partie 516: Essai de  
courbure sévère

Luft- und Raumfahrt - Faseroptische Leitungen für  
Luftfahrzeuge - Prüfverfahren - Teil 516: Schwere  
Kabelbiegeprüfung

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

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

<b>Contents</b>		<b>Page</b>
Foreword.....		<b>3</b>
<b>1</b> <b>Scope</b> .....		<b>4</b>
<b>2</b> <b>Normative references</b> .....		<b>4</b>
<b>3</b> <b>Preparation of specimens</b> .....		<b>4</b>
<b>4</b> <b>Apparatus</b> .....		<b>4</b>
<b>5</b> <b>Method</b> .....		<b>6</b>

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## Foreword

This document (EN 3745-516:2012) 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 organisations 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 3745-516:2012 (E)****1 Scope**

This European Standard specifies a method of checking the break resistance and attenuation variation recovery of an optical cable subjected to severe bending under load.

**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**

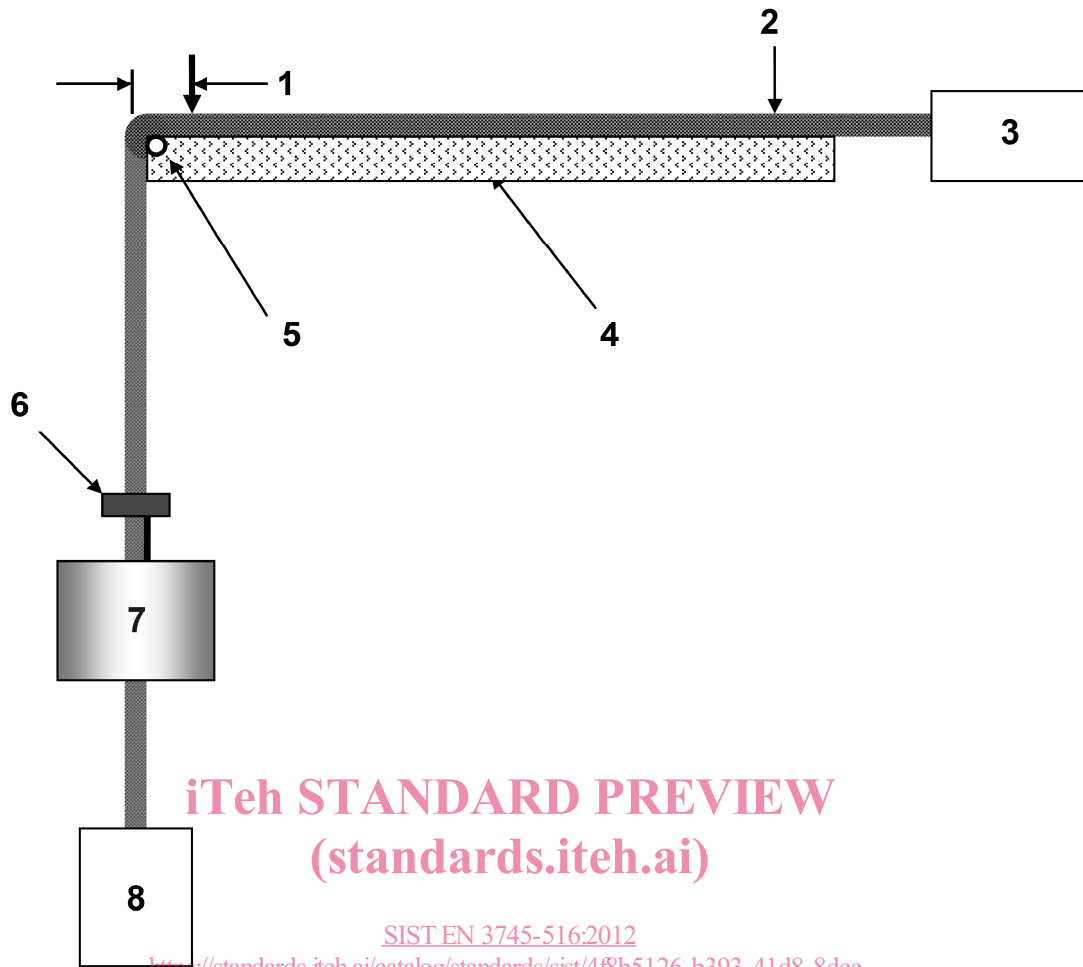
**3.1** If not yet at standard test conditions, the specimens shall be subjected to standard test conditions and stabilized at these conditions for 24 h as defined in EN 2591-100.

- Type and length of fibre or cable.
- Load mass  $M$  to be applied to ensure contact between the cable and the edge of the metal bar.
- Radius(s)  $R$  of the bending edge.
- Number of turns  $N$  to rotate the cable  $180^\circ$  after each bend test.

**4 Apparatus**

- A Light Launch System (LLS) as defined in EN 2591-100.
- A Light Detection System (LDS) as defined in EN 2591-100.
- A flat metal bar with radius edge and loads required by the applicable product standard.

A typical arrangement is shown in Figure 1.



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#### Key

- 1 Extra restraining clamp ( $25,4 \pm 1,3$ ) mm
- 2 Fibre optic cable
- 3 LLS
- 4 10 mm to 20 mm thick flat metal bar with radius edge  $R$
- 5 Typical radius  $R = (127 \pm 25,4)$   $\mu\text{m}$
- 6 Clamp
- 7 Load
- 8 LDS

Figure 1

**EN 3745-516:2012 (E)****5 Method****5.1 Procedure**

- a) Connect the specimen to the LLS and LDS.
- b) Attach the load mass (M) to the specimen as specified in the applicable product standard prior to mounting the specimen on the bend fixture.
- c) Zero the LDS to establish a reference measurement.
- d) Mount the specimen on the bend fixture and gently apply the load to the specimen.
- e) After one (1) minute, measure the attenuation variation (EN 3745-301, method C) to ensure no fiber breakage.
- f) Remove the load from the cable and rotate the cable 180°.
- g) Repeat steps d) through f) for the number of rotations required by the applicable product standard.
- h) Straighten specimen and measure the attenuation variation after one (1) minute.

**5.2 Final measurements and requirements**

Measure the residual attenuation variation (EN 3745-301, method C) after removing the specimen from the test fixture to ensure no fiber breakage.

Perform a visual examination according to EN 3745-201.

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