

Optical fibres - Measurement methods and test procedures -- Part 1-1: General and guidance

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 60793-1-1:2008 sisaldab Euroopa standardi EN 60793-1-1:2008 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 20.10.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 29.08.2008.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 60793-1-1:2008 consists of the English text of the European standard EN 60793-1-1:2008.

This standard is ratified with the order of Estonian Centre for Standardisation dated 20.10.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 29.08.2008.

The standard is available from Estonian standardisation organisation.

ICS 33.180.10

Võtmesõnad:

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
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English version

**Optical fibres -
Part 1-1: Measurement methods and test procedures -
General and guidance
(IEC 60793-1-1:2008)**

Fibres optiques -
Partie 1-1: Méthodes de mesure
et procédures d'essai -
Généralités et guide
(CEI 60793-1-1:2008)

Lichtwellenleiter -
Teil 1-1: Mess- und Prüfverfahren -
Allgemeines und Leitfaden
(IEC 60793-1-1:2008)

This European Standard was approved by CENELEC on 2008-07-01. 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/1127/CDV, future edition 3 of IEC 60793-1-1, prepared by SC 86A, Fibres and cables, of IEC TC 86, Fibre optics, was submitted to the IEC-CENELEC parallel Unique Acceptance Procedure and was approved by CENELEC as EN 60793-1-1 on 2008-07-01.

This European Standard supersedes EN 60793-1-1:2003.

The main changes with regard to EN 60793-1-1:2003 concern:

- re-wording of Clause 8: Categories of optical fibres;
- removal of Clause 10: Cross-reference of former test designations to current documents;
- removal of the bibliography.

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) | 2009-04-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2011-07-01 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60793-1-1:2008 was approved by CENELEC as a European Standard without any modification.

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 (mod)	Series	Optical fibres	EN 60793	Series
IEC 60793-1-20	- ¹⁾	Optical fibres - Part 1-20: Measurement methods and test procedures - Fibre geometry	EN 60793-1-20	2002 ²⁾
IEC 60793-1-21	- ¹⁾	Optical fibres - Part 1-21: Measurement methods and test procedures - Coating geometry	EN 60793-1-21	2002 ²⁾
IEC 60793-1-22	- ¹⁾	Optical fibres - Part 1-22: Measurement methods and test procedures - Length measurement	EN 60793-1-22	2002 ²⁾
IEC 60793-1-30	- ¹⁾	Optical fibres - Part 1-30: Measurement methods and test procedures - Fibre proof test	EN 60793-1-30	2002 ²⁾
IEC 60793-1-31	- ¹⁾	Optical fibres - Part 1-31: Measurement methods and test procedures - Tensile strength	EN 60793-1-31	2002 ²⁾
IEC 60793-1-32 (mod)	- ¹⁾	Optical fibres - Part 1-32: Measurement methods and test procedures - Coating strippability	EN 60793-1-32	2003 ²⁾
IEC 60793-1-33	- ¹⁾	Optical fibres - Part 1-33: Measurement methods and test procedures - Stress corrosion susceptibility	EN 60793-1-33	2002 ²⁾
IEC 60793-1-34	- ¹⁾	Optical fibres - Part 1-34: Measurement methods and test procedures - Fibre curl	EN 60793-1-34	2006 ²⁾
IEC 60793-1-40 (mod)	- ¹⁾	Optical fibres - Part 1-40: Measurement methods and test procedures - Attenuation	EN 60793-1-40	2003 ²⁾
IEC 60793-1-41	- ¹⁾	Optical fibres - Part 1-41: Measurement methods and test procedures - Bandwidth	EN 60793-1-41	2003 ²⁾
IEC 60793-1-42	- ¹⁾	Optical fibres - Part 1-42: Measurement methods and test procedures - Chromatic dispersion	EN 60793-1-42	2007 ²⁾

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60793-1-43	- ¹⁾	Optical fibres - Part 1-43: Measurement methods and test procedures - Numerical aperture	EN 60793-1-43	2002 ²⁾
IEC 60793-1-44	- ¹⁾	Optical fibres - Part 1-44: Measurement methods and test procedures - Cut-off wavelength	EN 60793-1-44	2002 ²⁾
IEC 60793-1-45 (mod)	- ¹⁾	Optical fibres - Part 1-45: Measurement methods and test procedures - Mode field diameter	EN 60793-1-45 + corr. April	2003 ²⁾ 2004
IEC 60793-1-46	- ¹⁾	Optical fibres - Part 1-46: Measurement methods and test procedures - Monitoring of changes in optical transmittance	EN 60793-1-46	2002 ²⁾
IEC 60793-1-47	- ¹⁾	Optical fibres - Part 1-47: Measurement methods and test procedures - Macrobending loss	EN 60793-1-47	2007 ²⁾
IEC 60793-1-48	- ¹⁾	Optical fibres - Part 1-48: Measurement methods and test procedures - Polarization mode dispersion	EN 60793-1-48	2007 ²⁾
IEC 60793-1-49	- ¹⁾	Optical fibres - Part 1-49: Measurement methods and test procedures - Differential mode delay	EN 60793-1-49	2006 ²⁾
IEC 60793-1-50	- ¹⁾	Optical fibres - Part 1-50: Measurement methods and test procedures - Damp heat (steady state)	EN 60793-1-50	2002 ²⁾
IEC 60793-1-51	- ¹⁾	Optical fibres - Part 1-51: Measurement methods and test procedures - Dry heat	EN 60793-1-51	2002 ²⁾
IEC 60793-1-52	- ¹⁾	Optical fibres - Part 1-52: Measurement methods and test procedures - Change of temperature	EN 60793-1-52	2002 ²⁾
IEC 60793-1-53	- ¹⁾	Optical fibres - Part 1-53: Measurement methods and test procedures - Water immersion	EN 60793-1-53	2002 ²⁾
IEC 60793-1-54	- ¹⁾	Optical fibres - Part 1-54: Measurement methods and test procedures - Gamma irradiation	EN 60793-1-54	2003 ²⁾
IEC 60793-2	- ¹⁾	Optical fibres - Part 2: Product specifications - General	EN 60793-2	2008 ²⁾
IEC/TR 61931	1998	Fibre optic - Terminology	-	-

CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope and object.....	6
2 Normative references	6
3 Terms and definitions	7
4 Measurement and test categories	7
5 Standard atmospheric measurement and test conditions	9
6 Calibration guidance.....	9
7 Reference test methods.....	10
8 Categories of optical fibres	10
9 Packaging	10
Table 1 – Standard range of atmospheric conditions	9

INTRODUCTION

Publications in the IEC 60793-1 series concern measurement methods and test procedures as they apply to optical fibres.

Within the same series, several different areas are grouped, as follows:

- Parts 1-10 to 1-19: General
- Parts 1-20 to 1-29: Measurement methods and test procedures for dimensions
- Parts 1-30 to 1-39: Measurement methods and test procedures for mechanical characteristics
- Parts 1-40 to 1-49: Measurement methods and test procedures for transmission and optical characteristics
- Parts 1-50 to 1-59: Measurement methods and test procedures for environmental characteristics.

OPTICAL FIBRES –

Part 1-1: Measurement methods and test procedures – General and guidance

1 Scope and object

This part of IEC 60793 lists and gives guidance on the use of documents giving the uniform requirements for measuring and testing optical fibres, thereby assisting in the inspection of fibres and cables for commercial (mostly telecommunications) purposes.

The individual measurement and test methods are contained in the different parts of the IEC 60793 series. They are identified as IEC 60793-1-X, where "X" is an assigned sub-part number, indicating its affiliation to IEC 60793-1.

In general, measurements and tests methods apply to all class A multimode fibres and Class B single-mode optical fibres covered by the IEC 60793-2 series, although there may be exceptions. Clause 1 of each part of IEC 60793 contains the scope for each particular attribute.

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.

IEC 60793 (all parts), *Optical fibres*

IEC 60793-1-20, *Optical fibres – Part 1-20: Measurement methods and test procedures – Fibre geometry*

IEC 60793-1-21, *Optical fibres – Part 1-21: Measurement methods and test procedures – Coating geometry*

IEC 60793-1-22, *Optical fibres – Part 1-22: Measurement methods and test procedures – Length measurement*

IEC 60793-1-30, *Optical fibres – Part 1-30: Measurement methods and test procedures – Fibre proof test*

IEC 60793-1-31, *Optical fibres – Part 1-31: Measurement methods and test procedures – Tensile strength*

IEC 60793-1-32, *Optical fibres – Part 1-32: Measurement methods and test procedures – Coating strippability*

IEC 60793-1-33, *Optical fibres – Part 1-33: Measurement methods and test procedures – Stress corrosion susceptibility*

IEC 60793-1-34, *Optical fibres – Part 1-34: Measurement methods and test procedures – Fibre curl*

IEC 60793-1-40, *Optical fibres – Part 1-40: Measurement methods and test procedures – Attenuation*

IEC 60793-1-41, *Optical fibres – Part 1-41: Measurement methods and test procedures – Bandwidth*

IEC 60793-1-42, *Optical fibres – Part 1-42: Measurement methods and test procedures – Chromatic dispersion*

IEC 60793-1-43, *Optical fibres – Part 1-43: Measurement methods and test procedures – Numerical aperture*

IEC 60793-1-44, *Optical fibres – Part 1-44: Measurement methods and test procedures – Cut-off wavelength*

IEC 60793-1-45, *Optical fibres – Part 1-45: Measurement methods and test procedures – Mode field diameter*

IEC 60793-1-46, *Optical fibres – Part 1-46: Measurement methods and test procedures – Monitoring of changes in optical transmittance*

IEC 60793-1-47, *Optical fibres – Part 1-47: Measurement methods and test procedures – Macrobending loss*

IEC 60793-1-48, *Optical fibres – Part 1-48: Measurement methods and test procedures – Polarization mode dispersion*

IEC 60793-1-49, *Optical fibres – Part 1-49: Measurement methods and test procedures – Differential mode delay*

IEC 60793-1-50, *Optical fibres – Part 1-50: Measurement methods and test procedures – Damp heat (steady state)*

IEC 60793-1-51, *Optical fibres – Part 1-51: Measurement methods and test procedures – Dry heat*

IEC 60793-1-52, *Optical fibres – Part 1-52: Measurement methods and test procedures – Change of temperature*

IEC 60793-1-53, *Optical fibres – Part 1-53: Measurement methods and test procedures – Water immersion*

IEC 60793-1-54, *Optical fibres – Part 1-54: Measurement methods and test procedures – Gamma irradiation*

IEC 60793-2, *Optical fibres – Product specifications– General*

IEC 61931:1998, *Fibre optic – Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions of IEC 61931 apply.

4 Measurement and test categories

The categories include: