SLOVENSKI STANDARD
oSIST prEN IEC 60793-2-60:2024

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Optična vlakna - 2-60. del: Specifikacije izdelka - Področna specifikacija za enorodna vlakna kategorije C za notranje povezovanje

Optical fibres - Part 2-60: Product specifications - Sectional specification for category C single-mode interconnection fibres

Fibres optiques - Partie 2-60: Spécifications de produits - Spécification intermédiaire pour les fibres d'interconnexion unimodales de catégorie c

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IEC SC 86A : FIBRES AND CABLES

SECRETARIAT:	SECRETARY:
France	Mr Laurent Gasca
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

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TITLE:

Optical fibres - Part 2-60: Product specifications - Sectional specification for category C single-mode interconnection fibres

PROPOSED STABILITY DATE: 2029

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL FIBRES –

Part 2-60: Product specifications – Sectional specification for category C single-mode interconnection fibres

FOREWORD

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IEC 60793-2-60 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics. It is an International Standard.

This second edition cancels and replaces the first edition published in 2008. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Replace 'intraconnection' by 'interconnection' and include definition of 'interconnection fibres';

b) Modify nominal MFD limit of C1 fibres;

c) Inclusion of limits of 'Primary coating diameter-colored' for class C fibres and change of 'Primary coating diameter-uncolored' limits of class C_80 fibres;

d) Change of coating strip force limits for class C1, C2, and C3 fibres;

e) Replace ‘Fibre cut-off wavelength’ by ‘Cable cut-off wavelength’ and revise ‘Note b’ in Table 6;

f) Replace ‘Fibre cut-off wavelength’ by ‘Cable cut-off wavelength’ and delete the ‘Note’ in Table 8;

g) Inclusion of 200 µm coating diameter requirements of C1_125 and change of coating diameters limits of C1_80 fibres in Table A.1;

h) Inclusion of 200 µm coating diameter requirements of C1_125 fibre and change of coating strip force limits in Table A.2 and in Table A.5;

i) Replace ‘Fibre cut-off wavelength’ by ‘Cable cut-off wavelength’, modify ‘Cable cutoff wavelength’ limit and include a new ‘note’ in Table A.3;

j) Include transmission requirements at 1625 nm and delete 1310 nm for C1 fibres in Table A.4;

k) Modify ‘Fibre cut-off wavelength’ limits of C3 fibres in Table C.3;

l) Replace ‘Fibre cut-off wavelength’ by ‘Cable cut-off wavelength’ for C4 fibres in Table D.3.

The text of this International Standard is based on the following documents:

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

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

OPTICAL FIBRES –

Part 2-60: Product specifications – Sectional specification for category C single-mode interconnection fibres

1 Scope

This part of IEC 60793 is applicable to optical fibre types C1, C2, C3, C4, as described in Table 1. These fibres are used for the interconnections within or between optical components systems and are optimized to support dense optical connectivity. While the fibres could be overcoated or buffered for the purpose of making protected pigtails, they may be used without overcoating. They may, however, be colour-coded.

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 60793-1-20, *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 60793-1-40, *Optical fibres – Part 1-40: Measurement methods and test procedures – Attenuation*

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 attenuation*

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

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 60793-2, *Optical fibres – Part 2: Product specifications – General*

3 Terms and definitions

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions and the terms and definitions given in IEC 60793-2 apply. Moreover, the definitions of the specified attributes are contained in the test methods.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.2 Interconnection fibres

Fibres up to 1 km in length that are used within or between optical components or systems to support dense connectivity

4 Symbols and abbreviations

The following symbols and abbreviations are used in this document:

F_{avg} average strip force

F_{peak} peak strip force

MFD Mode Field Diameter

n_d stress corrosion parameter – dynamic

5 Specifications

5.1 General

The general requirements defined in IEC 60793-2 apply to these fibres. Specific requirements that are common to these fibres are found in the body of this text. Particular requirements for individual fibre types or applications are defined in Annexes A, B, C and D, which refer to normative family specifications. These family specifications are distinguished based on optimum transmission wavelengths and nominal Mode Field Diameter (MFD), which affects splice loss.

For each family specification, there are two sub-categories that are distinguished on the basis of the cladding diameter and other related attributes. The conventional nominal cladding

diameter of 125 μm is augmented with the reduced cladding type product with a nominal diameter of 80 μm. These are distinguished with the suffixes: “_125” or “_80”. For example C1 fibre can be selected as C1_125 or C1_80. The transmission characteristics of both the cladding diameter choices should be the same.

For each family specification except C1, there are two sub-categories that are distinguished on the basis of transmission characteristics that relate to MFD. To denote these sub-categories, a suffix "_a" or "_b" is added, for lower or higher MFD. In general, the fibres can be optimised for either splice loss or macro-bend loss using MFD as a main variable. A C2 fibre with 80 μm cladding diameter and lower MFD is designated as C2_80_a.

Fibres for the C1_125 family specification can be selected from category B-652.B or B-652.D or B-657 single-mode fibres and are suitable for use with any category B single-mode fibre at wavelengths from 1 260 nm to 1 625 nm. Fibres for the C2 and C3 family specifications are optimized at nominal wavelengths of 1 310 nm and 1 550 nm respectively for connection to any category B single-mode fibre. Fibres for the C4 family specification are optimized for transporting optical amplifier pump light at 980 nm or higher.

Table 1 – List of families and main differences

Families	Nominal transmission wavelengths nm	Nominal MFDs
C1	1 260, 1 310,1 550 and 1 625	8,6 – 9,2 μm at 1 310 nm
C2	1 310	5,0 – 7,0 μm at 1 310 nm
C3	1 550 and 1 625	5,5 – 7,5 μm at 1 550 nm
C4	980	4,0 – 7,0 μm at 980 nm

The fibre shall consist of a glass core, glass cladding, and coating in accordance with 5.3 of IEC 60793-2.

5.2 Dimensional requirements

Dimensional attributes and measurement methods that may be specified are given in Table 2. Minimum requirements, common to all fibres in this category, are given in Table 3. Some family specification requirements may be stricter.

Table 2 – Dimensional attributes and measurement methods

Attributes	Tests
Cladding diameter	IEC 60793-1-20
Cladding non-circularity	IEC 60793-1-20
Core concentricity error	IEC 60793-1-20
Coating diameter	IEC 60793-1-21
Coating non-circularity	IEC 60793-1-21
Cladding-coating concentricity error	IEC 60793-1-21
Fibre length	IEC 60793-1-22