IEC 60793-2-30

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Withdrawn

Optical fibres –
Part 2-30: Product specifications – Sectional specification for category A3 multimode fibres

Fibres optiques –
Partie 2-30: Spécifications de produits – Spécification intermédiaire pour les fibres multimodales de catégorie A3

IEC 60793-2-30:2007

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CONTENTS

FOREWORD 3

1 Scope 5
2 Normative references 5
3 Specifications 6
3.1 General 6
3.2 Dimensional requirements 6
3.3 Mechanical requirements 7
3.4 Transmission requirements 7
3.5 Environmental requirements 8

Annex A (normative) Family specifications for A3a multimode fibres 9
Annex B (normative) Family specifications for A3b multimode fibres 10
Annex C (normative) Family specifications for A3c multimode fibres 11
Annex D (normative) Family specifications for A3d multimode fibres 13

Bibliography 15

Table 1 – Relevant dimensional attributes and measurement methods 6
Table 2 – Dimensional requirements common to category A3 fibres 6
Table 3 – Additional dimensional attributes required in family specifications 7
Table 4 – Relevant mechanical attributes and test methods 7
Table 5 – Mechanical requirements common to category A3 fibres 7
Table 6 – Relevant transmission attributes and measurement methods 7
Table 7 – Additional transmission attributes required in the family specifications 8
Table 8 – Relevant environmental attributes and test methods 8
Table A.1 – Dimensional requirements specific to A3a fibres 9
Table A.2 – Mechanical requirements specific to A3a fibres 9
Table A.3 – Transmission requirements specific to A3a fibres 9
Table B.1 – Dimensional requirements specific to A3b fibres 10
Table B.2– Mechanical requirements specific to A3b fibres 10
Table B.3 –Transmission requirements specific to A3b fibres 10
Table C.1 – Dimensional requirements specific to A3c fibres 11
Table C.2 – Mechanical requirements specific to A3c fibres 11
Table C.3 –Transmission requirements specific to A3c fibres 11
Table C.4.1 – Environmental exposure tests 12
Table C.4.2 – Attributes measured 12
Table D.1 – Dimensional requirements specific to A3d fibres 13
Table D.2 – Mechanical requirements specific to A3d fibres 13
Table D.3 – Transmission requirements specific to A3d fibres 13
Table D.4.1 – Environmental exposure tests 14
Table D.4.2 – Attributes measured 14

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OPTICAL FIBRES –

Part 2-30: Product specifications – Sectional specification for category A3 multimode fibres

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International Standard IEC 60793-2-30 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 2002. It constitutes a technical revision.

The main changes from the previous edition are:

– the addition of tensile strength requirement;
– the removal of water immersion requirement;
– the addition of environmental requirements.

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

CDV	Report on voting
86A/1130/CDV	86A/1150/RVC

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

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

A list of all parts of the IEC 60793 series, published 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
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OPTICAL FIBRES –

Part 2-30: Product specifications – Sectional specification for category A3 multimode fibres

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1 Scope

This part of IEC 60793-2 is applicable to optical fibre types A3a, A3b, A3c, and A3d. These fibres are used or can be incorporated in information transmission equipment and optical fibre cables (typically up to 1 km).

Three types of requirements apply to these fibres:

– general requirements, as defined in IEC 60793-2;
– specific requirements common to the category A3 multimodal fibres covered in this standard and which are given in Clause 3;
– particular requirements applicable to individual fibre types or specific applications (e.g. automotive or industrial applications), which are defined in the normative family specification annexes.

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 60793-1-40, *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 60793-1-46, *Optical fibres – Part 1-46: Measurement methods and test procedures – Monitoring of changes in optical transmittance*

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

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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 Specifications

3.1 General

The fibre shall consist of a glass core and a plastic cladding in accordance with 4.2 of IEC 60793-2.

3.2 Dimensional requirements

Relevant dimensional attributes and measurement methods are given in Table 1.

Dimensional requirements common to all fibres in category A3 are indicated in Table 2.

Table 3 lists additional dimensional attributes that shall be specified by each family specification.

Table 1 – Relevant dimensional attributes and measurement methods

Attributes	Measurement methods
Cladding diameter	IEC 60793-1-20
Core diameter	IEC 60793-1-20
Core non-circularity	IEC 60793-1-20
Core-cladding concentricity error	IEC 60793-1-20
Coating diameter	IEC 60793-1-21
Fibre length	IEC 60793-1-22

Table 2 – Dimensional requirements common to category A3 fibres

Attributes	Unit	Limits
Core diameter	µm	200 ± 8
Core non-circularity	%	≤6
Core-cladding concentricity error	%	≤10
Fibre length	km	[a]
[a] Length requirements vary and should be agreed between supplier and customer.		

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Table 3 – Additional dimensional attributes required in family specifications

Attributes
Cladding diameter
Coating diameter

3.3 Mechanical requirements

Relevant mechanical attributes and test methods are given in Table 4.

Requirements common to all fibres in category A3 are indicated in Table 5.

Table 4 – Relevant mechanical attributes and test methods

Attribute	Test method
Tensile strength	IEC 60793-1-31 (0,5 m sample length) Strain rate 3 % to 5 % / minute
Proof test	IEC 60793-1-30

Table 5 – Mechanical requirements common to category A3 fibres

Attribute	Unit	Limit
Proof stress level	%	≥0,5[a]
[a] The proof test level shall be equivalent to a minimum fibre elongation of 0,5 %. For the relation between different units, see 4.4 of IEC 62048.		

3.4 Transmission requirements

Relevant transmission attributes and measurement methods are given in Table 6.

Additional attributes required in the family specification are indicated in Table 7.

Table 6 – Relevant transmission attributes and measurement methods

Attribute	Measurement method
Attenuation coefficient[a]	IEC 60793-1-40
Optical continuity	IEC 60793-1-40 or IEC 60793-1-46
Modal bandwidth[a]	IEC 60793-1-41
Theoretical numerical aperture	IEC 60793-1-20
Change of optical transmission	IEC 60793-1-46
[a] When measuring attenuation and modal bandwidth, the appropriate launching conditions should be applied - as specified in IEC 60793-1-40 and IEC 60793-1-41. Attenuation and bandwidth are not necessarily linear with length.	

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Table 7 – Additional transmission attributes required in the family specifications

Attributes
Attenuation coefficient
Modal bandwidth
Theoretical numerical aperture

3.5 Environmental requirements

Relevant environmental attributes and test methods are given in Table 8.

Table 8 – Relevant environmental attributes and test methods

Attributes	Test methods
Damp heat tests	IEC 60793-1-50
Dry heat tests	IEC 60793-1-51
Change of temperature tests	IEC 60793-1-52

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Annex A
(normative)

Family specifications for A3a multimode fibres

The following clauses and tables contain particular requirements applicable to A3a fibres. Common requirements, repeated here for ease of reference from the sectional specification, are noted by an entry in the "Reference" column. Relevant notes from the sectional specification are not repeated but indicated with a superscript "SS".

A.1 Dimensional requirements

Table A.1 contains dimensional requirements specific to A3a fibres.

Table A.1 – Dimensional requirements specific to A3a fibres

Attributes	Unit	Limits	Reference
Cladding diameter	µm	300 ± 30	
Coating diameter	µm	900 ± 50	
Core diameter	µm	200 ± 8	3.2
Core non-circularity	%	≤6	3.2
Core-cladding concentricity error	%	≤10	3.2
Fibre length	km	[See 3.2]	3.2

A.2 Mechanical requirements

Table A.2 contains mechanical requirements specific to A3a fibres.

Table A.2 – Mechanical requirements specific to A3a fibres

Attribute	Unit	Limit	Reference
Proof stress level	%	≥0,5[SS]	3.3

A.3 Transmission requirements

Table A.3 contains transmission requirements specific to A3a fibres.

Table A.3 – Transmission requirements specific to A3a fibres

Attributes	Unit	Limits	Reference
Attenuation coefficient at 850 nm	dB/km	≤10	
Modal bandwidth at 850 nm	MHz·km	≥5	
Theoretical numerical aperture	Unitless	0,40 ± 0,04	

A.4 Environmental requirements

None.

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