

INTERNATIONAL STANDARD

**Optical fibres –
Part 2-50: Product specifications – Sectional specification for class B single-
mode fibres**

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[IEC 60793-2-50:2025](https://standards.iteh.ai/catalog/standards/iec/120f9fa4-d62b-4da2-85fd-5197216bb187/iec-60793-2-50-2025)

<https://standards.iteh.ai/catalog/standards/iec/120f9fa4-d62b-4da2-85fd-5197216bb187/iec-60793-2-50-2025>



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2025 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Secretariat
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search -

webstore.iec.ch/advsearchform

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

[IEC 60793-2-50:2025](https://standards.iteh.ai/catalog/standards/iec/120f9fa4-d62b-4da2-85fd-5197216bb187/iec-60793-2-50-2025)

<https://standards.iteh.ai/catalog/standards/iec/120f9fa4-d62b-4da2-85fd-5197216bb187/iec-60793-2-50-2025>

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD.....	5
1 Scope.....	7
2 Normative references	8
3 Terms, definitions, abbreviated terms and symbols.....	9
3.1 Terms and definitions.....	9
3.2 Abbreviated terms and symbols	10
4 Specifications	10
4.1 General.....	10
4.2 Dimensional requirements.....	10
4.3 Mechanical requirements	11
4.4 Transmission requirements	12
4.5 Environmental requirements	14
4.5.1 General	14
4.5.2 Optical environmental requirements – Attenuation	14
4.5.3 Mechanical environmental requirements	15
Annex A (normative) Family specification for category B-652 dispersion unshifted single-mode fibres	16
A.1 General.....	16
A.2 Dimensional requirements.....	16
A.3 Mechanical requirements	17
A.4 Transmission requirements	17
A.5 Hydrogen ageing for sub-category B-652.D.....	19
A.6 Environmental requirements	19
Annex B (normative) Family specification for category B-653 Dispersion shifted single-mode fibres.....	20
B.1 General.....	20
B.2 Dimensional requirements.....	20
B.3 Transmission requirements	21
B.3.1 General	21
B.3.2 Chromatic dispersion coefficient requirement for sub-category B-653.A fibres	21
B.3.3 Chromatic dispersion coefficient requirement for sub-category B-653.B fibres	22
B.4 Environmental requirements	22
Annex C (normative) Family specification for category B-654 cut-off shifted single-mode fibres.....	23
C.1 General.....	23
C.2 Dimensional requirements.....	23
C.3 Mechanical requirements	23
C.4 Chromatic dispersion parameters for B-654.E fibres	25
C.5 Environmental requirements	25
Annex D (normative) Family specification for category B-655 non-zero dispersion shifted single-mode fibres	26
D.1 General.....	26
D.2 Dimensional requirements.....	26
D.3 Mechanical requirements	26
D.4 Transmission requirements	27

D.4.1	General	27
D.4.2	Chromatic dispersion coefficient limits for sub-category B-655.C fibres.....	27
D.4.3	Chromatic dispersion coefficient limits for sub-category B-655.D fibres.....	28
D.4.4	Chromatic dispersion coefficient limits for sub-category B-655.E fibres.....	28
D.5	Environmental requirements	29
Annex E (normative) Family specification for category B-656 Wideband non-zero dispersion shifted single-mode fibres		30
E.1	General.....	30
E.2	Dimensional requirements.....	30
E.3	Mechanical requirements	30
E.4	Transmission requirements	31
E.4.1	General	31
E.4.2	Chromatic dispersion coefficient for category B-656 fibres.....	31
E.5	Environmental requirements	32
Annex F (normative) Family specification for category B-657 Bending loss insensitive single-mode fibres		33
F.1	General.....	33
F.2	Dimensional requirements.....	33
F.3	Mechanical requirements	34
F.4	Transmission requirements	34
F.5	Environmental requirements	35
Annex G (informative) System design information for category B-655 non-zero dispersion shifted single-mode fibres		36
G.1	General.....	36
G.2	One standard deviation limits for sub-category B-655.D fibres	36
G.3	One standard deviation limits for sub-category B-655.E fibres.....	37
Bibliography.....		39
List of comments.....		40

Figure G.1 – Sub-category B-655.D chromatic dispersion coefficient limits 37

Figure G.2 – Sub-category B-655.E chromatic dispersion coefficient limits 38

Table 1 – Map of IEC designation to ITU-T Recommendations and IEC 60793-2-50:2015 designation 7

Table 2 – Dimensional attributes and measurement methods..... 10

Table 3 – Dimensional requirements common to all category B fibres 11

Table 4 – Mechanical attributes and test methods..... 11

Table 5 – Mechanical requirements common to all class B fibres 12

Table 6 – Transmission attributes and measurement methods 13

Table 7 – Transmission, requirements common to all class B fibres 13

Table 8 – Additional transmission attributes required in the family specifications 13

Table 9 – Environmental exposure tests 14

Table 10 – Attributes measured in environmental exposure tests 14

Table 11 – Change in attenuation for environmental tests..... 14

Table 12 – Coating strip force for environmental tests..... 15

Table 13 – Tensile strength for environmental tests 15

Table 14 – Stress corrosion susceptibility for environmental tests..... 15

Table A.1 – Dimensional requirements specific to category B-652.B fibres.....	16
Table A.2 – Dimensional requirements specific to category B-652.D fibres	17
Table A.3 – Mechanical requirements specific to category B-652 fibres	17
Table A.4 – Transmission requirements specific to sub-category B-652.B fibres	18
Table A.5 – Transmission requirements specific to sub-category B-652.D Fibres	18
Table A.6 – Chromatic dispersion properties for sub-category B-652.D fibres	19
Table B.1 – Dimensional requirements specific to category B-653 fibres.....	20
Table B.2 – Mechanical requirements specific to category B-653 fibres	21
Table B.3 – Transmission requirements specific to category B-653 fibres	21
Table C.1 – Dimensional requirements specific to category B-654 fibres.....	23
Table C.2 – Mechanical requirements specific to category B-654 fibres	24
Table C.3 – Transmission requirements specific to category B-654 fibres	24
Table D.1 – Dimensional requirements specific to category B-655 fibres.....	26
Table D.2 – Mechanical requirements specific to category B-655 fibres	27
Table D.3 – Transmission requirements specific to category B-655 fibres	27
Table E.1 – Dimensional requirements specific to category B-656 fibres.....	30
Table E.2 – Mechanical requirements specific to category B-656 fibres	31
Table E.3 – Transmission requirements specific to category B-656 fibres	31
Table F.1 – Dimensional requirements specific to category B-657 fibres	34
Table F.2 – Mechanical requirements specific to category B-657 fibres.....	34
Table F.3 – Transmission requirements specific to category B-657 fibres	35
Table G.1 – Examples for $\lambda_{\min} = 1\,530\text{ nm}$ and $\lambda_{\max} = 1\,565\text{ nm}$	36

INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL FIBRES –

**Part 2-50: Product specifications –
Sectional specification for class B single-mode fibres**

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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

This commented version (CMV) of the official standard IEC 60793-2-50:2025 edition 7.0 allows the user to identify the changes made to the previous IEC 60793-2-50:2018 edition 6.0. Furthermore, comments from IEC TC 86 experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.

A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.

This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.

IEC 60793-2-50 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics. It is an International Standard.

This seventh edition cancels and replaces the sixth edition published in 2018. This edition constitutes a technical revision.

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

- a) The addition of a 200 µm coating nominal outer diameter option for B-654A, B, C fibres in Annex C.

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

Draft	Report on voting
86A/2494/FDIS	86A/2570/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/publications.

A list of all parts in 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 document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.