# Family specification Optical fibre cables for indoor applications

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### EESTI STANDARDI EESSÕNA

### NATIONAL FOREWORD

This Estonian standard EVS-EN 187103:2003 consists of the English text of the European standard EN 187103:2003.
This document is endorsed on 08.05.2003 with the notification being published in the official publication of the Estonian national standardisation organisation.
The standard is available from Estonian standardisation organisation.
Scope: This family specification covers optical cables for telecommunication application to be used indoor. This specification does not cover cable assemblies, such as connectorized jumper cable, or the functional requirements for cable break- out (fan out). It also not covers cables for LAN applications and cables incorporating multimode fibres
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# EUROPEAN STANDARD

# EN 187103

# NORME EUROPÉENNE

# **EUROPÄISCHE NORM**

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English version

## Family specification – Optical fibre cables for indoor applications

Spécification – Câbles à fibres optiques pour applications intérieures Familienspezifikation -Lichtwellenleiterkabel zur Anwendung in Innenräumen

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# 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

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### Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 86A, Optical fibres and optical fibre cables.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 187103 on 2002-03-05.

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)	2003-08-01
-	latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2005-03-01

This standard has been produced in accordance with a specialised agreement on work repartition and cooperation for standardization concerning fibre optics and is part of the CEN/CENELEC/ETSI (European Telecommunications Standards Institute) co-operation agreement.

It uses information provided by the ETSI on functional and system related aspects by means of an Interim European Telecommunication Standard (I-ETS).

The document I-ETS 300 644, Optical fibre cables for indoor applications, prepared by ETSI/TM1/WG1, TEN TO THE OPPORTUNE TO T has been reviewed and completed by the CENELEC TC 86A for incorporation within the set of EN 1871xx standards prepared using a similar process.

### Contents

		Page
1 Scope		1
i Scope		
2 General		4
10		
3 Normati	ve references	4
4 Symbols	and abbreviations	5
11 Sum	abala	Б
4.1 Syn 4.2 Abr	previations	5 6
5 Family s	specification for optical telecommunication cables for indoor application (blank detail	7
specification	and minimum requirements)	
5.1 Cat	ble description	7
5.2 Opt	ical fibres	9
5.2.1	Single mode dispersion unshifted (b1.1) optical fibre	9
5.2.2	Single mode dispersion shifted (b1.2) optical fibre	9
5.2.3	Single mode non zero dispersion shifted (b4) optical fibre	9
5.2.4	Details on family requirements	10
5.3 Car		10
5.3.1	l'ests applicable	10
5.3.Z	Additional tests and requirements.	10
5.3.3	Additional tests and requirements	10
5.4 Cal	Tests applieship	
5.4.1 5.4.2	Detaile on family requiremente	۱۱ 10
5.4.Z	allation and expertising conditions	۲۲۱۲ ۲۵
5.0 IIISI	aliation and operating conditions	۲۲۱۲ ۲۵
5.0 Met	Teete annlicable	دا۱۵ 12
562	Details on family requirements and test conditions for ontical fibre cable tests	را 12
0.0.2	Details on family requirements and test conditions for optical indic cable tests	

### 1 Scope

This family specification covers optical cables for telecommunication application to be used indoor. This specification does not cover cable assemblies, such as connectorized jumper cable, or the functional requirements for cable break-out (fan out). It also not covers cables for LAN applications and cables incorporating multimode fibres.

Clause 5 of this standard describes a blank detail specification for optical telecommunication cables to be used for indoor cables. It incorporates some minimum requirements common to all European countries.

Detail specifications may be prepared based on this family specification following in particular requirements of clause 5.

### 2 General

The parameters specified in this standard may be affected by measurement uncertainty arising either from measurement errors or calibration errors due to lack of suitable standards. Acceptance criteria shall be interpreted with respect to this consideration. The total uncertainty of measurement for this standard shall be less than or equal to 0,05 dB for attenuation.

The expression of no change in attenuation means that any change in measurement value either positive or negative, within the uncertainty of measurement shall be ignored.

The number of fibres tested shall be representative of the cable design and shall be agreed between the user and the manufacturer.

### **3** Normative references

This standard incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

[1]	EN 188101	1995	Family specification: Single-mode dispersion unshifted (B1.1) optical fibr	е
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- [2] EN 188102 1996 Family specification: Single-mode dispersion shifted (B2) optical fibre
- [3] EN 188103 200x Family specification: Single-mode non zero dispersion shifted optical fibre (B4)
- [4] EN 187000 1995 Generic specification: Optical fibre cables
- [5] EN 188000 1995 Generic specification: Optical fibres
- [6] HD 624.7 1994 Materials used in communication cables Part 7: Halogen free flame retardant thermoplastic sheathing compounds
- [7] IEC 60304 1982 Standard colours for insulation for low-frequency cables and wires
- [8] IEC 60332-1 1993 Tests on electric cables under fire conditions Part 1: Test on a single vertical insulated wire or cable
- [9] IEC 60332-3 1992 Tests on electric cables under fire conditions Part 3: Tests on bunched wires or cables

[10]	IEC 60754-2	1991	Test on gases evolved during combustion of electric cables – Part 2: Determination of degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity		
[11]	IEC 60811-4-2	1990	Common test methods for insulating and sheathing materials of electric cables – Part 4: Methods specific to polyethylene and polypropylene compounds – Section 2: Elongation at break after preconditioning - Wrapping test after preconditioning - Wrapping test after thermal ageing in air - Measurement of mass increase - Long-term stability test (Appendix A) - Test method for copper-catalysed oxidative degradation (Appendix B)		
[12]	IEC 60811-5-1	1990	Common test methods for insulating and sheathing materials of electric cables – Part 5: Methods specific to filling compounds – Section 1: Droppoint - Separation of oil - Lower temperature brittleness - Total acid number - Absence of corrosive components - Permittivity at 23 °C - D.C. resistivity at 23 °C and 100 °C		
[13]	IEC 61034-1	1990	Measurement of smoke density of electric cables burning under defined conditions – Part 1: Test apparatus		
[14]	IEC 61034-2	1991	Measurement of smoke density of electric cables burning under defined conditions – Part 2: Test procedure and requirements		
[15]	IEC 60754-1	1994	Test on gases evolved during combustion of electric cables – Part 1: Determination of the amount of halogen acid gas		
[16]	IEC 60794-1	1999	Optical fibre cables – Part 1: Generic specification		
[17]	IEC 60794-3	1998	Optical fibre cables - Part 3: Duct, buried & aerial cables Sectional specification		
[18]	IEC 60708-1	1981	Low-frequency cables with polyolefin insulation and moisture barrier polyolefin sheath – Part 1: General design details and requirements		
4 Symbols and abbroviations					
	Symbols				
For th	o purposos of this	e etanda	rd the following symbols apply:		
1011					
Λ <sub>cc</sub>	Cabled libre cut-off wavelength				
SZ	A technique in which the lay reverses direction periodically				

### 4 Symbols and abbreviations

### 4.1 Symbols

- Cabled fibre cut-off wavelength  $\lambda_{cc}$
- SZ A technique in which the lay reverses direction periodically
- Threshold below which no attenuation and/or fibre strain increase should occur in the tensile T<sub>0</sub> strength test
- The acceptable amount of transient stress that can be applied to the cable without permanent  $T_m$ degradation of the characteristics of the fibres in the tensile strength test
- $T_{A1}$ Temperature cycling lower limit for acceptance criteria 1
- $T_{A2}$ Temperature cycling lower limit for acceptance criteria 2