

**Optical fibre cables - Part 3-50: Outdoor cables -
Family specification for gas pipe cables and
subducts for installation by blowing and/or
pulling/dragging in gas pipes**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 60794-3-50:2009 sisaldab Euroopa standardi EN 60794-3-50:2008 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 19.01.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

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Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 60794-3-50:2009 consists of the English text of the European standard EN 60794-3-50:2008.

This standard is ratified with the order of Estonian Centre for Standardisation dated 19.01.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

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**Optical fibre cables -
Part 3-50: Outdoor cables -
Family specification for gas pipe cables and subducts
for installation by blowing and/or pulling/dragging in gas pipes
(IEC 60794-3-50:2008)**

Câbles à fibres optiques -
Partie 3-50: Câbles extérieurs -
Spécification de famille
relative aux câbles et sous-conduits
cheminant dans les gazoducs
destinés à être installés par soufflage
et/ou tirage/appareillage trainant,
dans les gazoducs
(CEI 60794-3-50:2008)

Lichtwellenleiterkabel -
Teil 3-50: Außenkabel -
Familienspezifikation
für Kabel in Gasleitungen und Schächten
für die Verlegung durch Einblasen
und/oder Einschieben/Einziehen
in Gasleitungen
(IEC 60794-3-50:2008)

This European Standard was approved by CENELEC on 2008-11-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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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

Foreword

The text of document 86A/1231/FDIS, future edition 1 of IEC 60794-3-50, prepared by SC 86A, Fibres and cables, of IEC TC 86, Fibre optics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60794-3-50 on 2008-11-01.

This standard is to be used in conjunction with EN 60794-1-1, EN 60794-1-2 and EN 60794-3.

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) 2009-08-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2011-11-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60794-3-50:2008 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60304	1982	Standard colours for insulation for low-frequency cables and wires	HD 402 S2	1984
IEC 60793-1-20	- ¹⁾	Optical fibres - Part 1-20: Measurement methods and test procedures - Fibre geometry	EN 60793-1-20	2002 ²⁾
IEC 60793-1-40 (mod)	- ¹⁾	Optical fibres - Part 1-40: Measurement methods and test procedures - Attenuation	EN 60793-1-40	2003 ²⁾
IEC 60793-1-44	- ¹⁾	Optical fibres - Part 1-44: Measurement methods and test procedures - Cut-off wavelength	EN 60793-1-44	2002 ²⁾
IEC 60793-2	- ¹⁾	Optical fibres - Part 2: Product specifications - General	EN 60793-2	2008 ²⁾
IEC 60793-2-50	- ¹⁾	Optical fibres - Part 2-50: Product specifications - Sectional specification for class B single-mode fibres	EN 60793-2-50	2008 ²⁾
IEC 60794-1-1	- ¹⁾	Optical fibre cables - Part 1-1: Generic specification - General	EN 60794-1-1	2002 ²⁾
IEC 60794-1-2	- ¹⁾	Optical fibre cables - Part 1-2: Generic specification - Basic optical cable test procedures	EN 60794-1-2	2003 ²⁾
IEC 60794-3	- ¹⁾	Optical fibre cables - Part 3: Sectional specification - Outdoor cables	EN 60794-3	2002 ²⁾
IEC 60794-3-10 (mod)	- ¹⁾	Optical fibre cables - Part 3-10: Outdoor cables - Family specification for duct and directly buried optical telecommunication cables	EN 60794-3-10	2002 ²⁾
IEC 60811-1-1	1993	Insulating and sheathing materials of electric and optical cables - Common test methods - Part 1-1: General application - Measurement of thickness and overall dimensions - Tests for determining the mechanical properties	EN 60811-1-1	1995 ²⁾

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60811-5-1 (mod)	1990	Insulating and sheathing materials of electric and optical cables - Common test methods - Part 5-1: Methods specific to filling compounds - Drop point - 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	EN 60811-5-1	1999 ²⁾

CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references	6
3 Symbols and abbreviations.....	7
4 Family specification for gas pipe cables and subducts for installation by blowing and/or pulling/dragging in gas pipes (blank detail specification and minimum requirements).....	8
4.1 Construction.....	8
4.1.1 General	8
4.1.2 Subducts	8
4.1.3 Gas pipe cables.....	8
4.2 Optical fibres.....	9
4.2.1 Single-mode dispersion unshifted (B1.1) optical fibre	9
4.2.2 Single-mode dispersion shifted (B2) optical fibre	9
4.2.3 Single-mode non-zero dispersion (B4) optical fibre.....	10
4.2.4 Single-mode (B6) optical fibre	10
4.2.5 Multimode fibres	10
4.3 High pressure gas pipe cable constructions.....	11
4.3.1 Cable for installation within subducts (previously installed within the high pressure gas pipe)	11
4.3.2 Cable for direct installation within the high pressure gas pipe	12
4.3.3 Subduct construction	13
4.4 Installation and operating conditions	13
4.4.1 Tests applicable to cables/cable elements	13
4.4.2 Installation conditions	13
4.5 Mechanical and environmental tests	14
4.5.1 Subducts	14
4.5.2 Cable for installation within subducts (previously installed into the gas pipe)	16
4.5.3 Cables for direct installation into the high pressure gas pipe	20
Annex A (informative) Blank detail specification.....	24
Annex B (informative) OF cables for high pressure gas pipes	27
Annex C (informative) Examples of subducts and high pressure gas pipe cables	28
Annex D (informative) Example for installation schemes of cables in high pressure gas pipes (fibre-in-gas).....	30
Figure C.1 – Example of constructions of cables for installation in subducts within gas pipes	28
Figure C.2 – Example of constructions of cables for direct installation into high pressure gas pipes	29
Figure D.1 – Picture of an I/O-port	30
Figure D.2 – Schematic drawing of Figure D.1: installation of OF cable within the gas pipe	30
Figure D.3 – Schematic drawing of the installation of I/O-ports on high pressure PE gas pipes	31

Table 1 – Single-mode dispersion unshifted (B1.1) optical fibre	9
Table 2 – Single-mode dispersion shifted (B2) optical fibre	9
Table 3 – Single-mode non-zero dispersion (B4) optical fibre.....	10
Table 4 – Single-mode (B6) optical fibre	10
Table 5 – Characteristics – Cable for installation within subducts	11
Table 6 – Characteristics – Cable for direct installation within the high pressure gas pipe	12
Table 7 – Characteristics – Subduct construction.....	13
Table 8 – Tests applicable to cables/cable elements.....	13
Table 9 – Tests applicable to subducts	14
Table 10 – Tests applicable for OF cables within subducts	16
Table 11 – Tests applicable to direct installed OF cables.....	20
Table A.1 – Cables for subduct installation into the gas pipe.....	24
Table A.2 – Cables for direct installation into the gas pipe	25
Table A.3 – Subduct description	26
Table B.1 – OF cables for high pressure gas pipes	27

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OPTICAL FIBRE CABLES –

Part 3-50: Outdoor cables – Family specification for gas pipe cables and subducts for installation by blowing and/or pulling/dragging in gas pipes

1 Scope

This part of IEC 60794 is a family specification that covers gas pipe cables and subducts for installation by blowing and/or pulling/dragging in high pressure gas pipes (400 mbar to 4 bar). Systems built with components covered by this standard are subject to the requirements of sectional specification IEC 60794-3.

Gas pipe cable and subduct constructions have to meet the different requirements of the gas-companies and/or associations regarding chemical, environmental, operational interactions and in general maintenance conditions.

I/O-ports for the inlet and outlet of the gas pipe cables and/or subducts are housing the sealing system assuring the absolute gas tightness preventing any gas leakage due to the installation of the gas pipe cables into the gas pipes.

A table of preferential applications, describing gas pipe cable characteristics versus methods of installation is reported in Annex A for high pressure gas pipe cables.

Clause 4 describes a blank detail specification for gas pipe cables and subducts for installation by blowing and/or pulling/dragging in high pressure gas pipes. It incorporates some minimum requirements.

Detail specifications may be prepared on the basis of this family specification.

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 should be interpreted with respect to this consideration.

The number of fibres tested is representative of the gas pipe cable and should be agreed between the customer and the supplier.

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 60304, 1982: *Standard colours for insulation for low-frequency cables and wires*

IEC 60793-1-20, *Optical fibres – Part 1-20: Measurement methods and test procedures – Fibre geometry*

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

IEC 60793-2-50, *Optical fibres – Part 2-50: Product specifications – Sectional specification for class B single-mode fibres*

IEC 60794-1-1, *Optical fibre cables – Part 1-1: Generic specification – General*

IEC 60794-1-2, *Optical fibre cables – Part 1-2: Generic specification – Basic optical cable test procedures*

IEC 60794-3, *Optical fibre cables – Part 3: Sectional specification – Outdoor cables*

IEC 60794-3-10, *Optical fibre cables – Part 3-10: Outdoor cables – Family specification for duct and directly buried optical telecommunication cables*

IEC 60811-1-1, 1993: *Common test methods for insulating and sheathing materials of electric cables and optical cables – Part 1-1: Methods for general application – Measurement of thickness and overall dimensions – Tests for determining the mechanical properties*

IEC 60811-5-1, 1990 *Insulating and sheathing materials of electric and optical cables – Common test methods – Part 5-1: Methods specific to filling compounds – Drop-point – Separation of oil – Lower temperature brittleness – Total acid number – Absence of corrosive components – Permittivity at 23 °C – DC resistivity at 23 °C and 100 °C*

3 Symbols and abbreviations

For the purposes of this document, the following symbols and abbreviations apply.

λ_{CC}	cabled fibre cut-off wavelength
d	nominal outer diameter of the gas pipe optical fibre cable
d_c	nominal outer diameter of the subduct
DS	detail specification
T_O	threshold tensile load below which no attenuation and/or fibre strain increase should occur in the tensile performance test
T_M	the acceptable amount of short-term tensile load that can be applied to the cable without permanent degradation of the characteristics of the fibres in the tensile performance test
T_{A1}	temperature cycling test low-temperature limit according to IEC 60794-1-2, method F1
T_{A2}	temperature cycling test low-temperature limit according to IEC 60794-1-2, method F1
T_{B1}	temperature cycling test high-temperature limit according to IEC 60794-1-2, method F1
T_{B2}	temperature cycling test high-temperature limit according to IEC 60794-1-2, method F1
t_1	temperature cycling dwell time
$n \times d$	a value times cable outer diameter used for bends, mandrels, etc.
PE	polyethylene
I/O-port	input/ output port for guiding the cable into and out of the gas pipe