



**SLOVENSKI STANDARD
SIST EN 60793-1-42:2007**

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Optical fibres - Part 1-42: Measurement methods and test procedures - Chromatic dispersion (IEC 60793-1-42:2007 (EQV) + corrigendum Jun. 2007)

Lichtwellenleiter - Teil 1-42: Messmethoden und Prüfverfahren - Chromatische Dispersion (IEC 60793-1-42:2007 (EQV) + corrigendum Jun. 2007)

Fibres optiques - Partie 1-42: Méthodes de mesure et procédures d'essai - Dispersion chromatique (IEC 60793-1-42:2007 (EQV) + corrigendum Jun. 2007)

Ta slovenski standard je istoveten z: EN 60793-1-42:2007

ICS:

33.180.10 Q] c̄ } æD̄|æ } æÁ Á æ|ã Fibres and cables

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English version

**Optical fibres -
Part 1-42: Measurement methods and test procedures -
Chromatic dispersion**
(IEC 60793-1-42:2007 + corrigendum 2007)

Fibres optiques -
Partie 1-42: Méthodes de mesure
et procédures d'essai -
Dispersion chromatique
(CEI 60793-1-42:2007 +
corrigendum 2007)

Lichtwellenleiter -
Teil 1-42: Messmethoden
und Prüfverfahren -
Chromatische Dispersion
(IEC 60793-1-42:2007 +
Corrigendum 2007)

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This European Standard was approved by CENELEC on 2007-05-01. CENELEC 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 Central Secretariat or to any CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 86A/1136/FDIS, future edition 2 of IEC 60793-1-42, prepared by SC 86A, Fibres and cables, of IEC TC 86, Fibre optics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60793-1-42 on 2007-05-01.

This European Standard supersedes EN 60793-1-42:2002.

The main changes in EN 60793-1-42:2007 concern the addition of a new Annex E on chromatic dispersion fitting and the applicability to A4 fibres.

This standard is to be used in conjunction with EN 60793-1-1.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2008-02-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2010-05-01

Annex ZA has been added by CENELEC.

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Endorsement notice
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The text of the International Standard IEC 60793-1-42:2007 and its corrigendum June 2007 was approved by CENELEC as a European Standard without any modification.

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Annex ZA
(normative)

**Normative references to international publications
with their corresponding European publications**

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60793-1-1	2002	Optical fibres - Part 1-1: Measurement methods and test procedures - General and guidance	EN 60793-1-1	2003
IEC 60793-1-41	- ¹⁾	Optical fibres - Part 1-41: Measurement methods and test procedures - Bandwidth	EN 60793-1-41	2003 ²⁾

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¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

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INTERNATIONAL
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IEC
CEI

NORME
INTERNATIONALE

60793-1-42

Second edition
Deuxième édition
2007-04

Optical fibres –

Part 1-42:

Measurement methods and test procedures –
Chromatic dispersion

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Fibres optiques –
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Partie 1-42: EN 60793-1-42:2007

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Methodes de mesure et procédures d'essai –
Dispersion chromatique



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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For price, see current catalogue
Pour prix, voir catalogue en vigueur

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL FIBRES –

**Part 1-42: Measurement methods and test procedures –
Chromatic dispersion**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60793-1-42 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition published in 2001. It constitutes a technical revision. The main changes in this second edition concern the addition of a new Annex E on chromatic dispersion fitting and the applicability to A4 fibres.

This bilingual version replaces the monolingual version (2007) and its corrigendum (2007).

This standard is to be read in conjunction with IEC 60793-1.

The text of this standard is based on the following documents:

FDIS	Report on voting
86A/1136/FDIS	86A/1146/RVD

Full information on the voting for the approval of this part can be found in the report on voting indicated in the above table.

The French version of this standard has not been voted upon.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The list of all parts of the IEC 60793 series, under the general title *Optical fibres*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

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OPTICAL FIBRES –

Part 1-42: Measurement methods and test procedures – Chromatic dispersion

1 Scope

This part of IEC 60793 establishes uniform requirements for measuring the chromatic dispersion of optical fibre, thereby assisting in the inspection of fibres and cables for commercial purposes.

Chromatic dispersion varies with wavelength. Some methods and implementations measure the group delay as a function of wavelength and the chromatic dispersion and dispersion slope are deduced from the derivatives (with respect to wavelength) of this data. This differentiation is most often done after the data are fitted to a mathematical model. Other implementations can allow direct measurement (of the chromatic dispersion) at each of the required wavelengths.

For some categories of fibre, the chromatic dispersion attributes are specified with the parameters of a specific model. In these cases, the relevant recommendation or standard defines the model appropriate for the definition of the specified parameters. For other fibre categories, the dispersion is specified to be within a given range for one or more specified wavelength intervals. In the latter case, either direct measurements may be made at the wavelength extremes or some fitting model may be used to allow either group delay measurement methods or implementations or storage of a reduced set of parameters that may be used to calculate the interpolated dispersion for particular wavelengths which may not have actual direct measurement values.

Annex E gives a general description of chromatic dispersion fitting and outlines a number of fitting equations suitable for use with any of the measurement methods or fibre categories.

This standard gives four methods for measuring chromatic dispersion:

- method A: phase shift;
- method B: spectral group delay in the time domain;
- method C: differential phase shift;
- method D: interferometry.

Methods A, B, and C apply to the measurement of chromatic dispersion of the following fibres over a specified wavelength range:

- class A1 graded-index multimode fibres;
- category A4f, A4g and A4h multimode fibres;
- class B single-mode fibres (all categories).

Method D applies to the measurement of chromatic dispersion values of single-mode fibres categories B1, B2, B4 and B5 over the 1 000 nm to 1 700 nm wavelength range.

The methods can be applied to laboratory, factory and field measurements of chromatic dispersion, and the wavelength range of the measurements can be tailored as required. Measurements are made at temperature as stated in IEC 60793-1-1, Table 1 – Standard range of atmospheric conditions (Temperature $23\text{ °C} \pm 5\text{ °C}$).