

English version

**Optical fibre cables –
Gas pipe cables –
Family specification for cables to be installed
in high pressure gas pipes**

Lichtwellenleiterkabel –
Kabel für Gasleitungen –
Familienspezifikation für Kabel zu
Montage in Hochdruckgasleitungen

This Technical Specification was approved by CENELEC on 2004-09-11.

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CENELEC

European Committee for Electrotechnical Standardization
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Foreword

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

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1 Scope

This document is a family specification that covers gas pipe cables and sub-ducts for installation by blowing and/or pulling / dragging in high pressure gas pipes. Systems built with components covered by this standard are subject to the requirements of sectional specifications EN 60794-3 and EN 60794-4 where applicable.

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

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 sub-ducts for installation by blowing and/or pulling / dragging in/into 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 sewer cable and should be agreed between the customer and 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.

EN 60068-2-2	<i>Environmental testing</i> (IEC 60068-2-2)
EN 60793-1-20	<i>Optical fibres - Part 1-20: Measurement methods and test procedures - Fibre geometry</i> (IEC 60793-1-20)
EN 60793-1-40	<i>Optical fibres - Part 1-40: Measurement methods and test procedures – Attenuation</i> (IEC 60793-1-40)
EN 60793-1-44	<i>Optical fibres - Part 1-44: Measurement methods and test procedures - Cut-off wavelength</i> (IEC 60793-1-44)
EN 60793-2	<i>Optical fibres - Part 2: Product specifications</i> (IEC 60793-2)
EN 60794-1-1	<i>Optical fibre cables - Part 1-1: Generic specification -General</i> (IEC 60794-1-1)
EN 60794-1-2	<i>Optical fibre cables - Part 1-2: Generic specification - Basic optical cable test procedures</i> (IEC 60794-1-2)
EN 60794-3	<i>Optical fibre cables - Part 3: Sectional specification - Outdoor cables – Duct, buried and aerial cables</i> (IEC 60794-3)
EN 60794-3-10	<i>Optical fibre cables - Part 3-11: Detailed specification - Outdoor cables - Duct and directly buried optical telecommunication cables</i> (IEC 60794-3-10)
EN 60794-4	2003 <i>Optical fibre cables - Part 3: Sectional specification – Aerial optical cables along electrical power lines</i> (IEC 60794-4:2003)

EN 60811-1-1	1995	<i>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</i> (IEC 60811-1-1:1993)
EN 60811-5-1	1999	<i>Common test methods for insulating and sheathing materials of electric cables - Part 5: Methods specific to filling compounds. Section one - 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</i> (IEC 60811-5-1:1990, mod)
EN 187105		<i>Single mode optical cable (duct/direct buried installation)</i>
HD 402 S2	1984	<i>Standard colours for insulation for low-frequency cables and wires</i> (IEC 60304:1982)

3 Symbols

For the purposes of this document, the following symbols apply:

λ_{CC}	cabled fibre cut-off wavelength
d	nominal outer diameter of the sewer cable
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 EN 60794-1-2, method F1
T_{A2}	temperature cycling test low-temperature limit according to EN 60794-1-2, method F1
T_{B1}	temperature cycling test high-temperature limit according to EN 60794-1-2, method F1
T_{B2}	temperature cycling test high-temperature limit according to EN 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.