Doc. No. : LITD 11 (23467) IS / IEC 60793-1-1: 2022 Sept 2023

#### BUREAU OF INDIAN STANDARDS DRAFT FOR COMMENTS ONLY

# मसौदा भारतीय मानक प्रकाशिक तंतु

भाग १ मापन विधियाँ और परीक्षण प्रक्रियाएँ अनुभाग १ सामान्य एवं मार्गदर्शन (दूसरा पुनरीक्षण)

## Draft Indian Standard OPTICAL FIBRES

Part 1 Measurement Methods and Test Procedures Section 1 General and Guidance

(Second Revision)

ICS 33.180.10

Fibre Optics, Fibres, Cables And Devices Sectional Committee, LITD 11 Last Date for Comments: 25<sup>th</sup> October 2023

### NATIONAL FOREWORD

This draft Indian Standard (Part 1/Sec 1) (*Second Revision*) which is identical with IEC 60793-1-1: 2022 "Optical fibres –Part 1-1: Measurement methods and test procedures – General and guidance' issued by the International Electrotechnical Commission (IEC) will be adopted by the Bureau of Indian Standards on the recommendation of Fibre Optics, Fibres, Cables And Devices Sectional Committee and approval of the Electronics and Information Technology Division Council.

This standard was originally published in 2012 and was identical to IEC 60793-1-1: 2008. It was subsequently revised in 2018 and was identical to IEC 60793-1-1: 2017. The second revision of this standard has been undertaken to align it with the latest version IEC 60793-1-1: 2022

The text of IEC Standard may be approved as suitable for publication an Indian Standard without deviations. Certain terminology and conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard', and;
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted draft standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies:-

International Standards	Corresponding Indian Standard	Degree of Equivalence
IEC 60793-1-20 Optical fibres – Part 1-20 Measurement methods and test procedures –Fibre geometry	IS/IEC 60793-1-20:2014 Optical fibres Part 1 Measurement methods and test procedures, Section 20 Fibre geometry	Identical
IEC 60793-1-21 Optical fibres – Part 1-21 Measurement methods and test procedures – Coating geometry	IS/IEC 60793-1-21: 2001 Optical fibres Part 1 Measurements methods and test procedures, Section 21 Coating geometry	-do-
IEC 60793-1-22 Optical fibres – Part 1-22 Measurement methods and test procedures –Length measurement	IS/IEC 60793-1-22: 2001 Optical fibres Part 1 Measurement methods and test procedures Section 22 Length measurement	-do-
IEC 60793-1-30 Optical fibres – Part 1-30 Measurement methods and test procedures –Fibre proof test	IS/IEC 60793-1-30: 2010 Optical Fibres Part 1 Measurement Methods and Test Procedures Section 30 Fibre Proof Test	-do-
IEC 60793-1-31 Optical fibres – Part 1-31 Measurement methods and test procedures –Tensile strength	IS/IEC 60793-1-31: 2010 Optical Fibres Part 1 Measurement Methods and Test Procedures Section 31 Tensile Strength	-do-

IEC 60793-1-32 Optical fibres – Part 1-32 Measurement methods and test procedures –Coating strippability	IS/IEC 60793-1-32: 2010 Optical Fibres Part 1 Measurement Methods and Test Procedures Section 32 Coating Strippability	Identical
IEC 60793-1-33 Optical fibres – Part 1-33 Measurement methods and test procedures –Stress corrosion susceptibility	IS/IEC 60793-1-33: 2017 Optical Fibres Part 1 Measurement Methods and Test Procedures Section 33 Stress Corrosion Susceptibility	-do-
IEC 60793-1-34 Optical fibres – Part 1-34 Measurement methods and test procedures –Fibre curl	IS/IEC 60793-1-34: 2006 Optical Fibres Part 1 Measurement Method and Test Procedures Section 34 Fibre Curl	-do-
IEC 60793-1-40 Optical fibres – Part 1-40 Measurement methods and test procedures –Attenuation	IS/IEC 60793-1-40: 2001 Optical Fibres Part 1 Measurement Methods and Test Procedures Section 40 Attenuation	-do-
IEC 60793-1-41 Optical fibres – Part 1-41 Measurement methods and test procedures –Bandwidth	IS/IEC 60793-1-41: 2010 Optical Fibres Part 1 Measurement Methods and Test Procedures Section 41 Bandwidth	-do-
IEC 60793-1-42 Optical fibres – Part 1-42 Measurement methods and test procedures –Chromatic dispersion	IS/IEC 60793-1-42: 2013 Optical Fibres Part 1 Measurement Methods and Test Procedures Section 42 Chromatic Dispersion	-do-
IEC 60793-1-43 Optical fibres – Part 1-43 Measurement methods and test procedures –Numerical aperture measurement	IS/IEC 60793-1-43: 2015 Optical Fibres Part 1 Measurement Methods and Test Procedures Section 43 Numerical Aperture	-do-
IEC 60793-1-44 Optical fibres – Part 1-44 Measurement methods and test procedures – Cutoff wavelength	IS/IEC 60793-1-44: 2011 Optical Fibres Part 1 Measurement Methods and Test Procedures Section 44 Cut- Off Wavelength	-do-

IEC 60793-1-45 Optical fibres - IS/IEC 60793-1-45: 2017 Optical Identical Part 1-45 Measurement methods Fibres Part 1 Measurement Methods and Test Procedures Section 45 and test procedures -Mode field Mode Field Diameter diameter

IEC 60793-1-46 Optical fibres -Part 1-46 Measurement methods and test procedures -Monitoring of changes in optical transmitttance

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) tests

IEC 60793-1-51 Optical fibres -Part 1-51 Measurement methods and test procedures – Dry heat (steady state) tests IEC 60793-1-52 Optical fibres -Part 1-52 Measurement methods and test procedures -Change of temperature tests

IS/IEC 60793-1-46: 2001 Optical -do-Fibres Part 1 Measurement Methods and Test Procedures Section 46 Monitoring of Change in Optical Transmittance

IS/IEC 60793-1-47: 2017 Optical -do-Fibres Part 1 Measurement Methods and Test Procedures Section 47 Macrobending Loss

IS/IEC 60793-1-48: 2017 Optical -do-Fibres Part 1 Measurement Method and Test Procedures Section 48 Polarization Mode Dispersion

IS/IEC 60793-1-49: 2006 Optical -do-Fibres Part 1 Measurement Methods and Test Procedures Section 49 **Differential Mode Delay** 

IS/IEC 60793-1-50: 2014 Optical -do-Fibres Part 1 Measurement Methods and Test Procedures Section 50 Damp Heat (Steady State)

IS/IEC 60793-1-51: 2014 Optical -dofibres Part 1 Measurement methods and test procedures Section 51 Dry heat IS/IEC 60793-1-52: 2014 Optical -dofibres Part 1 Measurement methods and test procedures Section 52 Change temperature

IEC	60793	8-1-53 Op	otical	fibres -	IS/IEC 607	'93-1-53:	2014	Optical	l Identical
Part	1-53	Measurer	ment	methods	fibres Part	1 Measure	ement 1	methods	5
and	test	procedu	ures	-Water	and test proc	edures Se	ction 5	3 Water	•
imm	ersion	tests			immersion				
IEC	60793	8-1-54 Op	otical	fibres –	IS/IEC 607	'93-1-54:	2018	Optical	-do-
Part	1-54:	Measurer	ment	methods	Fibres Part	1 Measur	ement	Method	l
and	test	procedu	res	–Gamma	and Test 1	Procedure	s Sect	tion 54	Ļ
irrad	iation				Gamma Irra	diation			
EC 6	50793-1	2 Optical f	fibres	– Part 2:	IS/IEC 6079	93-2: 2017	Optica	al fibres	-do-
Prod	uct spe	ecifications	s – Ge	eneral	– Part 2: F	Product sp	pecifica	ations -	-
					General				

The technical committee has reviewed the provisions of the following International Standard referred in this adopted draft standard and has decided that it is acceptable for use in conjunction with this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies:

International Standard	Title
IEC 60793-1-60	Optical fibres - Part 1-60: Measurement methods and test
	procedures – Beat length
IEC 60793-1-61	Optical fibres – Part 1-61: Measurement methods and test
	procedures – Polarization crosstalk

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2: 2022 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

### SCOPE OF IEC 60793-1-1: 2022:

This part of IEC 60793 lists and gives guidance on the use of documents giving 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 the IEC 60793-1 series.

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

NOTE- The Technical content of this document has not been enclosed as these are identical with the corresponding IEC Standard. For details please refer IEC 60793-1-1: 2022 or kindly contact.

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