
OIL / GAS & PETROCHEMICALS
CABLES FOR
MARINE & OFFSHORE
APPLICATION
tecniKabel
SPECIAL ELECTRICAL AND OPTICAL CABLES
WWW.TECNIKABEL.COM

SPECIAL ELECTRICAL AND OPTICAL CABLES


Tecni Kabel

INTRODUCTION

TECNIKABEL is a leading European company with a remarkable range of special cables for different applications.
The increasing competitive globalisation of the world economy gave a new impulse to the maritime transport sector, including new emerging non-European countries.
We recently remark an increasing electrical penetration in the marine field, resulting in an increment of electrical power, control and instrumentation involved.
The electrical marine system is autonomous and independent from the external world. Everything required for the functioning of such system e.g. generation, transmission, distribution and utilisation devices, can therefore be found on-board.
TecniKabel special copper and optical cables for control, signal, data transmittal, fire detection and telecommunication observe the most demanding international standards for a steady supply in the most severe conditions, where high pressures and temperatures, humidity, presence of dust and drilling mud, several solvents and gases containing toxic and aggressive elements, are a crucial test for efficiency and resistance.

PRODUCT LINES

- TRANSPORTATION
- OIL / GAS & PETROCHEMICALS
- TELECOMMUNICATION
- OPTICAL
- AUTOMATION
- BUILDING TECHNOLOGY
- SUBMARINE
- AUDIOVIDEO
- NAVAL
- GREEN ENERGY

TECNIKABEL

is focused on constant product innovation to get competitive advantages with endless commitment to research and development.

PRODUCTION

Updated production Systems, stringent process procedures and expert operators reached the goal to carry out our production efficient and flexible.

In 30 years of activity. we produced more than 26.000 different types of cables.

FINAL INSPECTIONS

At the end of production processes each cable is checked in its electrical optical and physical performances for a complete compliance to customer specifications.

LABORATORY TESTS

We submit our cables to the most severe tests, simulating critical applications. In addition to the classic tests required by current rules, we made special equipments for different types of mechanical, environmental, electric and optical tests.

MATERIALS RESEARCH AND DEVELOPMENT

Our thirty year experience took us to carry on research of new materials in order to improve performances, costs and fulfil the standards required by our customers.

QUALITY SYSTEM

Since 1978, constant commitment to Quality has awarded Tecnikabel approval from American and European Authorities, complying with the most demanding international manufacturing and quality standards.

CSQ IQNet ISO 9001 edizione norma: 2015 9125.TEKA

APPROVED LR

SA

LPCB LOSS PREVENTION CERTIFICATION BOARD UKAS PRODUCT CERTIFICATION 0007 BS 6387:2013 Cert/LPCB ref. 1352

RINA

Member of CISQ Federation RINA IQNet CERTIFIED MANAGEMENT SYSTEM ISO 14001

IRIS™ Certification

CSV CEI - UNEL

COMPLIANT - COMPLIANT - REACH

RoHS 2 2002/95/EC

TYPE APPROVED PRODUCT DNV·GL MARITIME

c UL

UL LISTED

ABS TYPE APPROVED PRODUCT

DVE

WRAS APPROVED PRODUCT

cert. number: 2017010103948372

BRITISH APPROVALS SERVICE FOR CABLES BASEC UKAS PRODUCT CERTIFICATION 0004 PRODUCT MARKING LICENCE NO: 226/001

OIL / GAS & PETROCHEMICALS

NEW STRINGENT REQUIREMENTS OF FIRE DURATION BY HOMOLOGATION BODIES

Engineers daily design new powerful systems and large cabling infrastructures, where transmission protocols need to vehicle huge amounts of data (data, signals, images, etc.) at high speed.

These communication systems work at the highest speed and maximum stability, either through the use of optical fiber or copper cables.

Tecnikabel is able to meet the most recent Off-Shore and Shipbuilding requirements from Homologation Bodies, with full-circuit integrity guaranteed during fire in accordance with IEC 60331 up to a superior extended time of 180 minutes.

THE GAS-TIGHT RESISTANCE FOR SAFER OPERATIONS

There is, furthermore, ever more often the need to fit high-quality data connections between Explosion areas and Safe areas. The risk of propagation of gas explosive mixtures to zones with a consistent number of people through gas permeable cavities found longitudinally in cables, lead to strict specifications to observe. The increasing use of LNG (Liquid Natural Gas) as a mean of propelling vessels, and the storage and transportation in tanker ships, implies that the cases of application in the crossover areas are becoming ever more frequent.

Tecnikabel has engineered a complete range of copper data cables for such atmospheres in accordance with the requirements of IEC 60079-14, not only fulfilling the traditional requisites for cables used in Explosive areas in terms of mechanical, chemical and thermal loads, but also in terms of gas migration and can therefore be installed in the offshore sector without restriction.

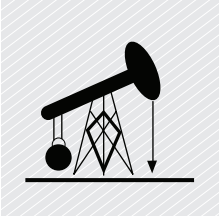
ENHANCED CABLE PERFORMANCE FOR ARCTIC ENVIRONMENTS

TKSEA cable range also offers an excellent performance in extremely cold environments, as especially suited for installation down to –30 °C and permanent operating temperatures up to down –62 °C.

The correct behaviour in presence of Arctic temperatures of TKSEA cables is proven by the cold bend and cold impact test done in accordance with the North American (Canadian) standards CSA 22/2.

Tecnikabel thereby makes a significative contribution to increasing safety on board ships and offshore structures.

Passion flows through our cables.



MUD RESISTANCE TEST

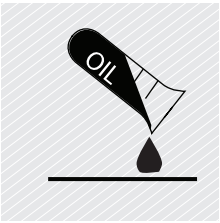
- Mud resistance according to NEK 606 oil based (EDC 95-11) and drilling fluid water based (Calcium-Bromide)
- Mud resistance according to IEC 60092-360 (Oil IRM 902; IRM 903; drilling fluid water based Calcium-Bromide, 45% w/w CaBr2 in water)

Requirements of the test procedures (NEK 606 - IEC 60092-360) for drilling fluids:

- Temperature: 70 °C
- Test period: 56 days (1344 hours)
- Alteration of the tensile strength and elongation of break max ±25 %
- Volume change: max. ±20 %
- Mass change: max. ±15 %

The use of mineral oil types (IRM 902 and IRM903) can also be performed at a temperature of 100°C for 7 days (168 hours), with a max alteration of :

IEC 60092-360 : IRM 902 tensile strength and elongation of break ±30 % linear swell: +/- 15%
IRM 903 tensile strength and elongation of break, linear swell : ±30 %



OIL RESISTANCE TESTS

- Performance of the oil resistance tests for cable jackets (insulations) according to IEC 60811-404

Requirements of the test procedures:

- IEC 60092-360 (for SHF2 types) Test duration: 1 day / 100 °C
- IEC 60092-350 Test duration: 7 days / 100 °C

ARCTIC GRADE TESTS

- Performance of the cold bend and cold impact resistance tests for cable jackets (insulations) according to CSA 22.2 (temperature depending on the construction required).

Requirements of the test procedures:

- CSA 22.2 Test duration: 4 hours

VAPOR/ GAS TIGHT REQUIREMENT TESTS

- Performance according to IEC 60079-14: Annex E.

Requirements of the test procedures:

- CSA 22.2 Testing length: 0,5 m
- CSA 22.2 Sealed enclosure of 5 l (± 0.2 l), under constant temperature conditions.
- The cable is considered acceptable if the time interval required for an internal overpressure of at least 0.3 kPa (30 mm water gauge) to drop by 0.15 kPa (15 mm water gauge) is not less than 5 s.

INDEX

SYMBOLS

ENVIRONMENTAL PROPERTIES


FLAME RETARDANT SINGLE WIRE (IEC 60332-1-2)


FLAME RETARDANT BUNCHED WIRES (IEC 60332-3)


FIRE RESISTANCE (IEC 60331 – EN50200 - BS6387 CWZ)


REDUCED EMISSION OF FUMES AND HALOGEN ACID GASES (IEC 60754-1)


SMOKE DENSITY (IEC 61034-1/2)


LOW ACIDITY AND CORROSIVITY OF EVOLVED GASES (IEC 60754-2)


WEATHERING TEST RESISTANCE (OUTDOOR)


INDOOR


WATER RESISTANCE


RODENT RESISTANCE


HAZARDOUS AREA


DYNAMIC APPLICATION


FULLY DIELECTRIC


DIRECT BURIAL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CHEMICAL PROPERTIES


MUD RESISTANCE


MINERAL OIL RESISTANCE

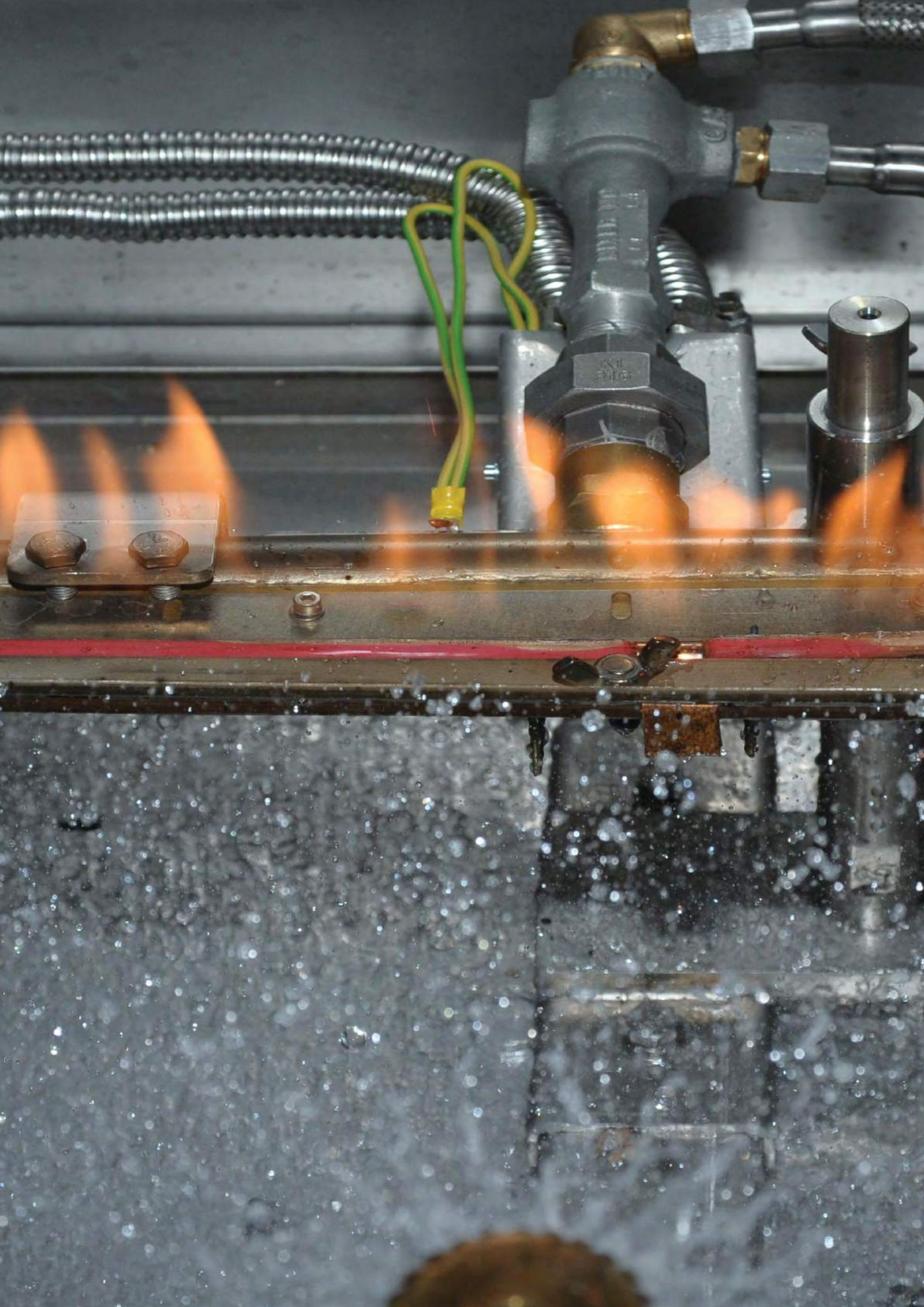

HYDROCARBONS RESISTANCE


ARCTIC TEMPERATURES

MECHANICAL PROPERTIES


MECHANICAL RESISTANCE


REDUCED BENDING RADIUS



FIRE PERFORMANCE

FIRE PERFORMANCES

IEC 60332-1-2 / EN 50265 / BS 4066:
Fire propagation on a vertical single cable

The single cable is mounted vertically and flamed with a Bunsen burner.

The flame must extinguish itself, at least 50 mm below the upper fixing clamp.

Power of burner, duration and angle of flame application, are described in the reference standards.

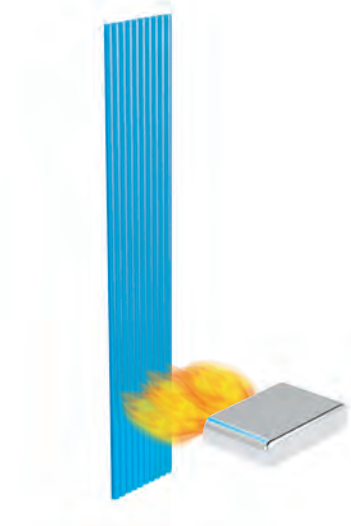
IEC 60332-3 / EN 50266:
Fire propagation on a vertical cables bundle

A certain number of cable samples are fixed on a 3.5m long ladder, and flamed with an appropriate burner.

The sample number, the duration of flame application, and the power/temperature of burner are described in the reference standards. After flame application, the visible area of fire damage must not exceed 2.5 m in height from the bottom of the burner.

The volume of tested material define a differentiation in categories:

A F/R Part 3-21	7 l/m
A Part 3-22	7 l/m
B Part 3-23	3.5 l/m
C Part 3-24	1.5 l/m
D Part 3-25	0.5 l/m



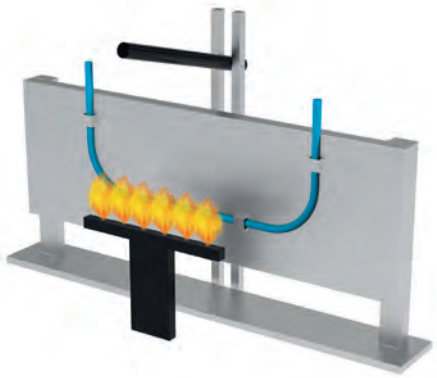
IEC 60331 / EN 50200: Fire test resistance

A sample of cable is horizontally applied supported by metal rings, or in U shape fixed on a fireproof wall.

Through using a gas burner the cable is maintained in flame contact for a certain time.

The test and the temperature of burner are described in the reference standards. In U shape test, the fireproof wall is hit every five minutes by a mechanical shock, to simulate a potential collapse during the fire.

The time of fire application, and the temperature of flame are described in the reference standards (typically 750°C or 830°C). The optical transmission of the fibers is checked and the change in attenuation is recorded during the test. and 15 minutes after flame extinction.



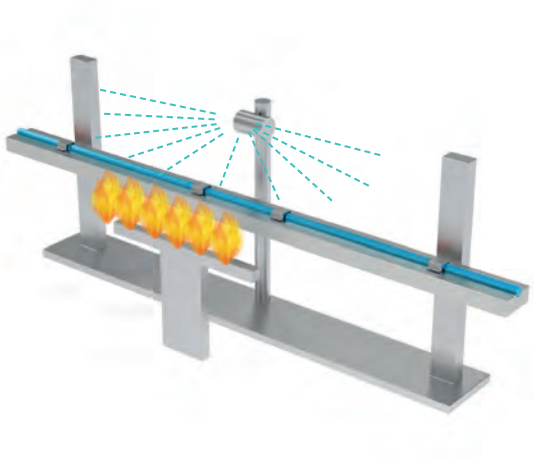
BS 6387 Category CWZ

The full test consists of subjecting the cable to 3 different protocols.

Protocol C: a flame with a temperature attack of 950°C is applied to the cable.

Protocol W: a flame with a temperature attack of 650°C is applied to the cable together with water simulating a sprinkler system.

Protocol Z: a flame with a temperature attack of 950°C is applied to the cable together with mechanical shock.



IEC 61034-1/2 - EN 50268-1/2: Measurement of smoke density of cables burning under defined conditions.

A few samples of cable are burnt in a cubic (3x3x3m^3) chamber using a flammable liquid.

The light transmittance of the resulting smoke is measured using an optical light detector. The test duration is about 40 minutes, depending on the quantity and composition of the liquid fuel. During the test the light transmittance of the smoke must be 60% minimum.

BS 8434-2 2003 + A2 2009: Fire resistance test

Test for unprotected small cables used in emergency circuits.

This British Standard specifies a method of test to be used for small unprotected cables where the requirements of BS EN 50200 are modified to use a flame temperature of 930 - 0 +40°C and the application of water spray.

The duration of the test shall be 120 min (60 min for the initial fire and impact phase followed by an additional 60 min for the fire, mechanical shock and water phase), during which the cable shall not reach the point of failure.

Conformity to this requirement shall qualify for a 120 min classification.

IEC 60754-1 - EN 50267-2-1: Test on gases evolved during combustion of materials from cables - Determination of the halogen acid gas content

This standard covers the general aspects of potential hazard caused from corrosiveness of smoke and combustion gases.

A small quantity of non-metallic material is heated in a tube, the resulting gases are tested for their halogen content. The flame

temperature is 800 °C ± 10 °C, with a test duration of 40 ± 5 min in total.
The halogen content of non-metallic materials must be less than 0.5% or 5 mg/g.

IEC 60754-2 - EN 50267-2-: Test on gases evolved during combustion of materials from cables - Determination of acidity (by pH measurement) and conductivity

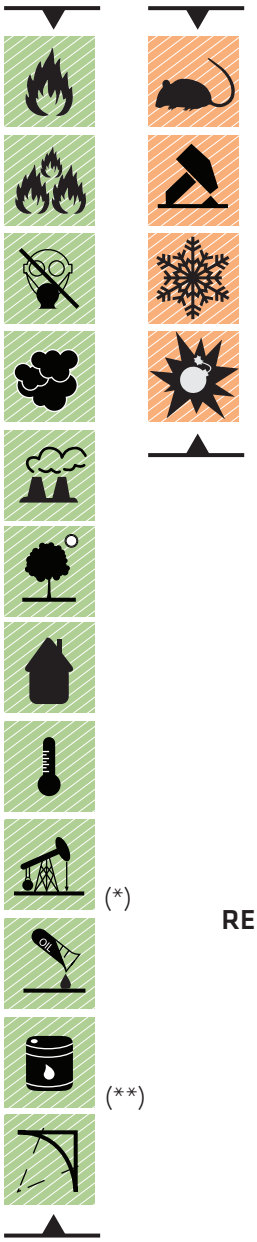
A small quantity of non-metallic material is burnt in a furnace, the pH and conductivity combustion gases dissolved in water are measured.
The minimum pH value of the washing water must 4.3, and the maximum conductivity must be 10 µS/mm.

COPPER DATA TRANSMISSION CABLES

These images are solely for illustrative purposes

TK-SEA LAN S/FTP CAT 6A_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded Bare Copper 23 AWG
Insulation	Cellular Polyolefin
Core identification	1. White – Blue 2. White – Orange 3. White – Green 4. White – Brown
Individual pairs shield	Alluminium/polyester tape
Overall shield	Tinned Copper braid
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
Outer diameter	8,6 mm – SHF1 - SHF2 10 mm – SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 69,5 Ω/km
Nominal capacitance	55 pF/m
Characteristic Impedance	@ 100 MHz: 100 ± 5 Ω

REFERENCE STANDARDS

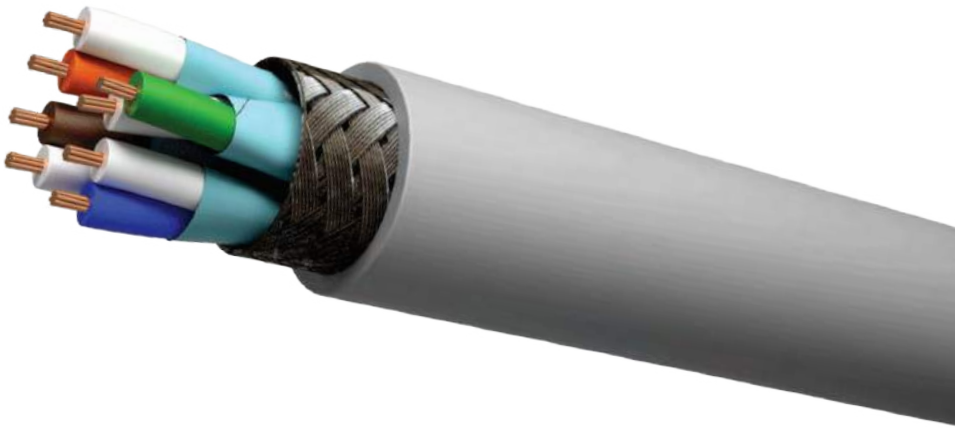
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	12mm

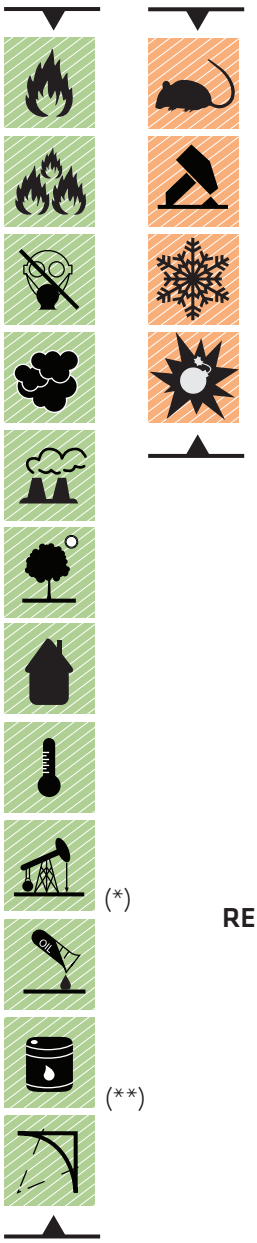
TK-SEA LAN S/FTP CAT 6A_ARMOURED AND UNARMOURED

Transmission Characteristics Category 6A (IEC 61156-6)													
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	250	500
Maximum Attenuation	**dB/100**	3.12	5.70	8.89	11.23	12.57	15.75	22.48	28.70	36.13	41.36	46.60	67.89
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	250	500
Minimum Return Loss	**dB**		23.01	25.00	25.00	25.00	23.33	20.74	18.99	17.35	16.40	15.60	15.60
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	250	500
Minimum NEXT	**dB**	75.30	66.27	60.30	57.24	55.78	52.88	48.36	45.30	42.45	40.78	39.33	34.82
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	250	500
Minimum PS-NEXT	**dB**	72.30	63.27	57.30	54.24	52.78	49.88	45.36	42.30	39.45	37.78	36.33	31.82



TK-SEA LAN S/FTP CAT 7_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded Bare Copper 23 AWG
Insulation	Cellular Polyolefin
Core identification	1. White – Blue 2. White – Orange 3. White – Green 4. White – Brown
Individual pairs shield	Alluminium/polyester tape
Overall shield	Tinned Copper braid
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
Outer diameter	8,6 mm – SHF1 - SHF2 10 mm – SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 69,5 Ω/km
Nominal capacitance	55 pF/m
Characteristic Impedance	@ 100 MHz: 100 ± 5 Ω

REFERENCE STANDARDS

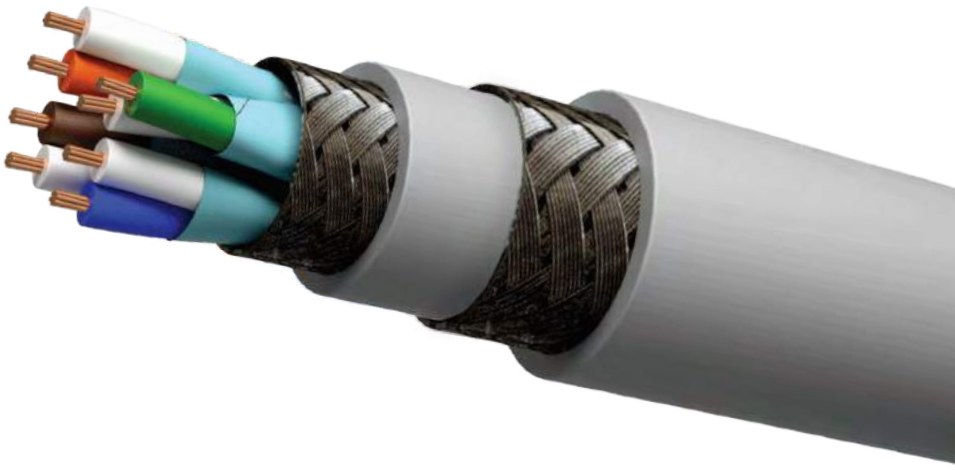
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	12mm

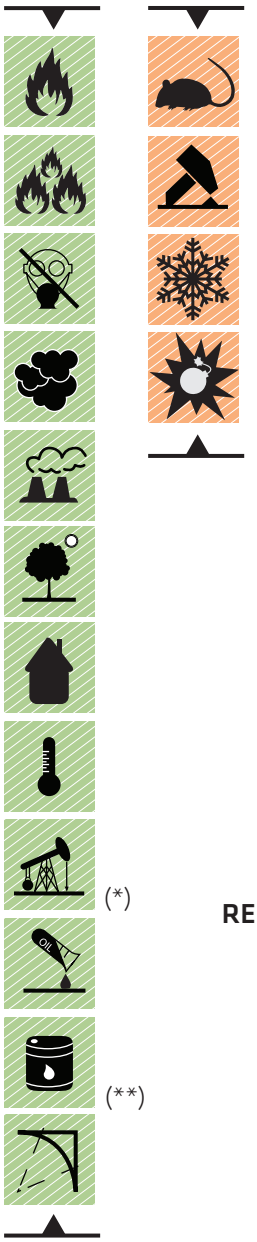
TK-SEA LAN S/FTP CAT 7_ARMOURED AND UNARMOURED

Transmission Characteristics Category 7 (IEC 61156-6)													
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	300	600
Maximum Attenuation	**dB/100**	3.02	5.61	8.78	11.12	12.44	15.62	22.32	28.53	35.96	41.20	51.28	75.15
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	300	600
Minimum Return Loss	**dB**		23.01	25.00	25.00	25.00	23.33	20.74	18.99	17.35	16.40	15.60	15.60
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	300	600
Minimum NEXT	**dB**	78.00	78.00	78.00	78.00	78.00	78.00	75.46	72.40	69.55	67.88	65.24	60.73
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	300	600
Minimum PS-NEXT	**dB**	75.00	75.00	75.00	75.00	75.00	75.00	72.46	69.40	66.55	64.88	62.24	57.73



TK-SEA LAN S/FTP CAT 7A_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded Bare Copper 23 AWG
Insulation	Cellular Polyolefin
Core identification	1. White – Blue 2. White – Orange 3. White – Green 4. White – Brown
Individual pairs shield	Alluminium/polyester tape
Overall shield	Tinned Copper braid
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
Outer diameter	8,6 mm – SHF1 - SHF2 10 mm – SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 69,5 Ω/km
Nominal capacitance	55 pF/m
Characteristic Impedance	@ 100 MHz: 100 ± 5 Ω

REFERENCE STANDARDS

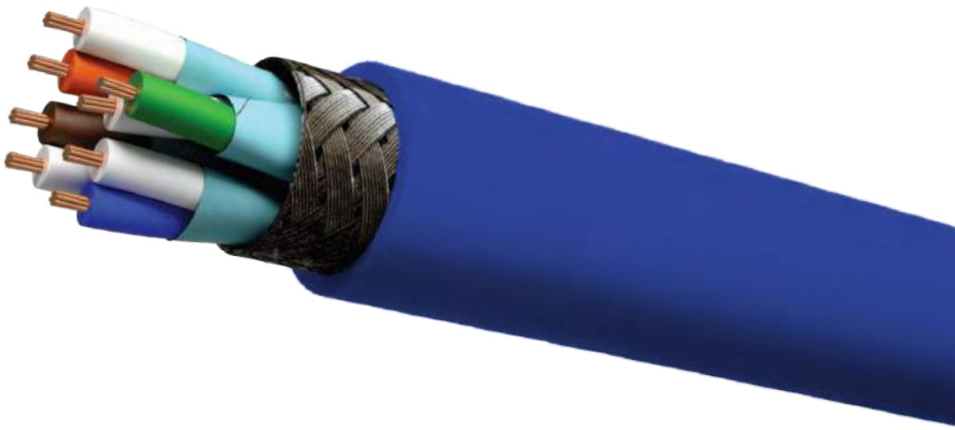
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	12mm

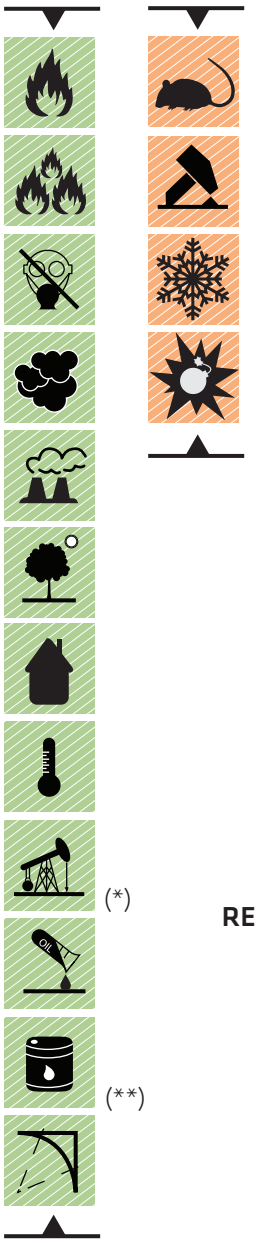
TK-SEA LAN S/FTP CAT 7A_ARMOURED AND UNARMOURED

Transmission Characteristics Category 7 (IEC 61156-6)														
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	300	600	1000
Maximum Attenuation	**dB/100**	3.01	5.58	8.71	11.00	12.29	15.38	21.58	27.78	34.80	39.70	49.03	70.65	92.89
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	300	600	1000
Minimum Return Loss	**dB**		23.01	25.00	25.00	25.00	23.33	20.74	18.99	17.35	16.40	15.60	15.60	13.69
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	300	600	1000
Minimum NEXT	**dB**	78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00	75.55	73.88	71.24	66.73	63.40
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	300	600	1000
Minimum PS-NEXT	**dB**	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00	72.55	70.88	68.24	63.73	60.40



TK-SEA LAN S/FTP CAT 7A + UP TO 1200 MHZ_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded Bare Copper 23 AWG	
Insulation	Cellular Polyolefin	
Core identification	1. White – Blue 2. White – Orange 3. White – Green 4. White – Brown	
Individual pairs shield	Alluminium/polyester tape	
Overall shield	Tinned Copper braid	
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	8,6 mm 10 mm	SHF1 - SHF2 SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 69,5 Ω/km
Nominal capacitance	55 pF/m
Characteristic Impedance	@ 100 MHz: 100 ± 5 Ω

REFERENCE STANDARDS

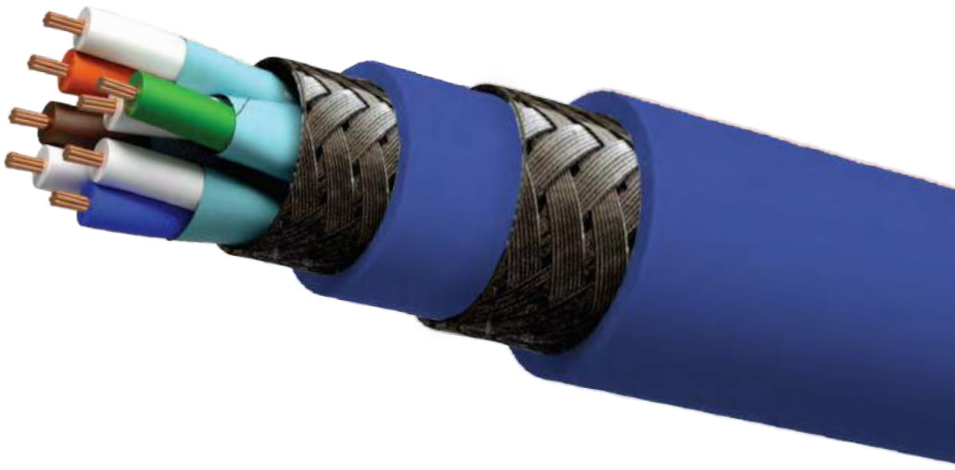
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	12mm

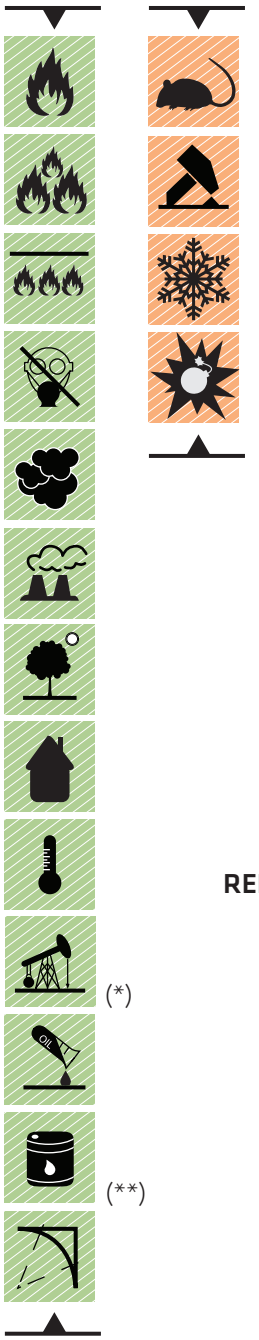
TK-SEA LAN S/FTP CAT 7A + UP TO 1200 MHZ_ARMOURED AND UNARMOURED

Transmission Characteristics Category 7A + up to 1200 MHz (IEC 61156-8)													
Frequenzy	**MHz**	4	10	16	20	31.25	62.5	100	200	250	600	1000	1200
Maximum Attenuation	**dB/100**	5.6	8.8	11.1	12.4	15.6	22.3	28.50	41.20	46.50	75.20	100.4	111.50
Frequenzy	**MHz**	4	10	16	20	31.25	62.5	100	200	250	600	1000	1200
Minimum Return Loss	**dB**	23.00	25.00	25.00	25.00	20.7	19.00	16.40	15.60	15.60	15.60	13.40	12.60
Frequenzy	**MHz**	4	10	16	20	31.25	62.5	100	200	250	600	1000	1200
Minimum NEXT	**dB**	78.00	78.00	78.00	78.00	78.00	78.00	76.00	71.48	70.03	64.33	61.00	59.81
Frequenzy	**MHz**	4	10	16	20	31.25	62.5	100	200	250	600	1000	1200
Minimum PS-NEXT	**dB**	75.00	75.00	75.00	75.00	75.00	75.00	73.00	68.48	67.03	61.33	58.00	56.81



TK-SEA LAN S/FTP CAT 6A FIRE RESISTANT_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded Bare Copper 23 AWG
Insulation	Fire resistant material
Core identification	1. White – Blue 2. White – Orange 3. White – Green 4. White – Brown
Individual pairs shield	Alluminium/polyester tape
Overall shield	Tinned Copper braid
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
Outer diameter	9,8 mm

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 69,5 Ω/km
Nominal capacitance	55 pF/m
Characteristic Impedance	@ 100 MHz: 100 ± 5 Ω

REFERENCE STANDARDS

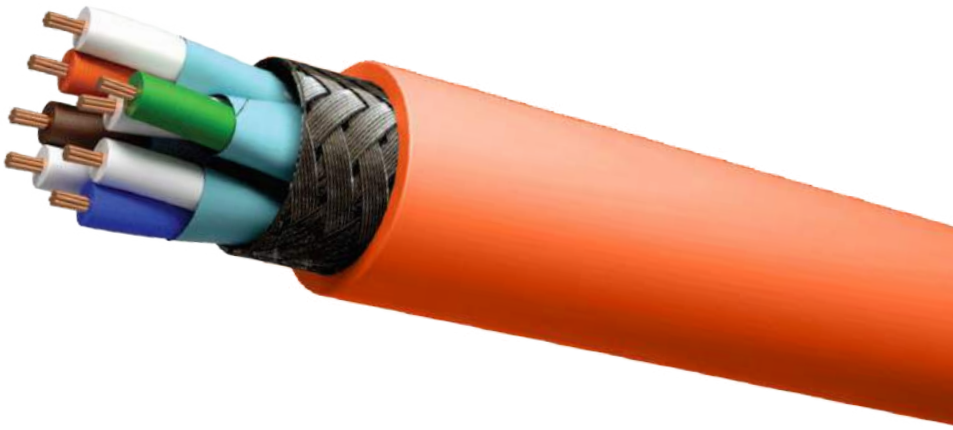
Fire resistance	IEC 60331-23
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	14mm

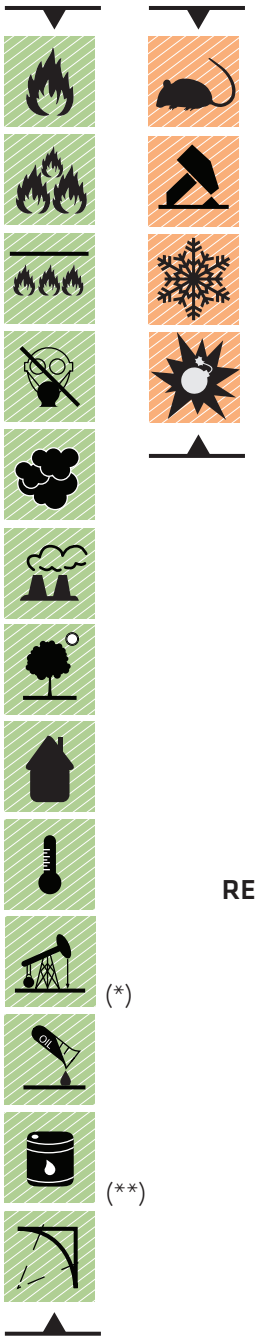
TK-SEA LAN S/FTP CAT 6A FIRE RESISTANT_ARMOURED AND UNARMOURED

Transmission Characteristics Category 6A (IEC 61156-6)													
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	250	500
Maximum Attenuation	**dB/100**	3.12	5.70	8.89	11.23	12.57	15.75	22.48	28.70	36.13	41.36	46.60	67.89
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	250	500
Minimum Return Loss	**dB**		23.01	25.00	25.00	25.00	23.33	20.74	18.99	17.35	16.40	15.60	15.60
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	250	500
Minimum NEXT	**dB**	75.30	66.27	60.30	57.24	55.78	52.88	48.36	45.30	42.45	40.78	39.33	34.82
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	250	500
Minimum PS-NEXT	**dB**	72.30	63.27	57.30	54.24	52.78	49.88	45.36	42.30	39.45	37.78	36.33	31.82



TK-SEA LAN S/FTP CAT 7 FIRE RESISTANT_ARMOURED AND UNARMOURED

ON REQUEST



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CABLE SPECIFICATION

Conductors	Stranded Bare Copper 23 AWG
Insulation	Fire resistant material
Core identification	1. White – Blue 2. White – Orange 3. White – Green 4. White – Brown
Individual pairs shield	Alluminium/polyester tape
Overall shield	Tinned Copper braid
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
Outer diameter	9,8 mm

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 69,5 Ω/km
Nominal capacitance	55 pF/m
Characteristic Impedance	@ 100 MHz: 100 ± 5 Ω

REFERENCE STANDARDS

Fire resistance	IEC 60331-23
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

ARMOURED VERSION

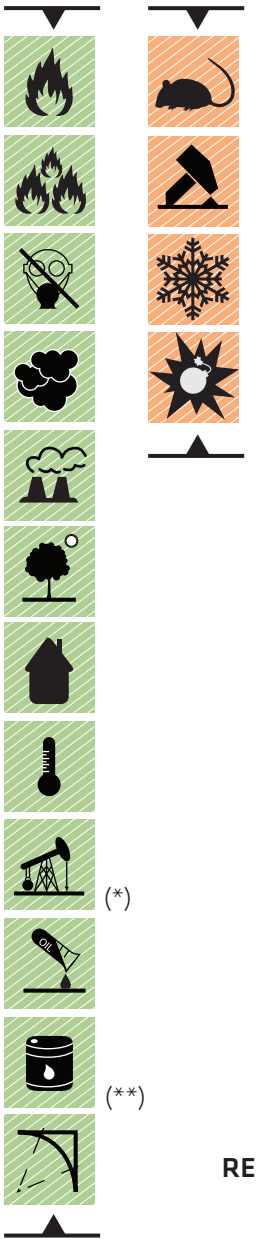
Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	14mm

TK-SEA LAN S/FTP CAT 7 FIRE RESISTANT_ARMOURED AND UNARMOURED

Transmission Characteristics Category 7 (IEC 61156-6)													
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	300	600
Maximum Attenuation	**dB/100**	3.02	5.61	8.78	11.12	12.44	15.62	22.32	28.53	35.96	41.20	51.28	75.15
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	300	600
Minimum Return Loss	**dB**		23.01	25.00	25.00	25.00	23.33	20.74	18.99	17.35	16.40	15.60	15.60
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	300	600
Minimum NEXT	**dB**	78.00	78.00	78.00	78.00	78.00	78.00	75.46	72.40	69.55	67.88	65.24	60.73
Frequenzy	**MHz**	1	4	10	16	20	31.25	62.5	100	155	200	300	600
Minimum PS-NEXT	**dB**	75.00	75.00	75.00	75.00	75.00	75.00	72.46	69.40	66.55	64.88	62.24	57.73

TK-SEA PROFIBUS_ARMOURED AND UNARMOURED

ON REQUEST



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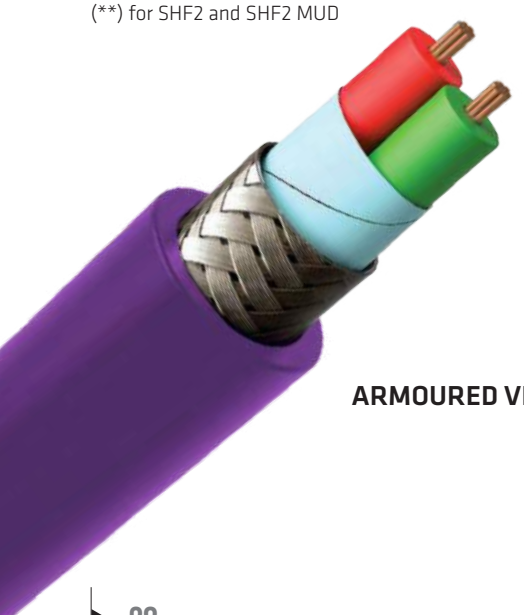
(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD



CABLE SPECIFICATION

Conductors	Stranded Bare Copper 0,35 mm²
Insulation	Foam-Skin Polyolefin
Core identification	Green-Red (1 pair) Green- Blue; Red -Brown (2 pairs 4 cores laid in quad formation)
Shield	Alluminium/polyester tape + tinned copper braid
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
Outer diameter	8.6 mm SHF1 - SHF2 (1 pair) 10 mm SHF2 MUD (1 pair) 9.5 mm SHF1 - SHF2 (2 pairs) 11 mm SHF2 MUD (2 pairs)

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 55 Ω/km
Nominal capacitance	30 pF/m
Characteristic Impedance	@ 3 ÷ 20 MHz: 150 ± 15 Ω @ 38,4 KHz: 185 ± 18,5 Ω @ 9,6 KHz: 250 ± 25 Ω
Nominal attenuation	@ 16 MHz: 45 dB/km @ 4 MHz: 22 dB/km @ 38,4KHz: 5 dB/km @ 9,6 KHz: 3 dB/km

REFERENCE STANDARDS

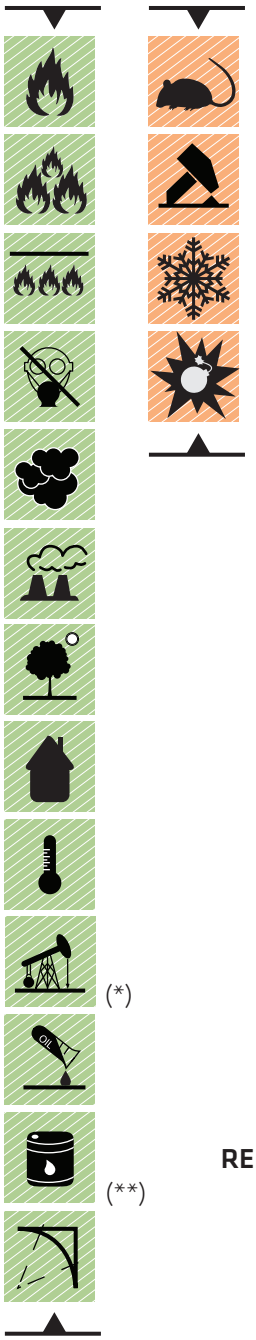
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	12 mm (1 pair) 12.5 mm (2 pairs)

TK-SEA PROFIBUS FIRE RESISTANT_ARMOURED AND UNARMOURED

ON REQUEST



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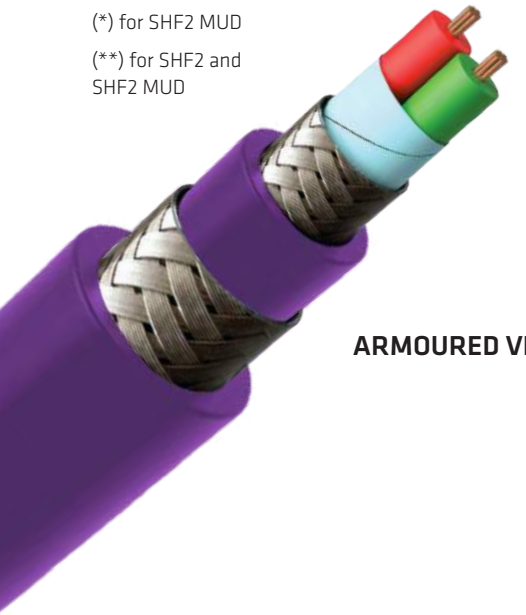
(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD



CABLE SPECIFICATION

Conductors	Stranded Bare Copper 0,35 mm²	
Insulation	Foam-Skin Polyolefin	
Core identification	Green-Red (1 pair)	
	Green- Blue; Red -Brown (2 pairs 4 cores laid in quad formation)	
Flame barrier	Mica tape	
Shield	Alluminium/polyester tape + tinned copper braid	
Outer sheath	Halogen free SHF1 UVR	
	Halogen free cross-linked SHF2 UVR	
	Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	9.6 mm	SHF1 - SHF2 (1 pair)
	11 mm	SHF2 MUD (1 pair)
	10.5 mm	SHF1 - SHF2 (2 pairs)
	12 mm	SHF2 MUD (2 pairs)

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 55 Ω/km
Nominal capacitance	30 pF/m
Characteristic Impedance	@ 3 ÷ 20 MHz: 150 ± 15 Ω @ 38,4 KHz: 185 ± 18,5 Ω @ 9,6 KHz: 250 ± 25 Ω
Nominal attenuation	@ 16 MHz: 45 dB/km @ 4 MHz: 22 dB/km @ 38,4KHz: 5 dB/km @ 9,6 KHz: 3 dB/km

REFERENCE STANDARDS

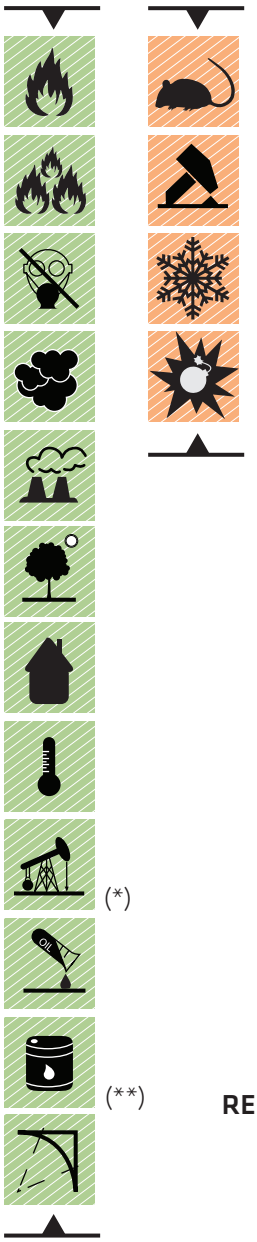
Fire resistance	IEC 60331-23
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	12.8 mm (1 pair) 13.5 mm (2 pairs)

TK-SEA CANBUS LSZH CABLE 1 PAIR_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded bare copper 0,75 mm²	
Insulation	Foam-Skin Polyolefin	
Core identification	White - Blue	
Individual pairs shield	Alluminium/polyester tape	
Earth conductor	Stranded tinned copper Yellow/Green	
Overall shield	Tinned Copper braid	
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	11,5 mm 14 mm	SHF1 - SHF2 SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 26 Ω/km (Bare copper) @ 20°C: ≤ 26,7 Ω/km (Tinned copper)
Nominal capacitance	40 pF/m
Characteristic Impedance	@ 1 MHz: 120 Ω ± 10%
Nominal attenuation	@ 1 MHz: 13,2 dB/km

REFERENCE STANDARDS

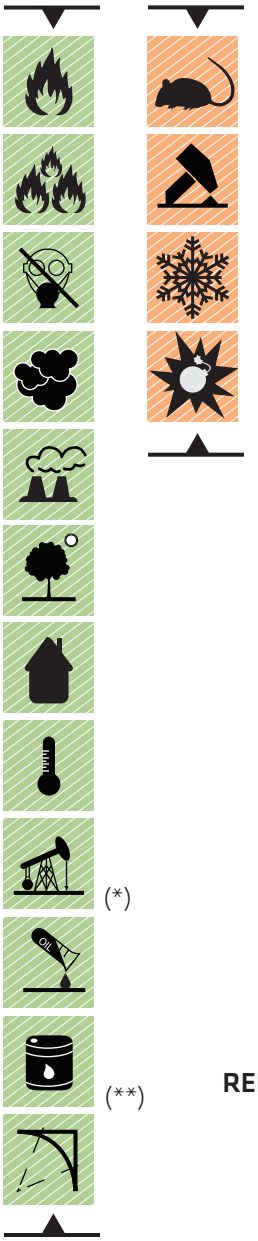
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	15 mm

TK-SEA CANBUS LSZH CABLE 2 PAIRS_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded bare copper 0,75 mm²
Insulation	Foam-Skin Polyolefin
Core identification	Green - Blue; Red - Brown
Inner sheath	Halogen free SHF1
Shield	Alluminium/polyester tape + Tinned copper braid
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
Outer diameter	10,5 mm — SHF1 - SHF2 13 mm — SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 Mud)
Conductor resistance	≤ 26 Ω/km (Bare copper) ≤ 26,7 Ω/km (Tinned copper)
Nominal capacitance	40 pF/m
Characteristic Impedance	@ 1 MHz: 120 Ω ± 10%
Nominal attenuation	@ 1 MHz: 13,2 dB/km

REFERENCE STANDARDS

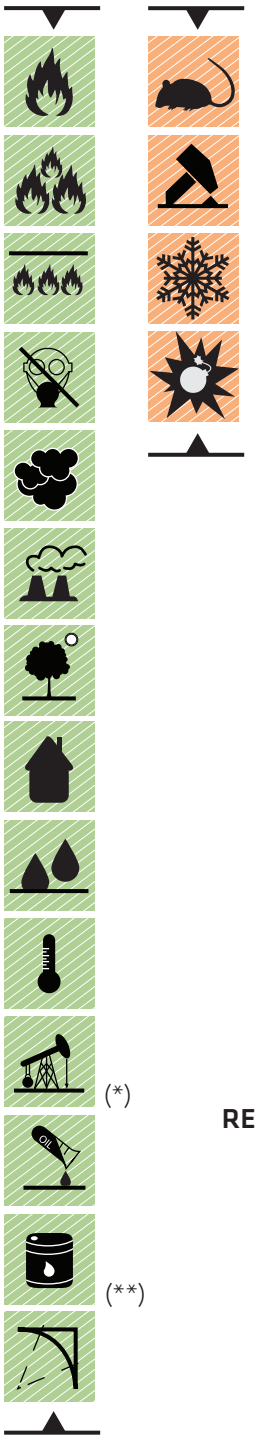
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (fSHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	14 mm

TK-SEA CANBUS FIRE RESISTANT LSZH CABLE 1 PAIR_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

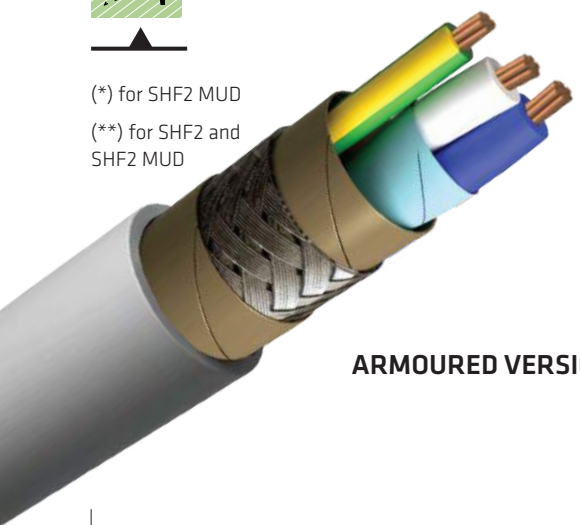
Conductors	Stranded bare copper 0,75 mm²
Insulation	Foam-Skin Polyolefin
Core identification	White - Blue
Flame barrier	Mica tape
Individual pairs shield	Alluminium/polyester tape
Earth conductor	Stranded tinned copper Yellow/Green
Overall shield	Tinned Copper braid
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2UVR Halogen free cross-linked SHF2 MUD UVR
Outer diameter	12,5 mm — SHF1 - SHF2 15 mm — SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 Mud)
Conductor resistance	≤ 26 Ω/km (Bare copper) @ 20°C: ≤ 26,7 Ω/km (Tinned copper)
Nominal capacitance	40 pF/m
Characteristic Impedance	@ 1 MHz: 120 Ω ± 10%
Nominal attenuation	@ 1 MHz: 13,2 dB/km

REFERENCE STANDARDS

Fire resistance	IEC 60331-23
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

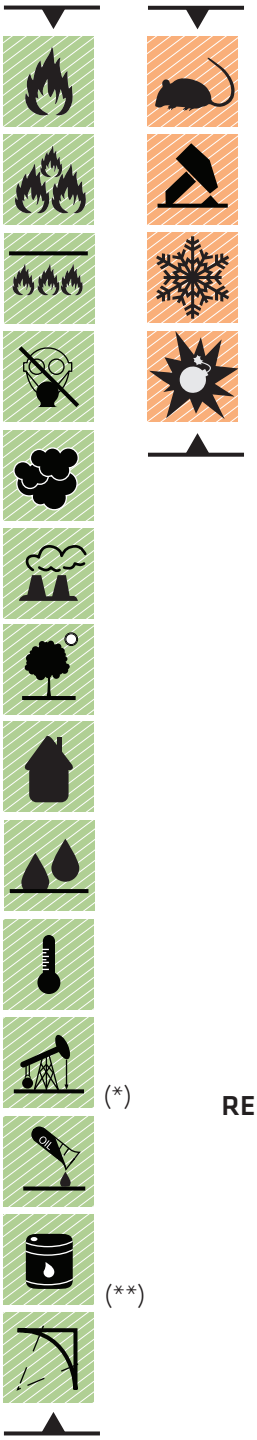


ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	16 mm

TK-SEA CANBUS FIRE RESISTANT LSZH CABLE 2 PAIRS_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded bare copper 0,75 mm²
Insulation	Foam-Skin Polyolefin
Core identification	Green - Blue; Red - Brown
Flame barrier	Mica tape
Inner sheath	Halogen free SHF1
Shield	Alluminium/polyester tape + Tinned copper braid
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
Outer diameter	11 mm — SHF1 - SHF2 13.5 mm — SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 26 Ω/km (Bare copper) ≤ 26,7 Ω/km (Tinned copper)
Nominal capacitance	40 pF/m
Characteristic Impedance	@ 1 MHz: 120 Ω ± 10%
Nominal attenuation	@ 1 MHz: 13,2 dB/km

REFERENCE STANDARDS

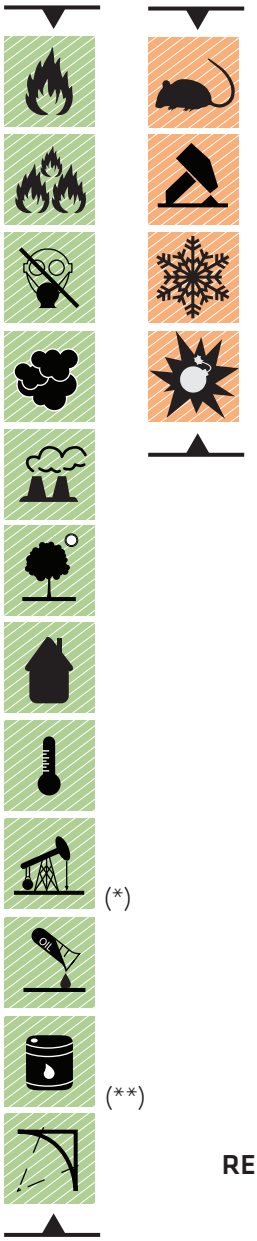
Fire resistance	IEC 60331-23
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	14.5 mm

TK-SEA RS 485 LSZH CABLE_ARMOURED AND UNARMOURED - 20 AWG

ON REQUEST



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CABLE SPECIFICATION

Conductors	Stranded Tinned Copper 20 AWG	
Insulation	Cellular Polyolefin	
Core identification	White - Blue (Colour code for 1 pair cable + filler) White – Blue; White - Orange (Colour code for 2 pairs 4 cores laid in quad formation) White – Blue; White - Orange, White - Orange; White - Brown (Colour code for 4 pairs cable)	
Shield	Alluminium/polyester tape + Tinned copper braid	
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	8,8 mm 10,8 mm 9,4 mm 11,4 mm 13,8 mm 15,8 mm	1 pair SHF1 1 pair SHF2 - SHF2 MUD 2 pairs (1 star quad) SHF1 2 pairs (1 star quad) SHF2 - SHF2 MUD 4 pairs SHF1 4 pairs SHF2 - SHF2 MUD

TECHNICAL DATA

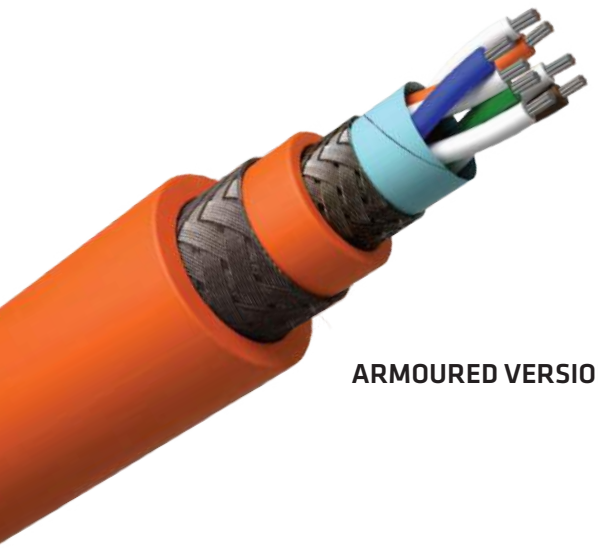
Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 33 Ω/km
Nominal capacitance	42 pF/m
Characteristic Impedance	@ 1 MHz: 100 ÷ 130 Ω
Nominal attenuation	@ 1 MHz: 12 dB/km

REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

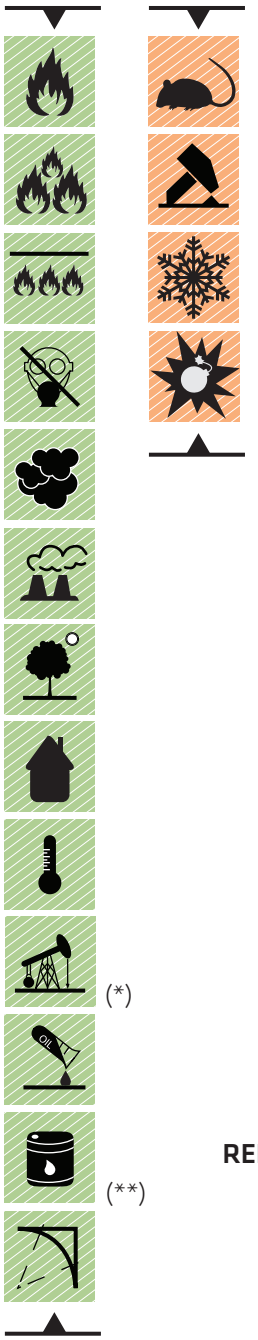


ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	1 pair: 11,8 mm 2 pairs: 12,5 mm 4 pairs: 16,8 mm

TK-SEA FIRE RESISTANT RS 485 LSZH CABLE_ARMOURED AND UNARMOURED - 20 AWG

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded Tinned Copper 20 AWG
Insulation	Cellular Polyolefin
Core identification	White - Blue (Colour code for 1 pair cable + filler) White – Blue; White - Orange (Colour code for 2 pairs 4 cores laid in quad formation) White – Blue; White -Orange, White -Orange; White - Brown (Colour code for 4 pairs cable)
Flame barrier	Mica tape
Shield	Alluminium/polyester tape + Tinned copper braid
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR

Outer diameter	
9,6 mm	1 pair SHF1
11,6 mm	1 pair SHF2 - SHF2 MUD
10,5 mm	2 pairs (1 star quad) SHF1
12,5 mm	2 pairs (1 star quad) SHF2 - SHF2 MUD
14,7 mm	4 pairs SHF1
16,7 mm	4 pairs SHF2 - SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 33 Ω/km
Nominal capacitance	42 pF/m
Characteristic Impedance	@ 1 MHz: 100 ÷ 130 Ω
Nominal attenuation	@ 1 MHz: 12 dB/km

REFERENCE STANDARDS

Fire resistance	IEC 60331-23
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	1 pair: 12,6 mm 2 pairs: 13,5 mm 4 pairs: 17,7 mm

TK-SEA RS 485 LSZH CABLE_ARMOURED AND UNARMOURED - 24 AWG

ON REQUEST

(*)

(**)

(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded Tinned Copper 24 AWG	
Insulation	Cellular Polyolefin	
Core identification	White - Blue (Colour code for 1 pair cable + filler)	
	White – Blue; White - Orange (Colour code for 2 pairs 4 cores laid in quad formation)	
	White – Blue; White - Orange, White - Orange; White - Brown (Colour code for 4 pairs cable)	
Shield	Alluminium/polyester tape + Tinned copper braid	
Outer sheath	Halogen free SHF1 UVR	
	Halogen free cross-linked SHF2 UVR	
	Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	6.7 mm	1 pair SHF1
	7 mm	1 pair SHF2 - SHF2 MUD
	6.5 mm	2 pairs (1 star quad) SHF1
	8 mm	2 pairs (1 star quad) SHF2 - SHF2 MUD
	9 mm	4 pairs SHF1
	10.5 mm	4 pairs SHF2 - SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 90 Ω/km
Nominal capacitance	42 pF/m
Characteristic Impedance	@ 1 MHz: 120 ÷ 50 Ω
Nominal attenuation	@ 1 MHz: 22 dB/km

REFERENCE STANDARDS

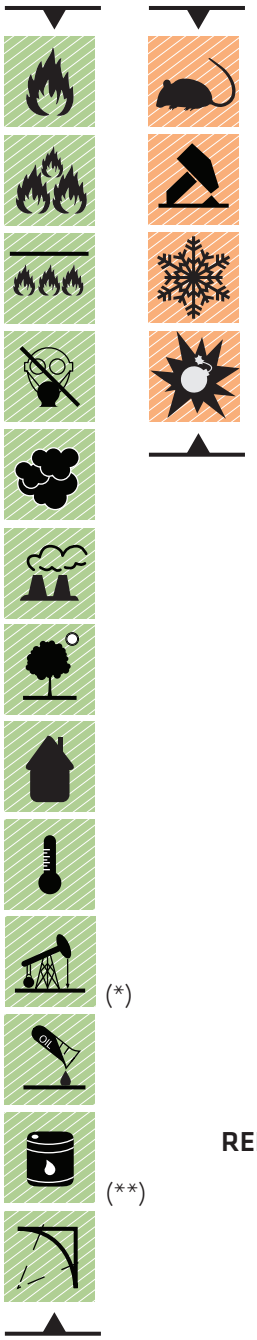
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	1 pair: 9.5 mm 2 pairs: 10 mm 4 pairs: 12 mm

TK-SEA FIRE RESISTANT RS 485 LSZH CABLE_ARMOURED AND UNARMOURED - 24 AWG

ON REQUEST



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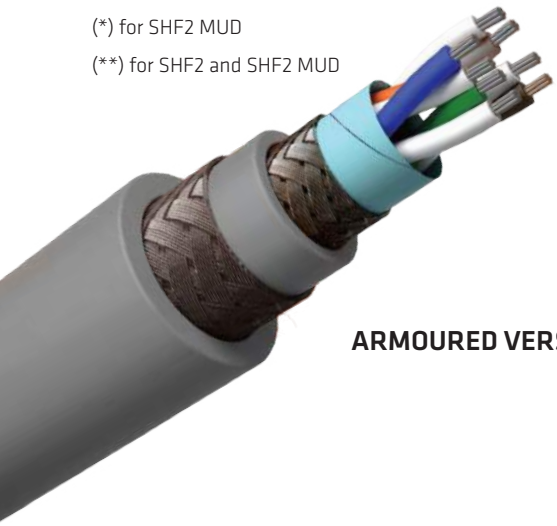
(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD



CABLE SPECIFICATION

Conductors	Stranded Tinned Copper 24 AWG	
Insulation	Cellular Polyolefin	
Core identification	White - Blue (Colour code for 1 pair cable + filler)	
	White – Blue; White - Orange (Colour code for 2 pairs 4 cores laid in quad formation)	
	White – Blue; White -Orange, White -Orange; White - Brown (Colour code for 4 pairs cable)	
Flame barrier	Mica tape	
Shield	Alluminium/polyester tape + Tinned copper braid	
Outer sheath	Halogen free SHF1 UVR	
	Halogen free cross-linked SHF2 UVR	
	Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	7 mm	1 pair SHF1
	8 mm	1 pair SHF2 - SHF2 MUD
	7.8 mm	2 pairs (1 star quad) SHF1
	9.2 mm	2 pairs (1 star quad) SHF2 - SHF2 MUD
	10.2 mm	4 pairs SHF1
	11.5 mm	4 pairs SHF2 - SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 90 Ω/km
Nominal capacitance	42 pF/m
Characteristic Impedance	@ 1 MHz: 120 ÷ 15 Ω
Nominal attenuation	@ 1 MHz: 22 dB/km

REFERENCE STANDARDS

Fire resistance	IEC 60331-23
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	1 pair: 10.5 mm 2 pairs: 11 mm 4 pairs: 13.5 mm

TK-SEA RS 422 LSZH CABLE_ARMOURED AND UNARMOURED - 20 AWG

ON REQUEST

(*)

(**)

(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded Tinned Copper 20 AWG	
Insulation	Cellular Polyolefin	
Core identification	White - Blue (Colour code for 1 pair cable + filler)	
	White – Blue; White - Orange (Colour code for 2 pairs 4 cores laid in quad formation)	
	White – Blue; White - Orange, White - Orange; White - Brown (Colour code for 4 pairs cable)	
Shield	Alluminium/polyester tape + Tinned copper braid	
Outer sheath	Halogen free SHF1 UVR	
	Halogen free cross-linked SHF2 UVR	
	Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	7.5 mm	1 pair SHF1
	8.5 mm	1 pair SHF2 - SHF2 MUD
	8 mm	2 pairs (1 star quad) SHF1
	9.5 mm	2 pairs (1 star quad) SHF2 - SHF2 MUD
	11 mm	4 pairs SHF1
	13 mm	4 pairs SHF2 - SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 33 Ω/km
Nominal capacitance	52 pF/m
Characteristic Impedance	@ 1 MHz: 100 ÷ 15 Ω
Nominal attenuation	@ 1 MHz: 18 dB/km

REFERENCE STANDARDS

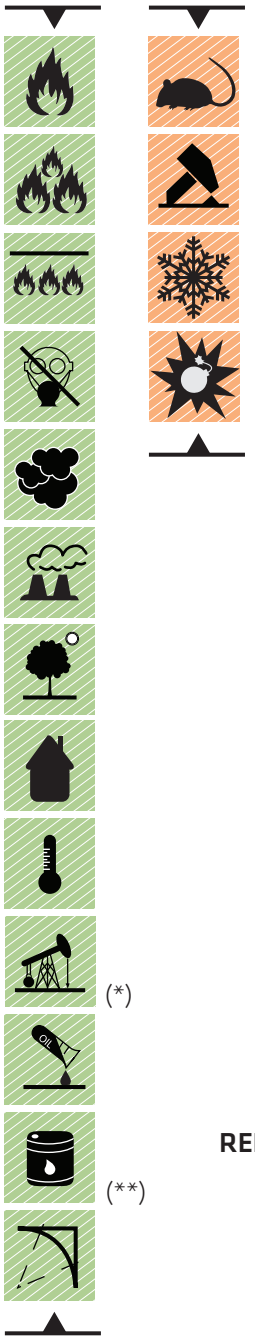
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	1 pair: 10.5 mm 2 pairs: 11.5 mm 4 pairs: 14 mm

TK-SEA FIRE RESISTANT RS 422 LSZH CABLE_ARMOURED AND UNARMOURED - 20 AWG

ON REQUEST



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CABLE SPECIFICATION

Conductors	Stranded Tinned Copper 20 AWG	
Insulation	Cellular Polyolefin	
Core identification	White - Blue (Colour code for 1 pair cable + filler	
	White – Blue; White - Orange (Colour code for 2 pairs 4 cores laid in quad formation)	
	White – Blue; White -Orange, White -Orange; White - Brown (Colour code for 4 pairs cable)	
Flame barrier	Mica tape	
Shield	Alluminium/polyester tape + Tinned copper braid	
Outer sheath	Halogen free SHF1 UVR	
	Halogen free cross-linked SHF2 UVR	
	Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	8.5 mm	1 pair SHF1
	9.5 mm	1 pair SHF2 - SHF2 MUD
	9 mm	2 pairs (1 star quad) SHF1
	10.6 mm	2 pairs (1 star quad) SHF2 - SHF2 MUD
	102.2 mm	4 pairs SHF1
	14.2 mm	4 pairs SHF2 - SHF2 MUD

TECHNICAL DATA

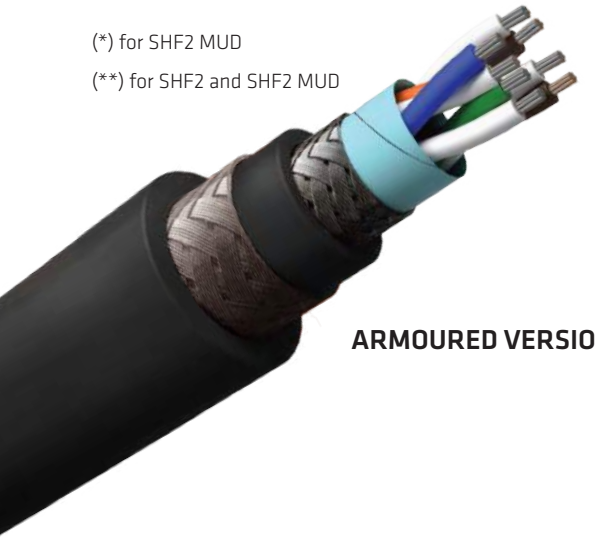
Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 33 Ω/km
Nominal capacitance	52 pF/m
Characteristic Impedance	@ 1 MHz: 120 ÷ 15 Ω
Nominal attenuation	@ 1 MHz: 18 dB/km

REFERENCE STANDARDS

Fire resistance	IEC 60331-23
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

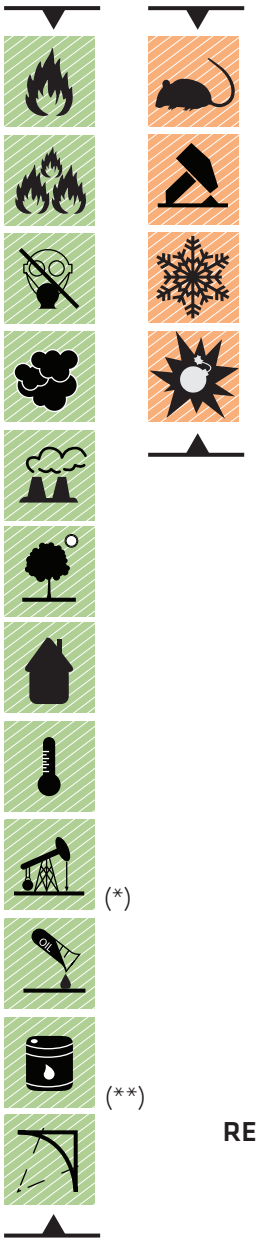


ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	1 pair: 11.5 mm 2 pairs: 12.5 mm 4 pairs: 15.5 mm

TK-SEA RS 422 LSZH CABLE_ARMOURED AND UNARMOURED - 24 AWG

ON REQUEST



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CABLE SPECIFICATION

Conductors	Stranded Tinned Copper 24 AWG	
Insulation	Cellular Polyolefin	
Core identification	White - Blue (Colour code for 1 pair cable + filler) White – Blue; White - Orange (Colour code for 2 pairs 4 cores laid in quad formation) White – Blue; White - Orange, White - Orange; White - Brown (Colour code for 4 pairs cable)	
Shield	Alluminium/polyester tape + Tinned copper braid	
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	5.5 mm 6.8 mm 6 mm 7 mm 8 mm 9.5 mm	1 pair SHF1 1 pair SHF2 - SHF2 MUD 2 pairs (1 star quad) SHF1 2 pairs (1 star quad) SHF2 - SHF2 MUD 4 pairs SHF1 4 pairs SHF2 - SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 33 Ω/km
Nominal capacitance	52 pF/m
Characteristic Impedance	@ 1 MHz: 100 ÷ 15 Ω
Nominal attenuation	@ 1 MHz: 18 dB/km

REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

(*) for SHF2 MUD

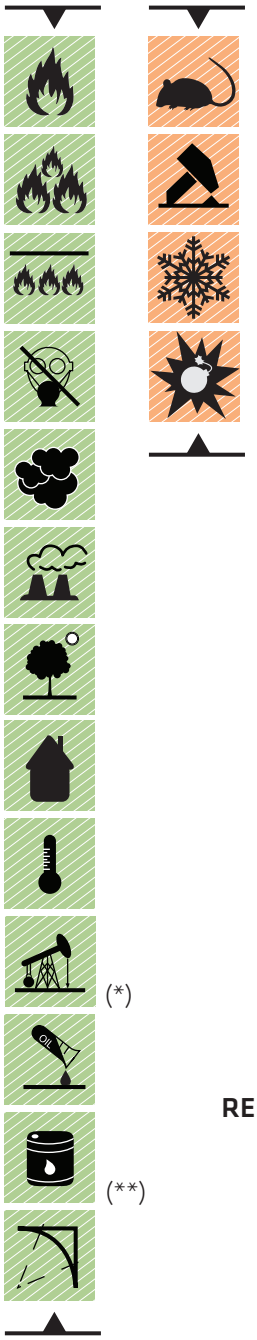
(**) for SHF2 and SHF2 MUD

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	1 pair: 8.5 mm 2 pairs: 9 mm 4 pairs: 11 mm

TK-SEA FIRE RESISTANT RS 422 LSZH CABLE_ARMOURED AND UNARMOURED - 24 AWG

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded Tinned Copper 24 AWG	
Insulation	Cellular Polyolefin	
Core identification	White - Blue (Colour code for 1 pair cable + filler)	
	White – Blue; White - Orange (Colour code for 2 pairs 4 cores laid in quad formation)	
	White – Blue; White -Orange, White -Orange; White - Brown (Colour code for 4 pairs cable)	
Flame barrier	Mica tape	
Shield	Alluminium/polyester tape + Tinned copper braid	
Outer sheath	Halogen free SHF1 UVR	
	Halogen free cross-linked SHF2 UVR	
	Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	6.5 mm	1 pair SHF1
	7.5 mm	1 pair SHF2 - SHF2 MUD
	7.5 mm	2 pairs (1 star quad) SHF1
	8.5 mm	2 pairs (1 star quad) SHF2 - SHF2 MUD
	19.5 mm	4 pairs SHF1
	10.5 mm	4 pairs SHF2 - SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 33 Ω/km
Nominal capacitance	52 pF/m
Characteristic Impedance	@ 1 MHz: 120 ÷ 15 Ω
Nominal attenuation	@ 1 MHz: 18 dB/km

REFERENCE STANDARDS

Fire resistance	IEC 60331-23
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	1 pair: 10 mm 2 pairs: 10.5 mm 4 pairs: 12.8 mm

NOTE

OPTICAL FIBER CABLES

These images are solely for illustrative purposes

OPTICAL FIBER CABLES GENERAL INFORMATION

FIBER TYPES

- Single-mode ITU-T G.652D - IEC 60793-2-50 Type B.1.3
- Single-mode ITU-T G.657A1 - IEC 60793-2-50 Type B.1.3 and B.6.A
- Single-mode ITU-T G.657A2 / B2 - IEC 60793-2-50 Type B.1.3 and B.6.A&B
- Single-mode ITU-T G.657A1 Type 200micron
- Single-mode NZD ITU-T G.655E/656 - IEC 60793-2-50 Type B4/B5

- Multimode 62.5/125 OM1 IEC 60793-2-10 Type A1 - OM1
- Multimode 62.5/125 OM1 IEC 60793-2-10 Type A1 - OM1+
- Multimode 50/125 OM2 ITU-T G.651.1 IEC 60793-2-10 Type A1 - OM2
- Multimode 50/125 OM3 ITU-T G.651.1 IEC 60793-2-10 Type A1 - OM3
- Multimode 50/125 OM4 ITU-T G.651.1 IEC 60793-2-10 Type A1 - OM4
- Multimode 50/125 OM5 ITU-T G.651.1 IEC 60793-2-10 Type A1 - OM5

STANDARD FIBER COLOUR CODE (TABLE A, EIA - TIA 598)

1 – Blue	7 – Red	13 – Blue (with black ring)	19 – Red (with black ring)
2 – Orange	8 – Black	14 – Orange (with black ring)	20 – Natural (with black ring)
3 – Green	9 – Yellow	15 – Green (with black ring)	21 – Yellow (with black ring)
4 – Brown	10 - Violet	16 – Brown (with black ring)	22 – Violet (with black ring)
5 – Grey	11 – Pink	17 – Grey (with black ring)	23 – Pink (with black ring)
6 – White	12 - Turquoise	18 – White (with black ring)	24 - Turquoise (with black ring)

*Other colours on request

N° OF FIBRE	STANDARD COLOURS OF LOOSE TUBE (EIA - TIA 598)	
2	1 – Blue (With 2 OF) 2 – Filler 3 – Filler	4 – Filler 5 – Filler 6 – Filler
4	1 – Blue(With 2 OF) 2 – Orange (With 2 OF) 3 – Filler	4 – Filler 5 – Filler 6 – Filler
8	1 – Blue (With 4 OF) 2 – Orange (With 4 OF) 3 – Filler	4 – Filler 5 – Filler 6 – Filler
12	1 – Blue (With 4 OF) 2 – Orange (With 4 OF) 3 – Green (With 4 OF)	4 – Filler 5 – Filler 6 – Filler
24	1 – Blue(With 6 OF) 2 – Orange (With 6 OF) 3 – Green(With 6 OF)	4 – Brown (With 6 OF) 5 – Filler 6 – Filler
48	1 – Blue(With 12 OF) 2 – Orange (With 12 OF) 3 – Green(With 12 OF)	4 – Brown (with 12 OF) 5 – Filler 6 – Filler
60	1 – Blue(With 12 OF) 2 – Orange (With 12 OF) 3 – Green(With 12 OF)	4 – Brown (with 12 OF) 5 – Grey (with 12 OF) 6 – Filler
72	1 – Blue(With 12 OF) 2 – Orange (With 12 OF) 3 – Green(With 12 OF)	4 – Brown (with 12 OF) 5 – Grey (with 12 OF) 6 – White (with 12 OF)

STANDARD TIGHT COLOUR CODE (TABLE C, EIA - TIA 598)

1- Blue	7- Red	13- Blue with black ring	19- Red with black ring
2- Orange	8- Black	14- Orange with black ring	20- White with double black ring
3- Green	9- Yellow	15- Green with black ring	21- Yellow with black ring
4- Brown	10- Violet	16- Brown with black ring	22- Violet with black ring
5- Grey	11- Pink	17- Grey with black ring	23- Pink with black ring
6- White	12- Turquoise (Aqua)	18- White with black ring	24- Turquoise with black ring

*Other colours on request

SINGLE-MODE FIBER PROPERTIES

	SM-LWP ITU-T G.652.D	SM ITU-T G.657.A1	SM ITU-T G.657.A2	SM 200 µm ITU-T G.657.A1	SM NZD ITU-T G.655.D
Mode Field Diameter @ 1310 nm	9.1 ± 0.4 µm	9.1 ± 0.4 µm	8.6 ± 0.4 µm	8.8 ± 0.4 µm	
Mode Field Diameter @ 1550 nm	10.2 ± 0.5 µm	10.2 ± 0.5 µm		9.8 ± 0.5 µm	9.6 ± 0.4 µm
Cladding diameter	125.0 ± 0.7 µm	125.0 ± 0.7 µm	125.0 ± 0.7 µm	125.0 ± 0.7 µm	125.0 ± 0.7 µm
Coating diameter	242 ± 7 µm	242 ± 7 µm	242 ± 7 µm	200 ± 10 µm	242 ± 7 µm
Cladding non-circularity	≤ 0.7 %	≤ 0.7 %	≤ 0.7 %	≤ 0.7 %	≤ 1.0 %
Core/cladding concentricity error	≤ 0.5 µm	≤ 0.5 µm	≤ 0.5 µm	≤ 0.5 µm	≤ 0.5 µm
Coating/cladding concentricity error	≤ 12 µm	≤ 12 µm	≤ 12 µm	≤ 12 µm	≤ 12 µm
Cable cut-off wavelength	≤ 1260 nm	≤ 1260 nm	≤ 1260 nm	≤ 1260 nm	≤ 1450 nm
Zero dispersion wavelength (λo)	1300-1324 nm	1300-1324 nm	1300-1324 nm	1300-1324 nm	
Dispersion slope (So) @ (λo)	≤ 0.090 ps/(nm²*km)	≤ 0.090 ps/(nm²*km)	≤ 0.092 ps/(nm²*km)	≤ 0.092 ps/(nm²*km)	
Chromatic dispersion @ 1285 – 1330 nm	≤ 3.5 ps/(nm*km)	≤ 3.5 ps/(nm*km)			
Chromatic dispersion @ 1550 nm	≤ 18 ps /(nm*km)	≤ 18 ps/(nm*km)			
Chromatic dispersion @ 1625 nm	≤ 22 ps/(nm*km)	≤ 22 ps/(nm*km)			
Chromatic dispersion @ 1530 – 1565 nm					2.0 -6.0 ps/(nm*km)
Chromatic dispersion @ 1565 – 1625 nm					4.5 to 11.2 ps/(nm*km)
PMD Individual Fiber @ 1550 nm	≤ 0.1 ps/√km	≤ 0.1 ps/√km	≤ 0.1 ps/√km	≤ 0.1 ps/√km	≤ 0.15 ps/√km
Attenuation @ 1310 nm	≤ 0.36 dB/km	≤ 0.36 dB/km	≤ 0.36 dB/km	≤ 0.36 dB/km	
Attenuation @ 1383nm	≤ 0.36 dB/km	≤ 0.36 dB/km	≤ 0.36 dB/km	≤ 0.36 dB/km	
Attenuation @ 1550 nm	≤ 0.25 dB/km	≤ 0.25 dB/km	≤ 0.25 dB/km	≤ 0.25 dB/km	≤ 0.27 dB/km
Attenuation @ 1625 nm	≤ 0.28 dB/km	≤ 0.28 dB/km	≤ 0.28 dB/km	≤ 0.28 dB/km	≤ 0.30 dB/km
Attenuation with bending					
Mandrel Radius 15mm@1550 10 turns		≤ 0.25 dB	≤ 0.03 dB	≤ 0.25 dB	
Mandrel Radius 15mm@1625 10 turns		≤ 1.0 dB	≤ 0.1 dB	≤ 1.0 dB	
Mandrel Radius 10mm@1550 1 turns		≤ 0.75 dB	≤ 0.1 dB	≤ 0.75 dB	
Mandrel Radius 10mm@1625 1 turns		≤ 1.5 dB	≤ 0.2 dB	≤ 1.5 dB	
Mandrel Radius 7.5mm@1550 1 turns			≤ 0.5 dB		
Mandrel Radius 7.5mm@1625 1 turns			≤ 1.0 dB		
Proof test	≥ 0.7 GPa	≥ 0.7 GPa	≥ 0.7 GPa	≥ 0.7 GPa	≥ 0.7 GPa

MULTIMODE FIBER PROPERTIES

	MM62.5 OM1	MM62.5 OM1+	MM50 OM2	MM50 OM3	MM50 OM4	MM50 OM5
Core diameter	62.5 ± 2.5 µm	62.5 ± 2.5 µm	50 ± 2.5 µm	50 ± 2.5 µm	50 ± 2.5 µm	50 ± 2.5 µm
Core non-circularity	≤ 5 %	≤ 5 %	≤ 5 %	≤ 5 %	≤ 5 %	≤ 5 %
Cladding diameter	125.0 ± 1.0 µm	125.0 ± 1.0 µm	125.0 ± 1.0 µm	125.0 ± 1.0 µm	125.0 ± 1.0 µm	125.0 ± 1.0 µm
Coating diameter	242 ± 5 µm	242 ± 5 µm	242 ± 5 µm	242 ± 5 µm	242 ± 5 µm	242 ± 5 µm
Cladding non-circularity	≤ 0.7 %	≤ 0.7 %	≤ 0.7 %	≤ 0.7 %	≤ 0.7 %	≤ 0.7 %
Core/cladding concentricity error	≤ 1 µm	≤ 1 µm	≤ 1 µm	≤ 1 µm	≤ 1 µm	≤ 1 µm
Coating/cladding concentricity error	≤ 10 µm	≤ 10 µm	≤ 6 µm	≤ 6 µm	≤ 6 µm	≤ 6 µm
Numerical Aperture	0.275 ± 0.015	0.275 ± 0.015	0.200 ± 0.015	0.200 ± 0.015	0.200 ± 0.015	0.200 ± 0.015
Attenuation @ 850 nm	≤ 3.50 dB/km	≤ 3.50 dB/km	≤ 2.80 dB/km	≤ 2.80 dB/km	≤ 2.80 dB/km	≤ 2.80 dB/km
Attenuation @ 953 nm						≤ 1.50 dB/km
Attenuation @ 1300 nm	≤ 1.00 dB/km	≤ 1.00 dB/km	≤ 0.80 dB/km	≤ 0.80 dB/km	≤ 0.80 dB/km	≤ 0.80 dB/km
Overfilled Modal Bandwidth @ 850 nm	≥ 200 MHz*km	≥ 220 MHz*km	≥ 500 MHz*km	≥ 1500 MHz*km	≥ 3500 MHz*km	≥ 3500 MHz*km
Overfilled Modal Bandwidth @ 953 nm						≥ 1850 MHz*km
Overfilled Modal Bandwidth @ 1300 nm	≥ 500 MHz*km	≥ 800 MHz*km	≥ 500 MHz*km	≥ 500 MHz*km	≥ 500 MHz*km	≥ 500 MHz*km
Effective Modal Bandwidth (EMB) @850 nm				≥ 2000 MHz*km	≥ 4700 MHz*km	≥ 4700 MHz*km
Effective Modal Bandwidth (EMB) @953 nm						≥ 2470 MHz*km
Fibre capacity 10GBASE-SR	33 m	33 m	83 m	300 m	550 m	550 m
Fibre capacity 1000BASE-SX	274 m	500 m	600 m	1000 m	1100 m	1100 m
Fibre capacity 40GBASE-SR4/100GBASE-SR10				140 m	170 m	170 m
Proof test	≥ 0.7 GPa	≥ 0.7 GPa	≥ 0.7 GPa	≥ 0.7 GPa	≥ 0.7 GPa	≥ 0.7 GPa

NOTE

TK-SEA FIRE RESISTANT METALLIC ARMOURED MULTI-LOOSE

ON REQUEST

CABLE TYPE

QFCI	GSWB+SHF1	13,5 mm
QFCU	GSWB+SHF2	13,5 mm
QFCU M	GSWB+SHF2 -MUD	13,5 mm
QFOI	TCWB+SHF1	13,5 mm
QFOU	TCWB +SHF2	13,5 mm
QFOU M	TCWB+SHF2 -MUD	13,5 mm

All cables are available with all type of fibers.

OPTICAL CORE

Optical core	Jelly filled loose tube (PBTP)
Fiber colour code	See table A
Loose tube colour	See table B
Flame barrier	Mica tape
Central element	Galvanized steel tape or thermoplastic resin coated glassline
Inner sheath	Halogen free SHF1
Protection	Galvanized steel wire braid (GSWB)or Tinned copper wire braid (TCWB)
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR

TECHNICAL DATA

Minimun Bending Radius	15 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Tensile performance (IEC 60794-1-21-E1)	2000 N (Δα reversible)
Crush (IEC 60794-1-21-E3)	3000 N/100 mm (Δα reversible)
Impact (IEC 60794-1-21-E4)	30 J (Δα reversible)

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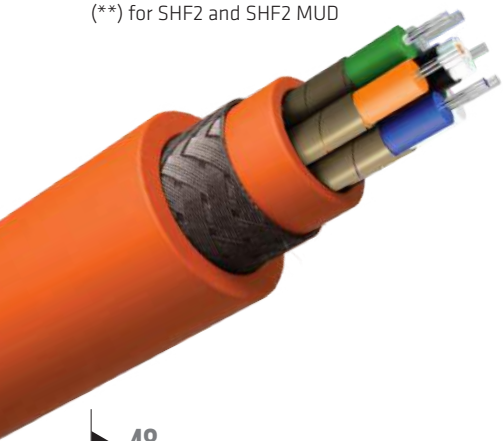
(**)

REFERENCE STANDARDS

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

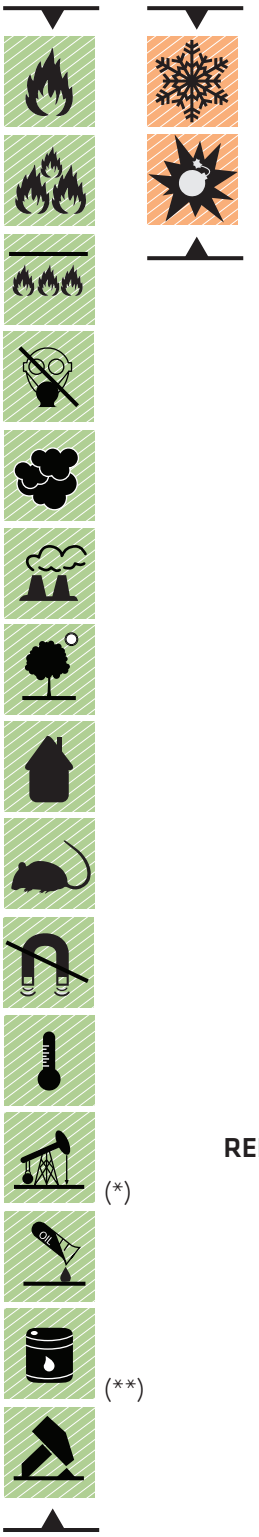
(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD



TK-SEA FIRE RESISTANT DIELECTRIC ARMOURED MULTI-LOOSE

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE TYPE

QFAI	Glass or aramidic yarns + SHF1	13,5 mm
QFAU	Glass or aramidic yarns + SHF2	13,5 mm
QFAU M	Glass or aramidic yarns + SHF2 MUD	13,5 mm

All cables are available with all type of fibers.

OPTICAL CORE

Optical core	Jelly filled loose tube (PBTP)
Fiber colour code	See table A
Loose tube colour	See table B
Flame barrier	Mica tape
Central element	Thermoplastic resin coated glassline
Inner sheath	Halogen free SHF1
Protection	Glass or aramidic yarns
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR

TECHNICAL DATA

Minimun Bending Radius	15 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Tensile performance (IEC 60794-1-21-E1)	2000 N (Δα reversible)
Crush (IEC 60794-1-21-E3)	3000 N/100 mm (Δα reversible)
Impact (IEC 60794-1-21-E4)	30 J (Δα reversible)

REFERENCE STANDARDS

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

TK-SEA FIRE RESISTANT DIELECTRIC ARMOURED SINGLE LOOSE

ON REQUEST

CABLE TYPE

QFAI	1 ÷12 fibers Glass yarns +SHF1	7,5 mm
QFAI	13 ÷24 fibers Glass yarns +SHF1	8,5 mm
QFAU	1 ÷12 fibers Glass yarns +SHF2	10 mm
QFAU	13 ÷24 fibers Glass yarns +SHF2	11 mm
QFAU M	1 ÷12 fibers Glass yarns +SHF2 MUD	10 mm
QFAU M	13 ÷24 fibers Glass yarns + SHF2 MUD	11 mm

All cables are available with all type of fibers.

OPTICAL CORE

Optical core	Jelly filled loose tube (PBTP)
Fiber colour code	See table A
Loose tube colour	Blue
Flame barrier	Mica tape
Protection	Longitudinal glass yarns
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Tensile performance (IEC 60794-1-21-E1)	2000 N (Δα reversible)
Crush (IEC 60794-1-21-E3)	3000 N/100 mm (Δα reversible)
Impact (IEC 60794-1-21-E4)	10 J (Δα reversible)

REFERENCE STANDARDS

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

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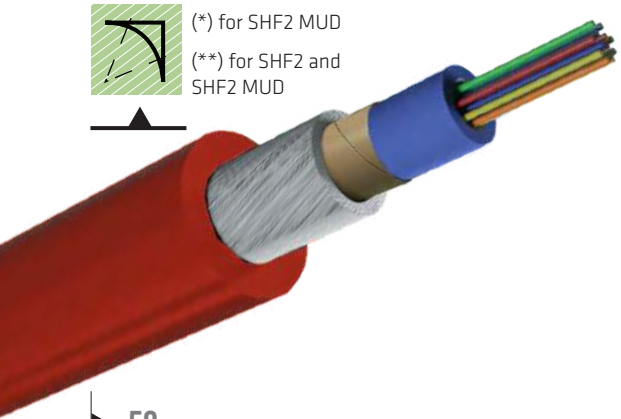
(**)

(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD



TK-SEA METALLIC ARMOURED MULTITIGHT

ON REQUEST

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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE TYPE

AICI	GSWB+SHF1	4 fibers	8,5 mm
AICU	GSWB+SHF2		
AICU M	GSWB+SHF2 MUD	8 fibers	9,4 mm
AIOI	TCWB+SHF1	12 fibers	10,3 mm
AIOU	TCWB+SHF2		
AICU M	TCWB+SHF2 MUD	24 fibers	12,1 mm

All cables are available with all type of fibers.

OPTICAL CORE

Optical core	Tight buffered Nominal diameter 0,9 mm
Tight colour	See table C
Protection	Waterblocking glass yarns
Inner sheath	Halogen free SHF1
Armouring	Galvanized steel wire braid (GSWB)or Tinned copper wire braid (TCWB)
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 Mud)
Tensile performance (IEC 60794-1-21-E1)	1000 N (Δα reversible) for 4 and 8 fibre 1500 N (Δα reversible) for 12 fibre 2000 N (Δα reversible) for 24 fibre
Crush (IEC 60794-1-21-E3)	2000 N/100 mm (Δα reversible)
Impact (IEC 60794-1-21-E4)	20 J (Δα reversible)
Water penetration (IEC 60794-1-22-F5)	No water leakage (limited to inner sheath)

REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

TK-SEA DIELECTRIC ARMOURED MULTITIGHT

ON REQUEST

CABLE TYPE

AIAI	Glass or aramidic yarns + SHF1	4 fibers	8,5 mm
AIAU	Glass or aramidic yarns + SHF2	8 fibers	9,4 mm
		12 fibers	10,3 mm
AIAU M	Glass or aramidic yarns + SHF2 MUD	24 fibers	12,1 mm

All cables are available with all type of fibers.

OPTICAL CORE

Optical core	Tight buffered Nominal diameter 0,9 mm
Tight colour	See table C
Assembling	N° of tight assembled
Protection	Waterblocking glass or aramidic yarns
Inner sheath	Halogen free SHF1
Protection	Glass or aramidic yarns
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 Mud)
Tensile performance (IEC 60794-1-21-E1)	1000 N (Δα reversible) for 4 and 8 fibre 1500 N (Δα reversible) for 12 fibre 2000 N (Δα reversible) for 24 fibre
Crush (IEC 60794-1-21-E3)	2000 N/100 mm (Δα reversible)
Impact (IEC 60794-1-21-E4)	20 J (Δα reversible)
Water penetration (IEC 60794-1-22-F5)	No water leakage (limited to inner sheath)

(*)

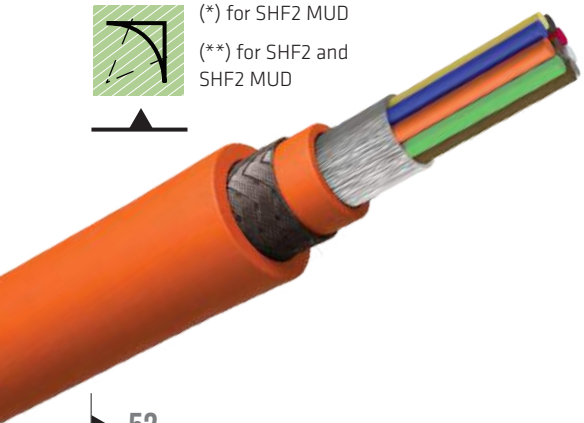
REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

(**)

(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD



TK SEA BREAKOUT_ARMOURED AND UNARMOURED

ON REQUEST

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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

OPTICAL CORE

Fiber Structure	White Tight Buffer Ø 0.9 mm
Strain relief	Aramid yarns
Sub unit Sheath	Numbered Halogen-free SHF1 Ø 2 mm
ASSEMBLING	
Outer Sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
Outer diameter	2 fibers 6.5 mm 4 fibers 7.5 mm 8 fibers 10 mm 12 fibers 13 mm 16 fibers 12.5 mm 24 fibers 15.5 mm

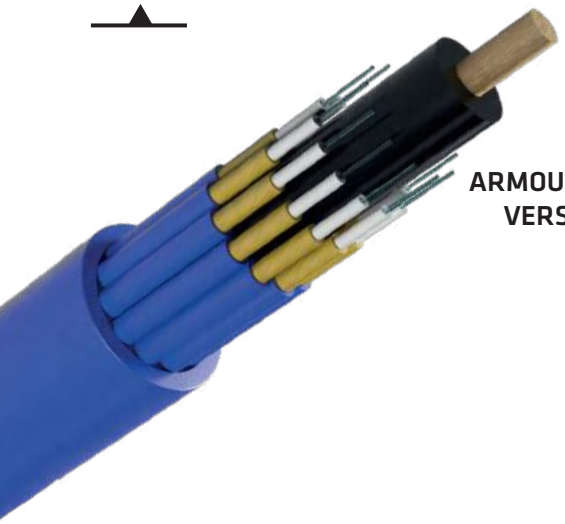
All cables are available with all type of fibers.

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 Mud)
Tensile performance (IEC 60794-1-21-E1)	500 N (Δα reversible) unarmoured cables 1500 N (Δα reversible) for armoured cables
Crush (IEC 60794-1-21-E3)	2000 N/100 mm (Δα reversible)
Impact (IEC 60794-1-21-E4)	20 J (Δα reversible)
Water penetration (IEC 60794-1-22-F5)	No water leakage (limited to inner sheath)

REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C



ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	2 fibers 9.5 mm 4 fibers 11 mm 8 fibers 13.5 mm 12 fibers 16.5 mm 16 fibers 16 mm 24 fibers 19 mm

TK SEA FIRE RESISTANT BREAKOUT_ARMOURED AND UNARMOURED

ON REQUEST

OPTICAL CORE

Fiber Structure	White Tight Buffer Ø 0.9 mm
Strain relief	Aramid yarns
Sub unit Sheath	Numbered Halogen-free SHF1 Ø 2 mm
ASSEMBLING	
Flame barrier	Mica tape
Outer Sheath	Halogen free SHF1 Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
Outer diameter	2 fibers 7 mm 4 fibers 8 mm 8 fibers 10.5 mm 12 fibers 13.5 mm 16 fibers 13 mm 24 fibers 16 mm

All cables are available with all type of fibers.

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 Mud)
Tensile performance (IEC 60794-1-21-E1)	500 N (Δα reversible) unarmoured cables 1500 N (Δα reversible) for armoured cables
Crush (IEC 60794-1-21-E3)	2000 N/100 mm (Δα reversible)
Impact (IEC 60794-1-21-E4)	20 J (Δα reversible)
Water penetration (IEC 60794-1-22-F5)	No water leakage (limited to inner sheath)

REFERENCE STANDARDS

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

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(**)

(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

ARMOURED VERSION

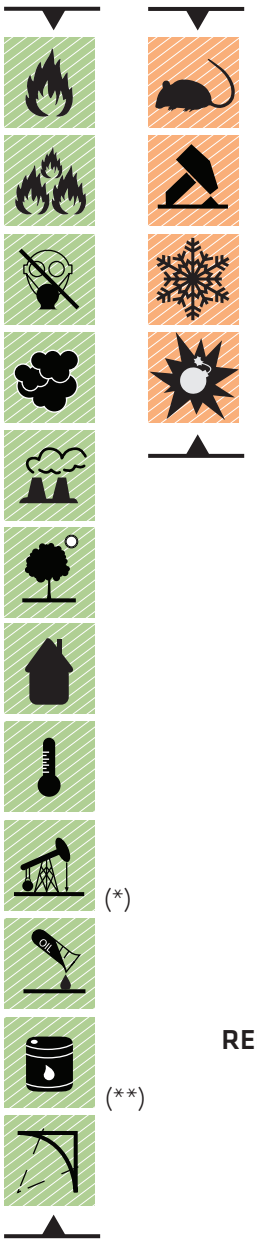
Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	2 fibers 10 mm 4 fibers 11.5 mm 8 fibers 14 mm 12 fibers 17 mm 16 fibers 16.5 mm 24 fibers 19.5 mm

COAXIAL CABLES

These images are solely for illustrative purposes

TK-SEA COAXIAL RG213_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded bare copper 7x0.75 mm
Insulation	Polyetylene Ø 7.25mm
Shield	Aluminium/Polyester/Aluminium tape + copper braid
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
Outer diameter	10.3 mm – SHF1 11.2 mm – SHF2 - SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 - SHF2 MUD)
Conductor resistance	≤ 6 Ω/km
Characteristic impedance	50 ± 3 Ω
Nominal capacitance	100 pF/m
Attenuation	@ 10 MHz ≤ 1.9 dB/100m @ 200 MHz ≤ 8.3 dB/100m @ 500 MHz ≤ 13.7 dB/100m @ 3000 MHz ≤ 37.8 dB/100m

REFERENCE STANDARDS

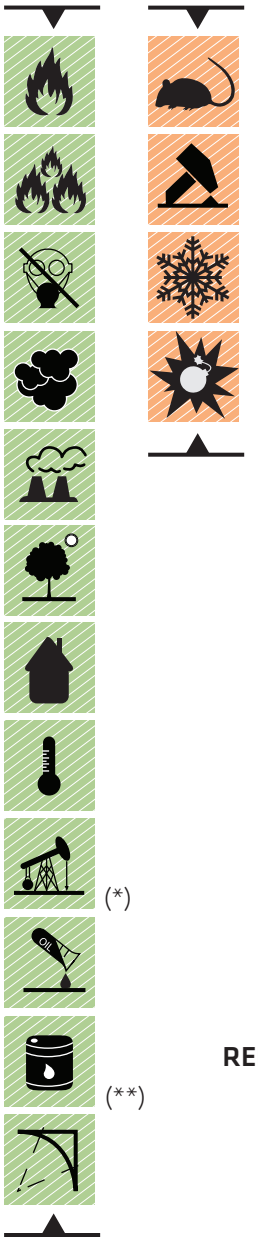
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	13.8 mm

TK-SEA COAXIAL RG214_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded bare copper 7x0.75 mm	
Insulation	Polyetylene Ø 7.25mm	
First shield	Aluminium/Polyester/Aluminium tape + silver braid	
Second shield	Silver copper braid	
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	10.8 mm 12.5 mm	SHF1 SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 90°C
Conductor resistance	≤ 6 Ω/km
Characteristic impedance	50 ± 3 Ω
Nominal capacitance	100 pF/m
Attenuation	@ 10 MHz ≤ 1.9 dB/100m @ 200 MHz ≤ 8.3 dB/100m @ 500 MHz ≤ 13.7 dB/100m @ 3000 MHz ≤ 37.8 dB/100m

REFERENCE STANDARDS

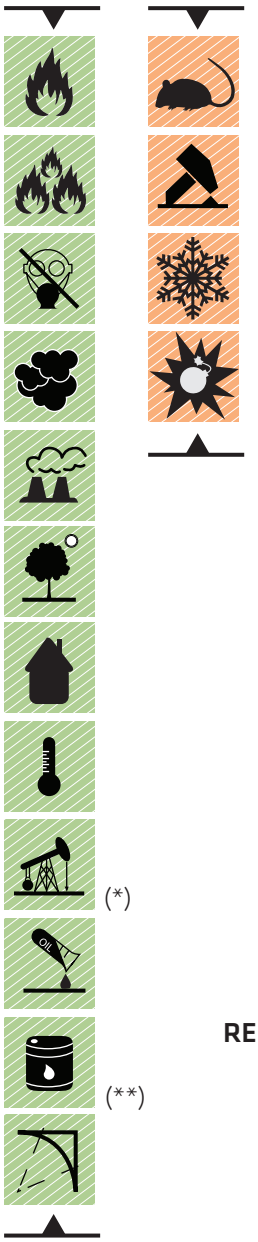
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	14.8 mm

TK-SEA COAXIAL RG58_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded tinned copper 19x0.18 mm	
Insulation	Polyetylene Ø 2.95mm	
Shield	Aluminium/Polyester/Aluminium tape + tinned copper braid	
Outer sheath	Halogen free SHF1 UVR	
	Halogen free cross-linked SHF2 UVR	
	Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	5 mm	SHF1
	6 mm	SHF2 - SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 - SHF2 MUD)
Conductor resistance	≤ 36.5 Ω/km
Characteristic impedance	50 ± 3 Ω
Nominal capacitance	100 pF/m
Attenuation	@ 100 MHz ≤ 4.1 dB/100m @ 200 MHz ≤ 19 dB/100m @ 500 MHz ≤ 31.9 dB/100m @ 3000 MHz ≤ 91.3 dB/100m

REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 and SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	8 mm

TK-SEA COAXIAL RG 11_ARMOURED AND UNARMOURED

ON REQUEST

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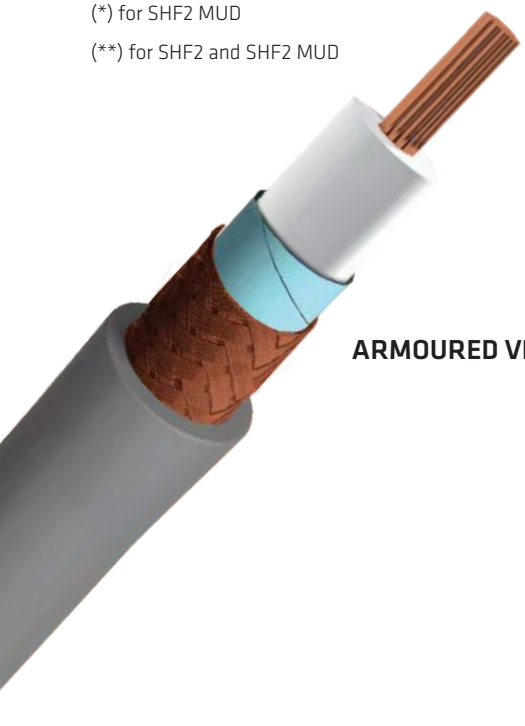
(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD



CABLE SPECIFICATION

Conductors	Stranded tinned copper 7x0.40 mm	
Insulation	Polyetylene Ø 7.25mm	
Shield	Aluminium/Polyester/Aluminium tape + copper braid	
Outer sheath	Halogen free SHF1 UVR	
	Halogen free cross-linked SHF2 UVR	
	Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	10.3 mm	SHF1
	12 mm	SHF2 - SHF2 MUD

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 - SHF2 MUD)
Conductor resistance	≤ 20.5 Ω/km
Characteristic impedance	75 ± 3 Ω
Nominal capacitance	67 pF/m
Attenuation	@ 10 MHz ≤ 2.0 dB/100m @ 200 MHz ≤ 10.5 dB/100m @ 500 MHz ≤ 17.1 dB/100m @ 3000 MHz ≤ 50.1 dB/100m

REFERENCE STANDARDS

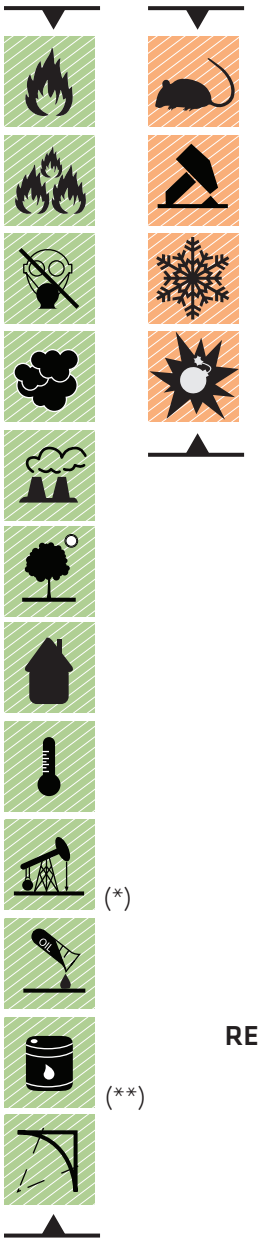
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 MUD)
Mud resistance	NEK 606 (SHF2 and SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	13.8 mm

TK-SEA COAXIAL RG59 FLEX_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Stranded bare copper 7x0.20 mm	
Insulation	Polyetylene Ø 3.7 mm	
Shield	Aluminium/Polyester/Aluminium tape + copper braid	
Outer sheath	Halogen free SHF1 UVR	
	Halogen free cross-linked SHF2 UVR	
	Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	6.2 mm	SHF1
	7.5 mm	SHF2 - SHF2 MUD

TECHNICAL DATA

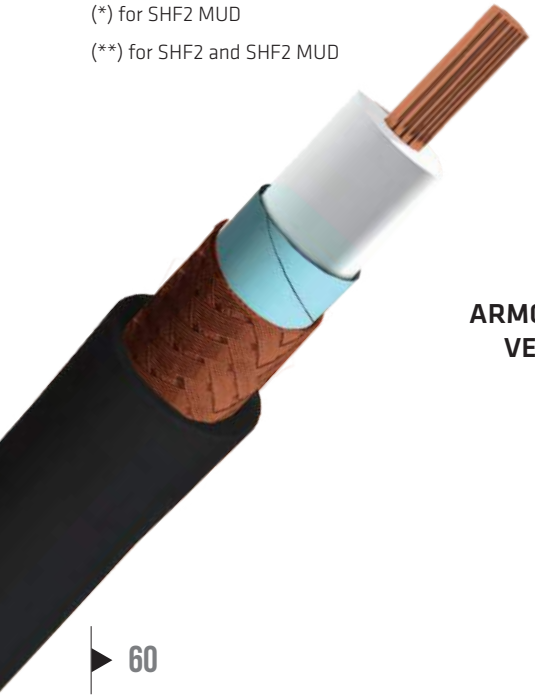
Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 - SHF2 MUD)
Conductor resistance	≤ 158 Ω/km
Characteristic impedance	75 ± 3 Ω
Nominal capacitance	67 pF/m
Attenuation	@ 10 MHz ≤ 3.3 dB/100m @ 200 MHz ≤ 15.3 dB/100m @ 500 MHz ≤ 25.1 dB/100m @ 3000 MHz ≤ 70.7 dB/100m

REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	9.5 mm



TK-SEA COAXIAL RG59_ARMOURED AND UNARMOURED

ON REQUEST

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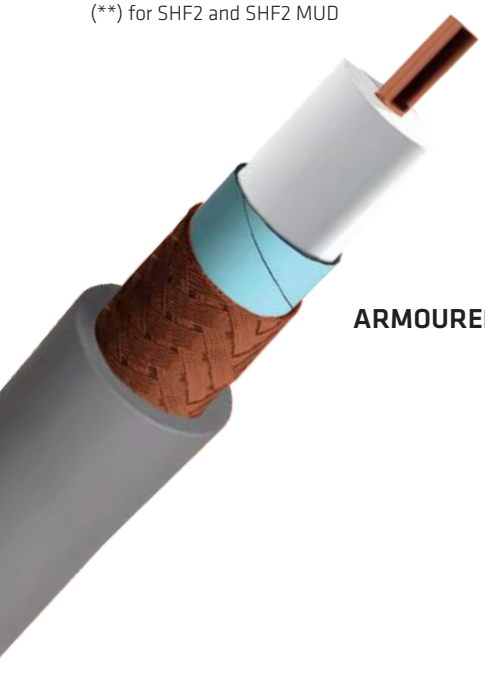
(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD



CABLE SPECIFICATION

Conductors	Solid copperweld 0.58 mm	
Insulation	Polyetylene Ø 3.7 mm	
Shield	Aluminium/Polyester/Aluminium tape + copper braid	
Outer sheath	Halogen free SHF1 UVR	
	Halogen free cross-linked SHF2 UVR	
	Halogen free cross-linked SHF2 MUD UVR	
Outer diameter	6.2 mm	SHF1
	7.5 mm	SHF2 - SHF2 MUD

TECHNICAL DATA

Operating voltage	500 V
Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1)
	- 40°C ÷ + 90°C (SHF2 - SHF2 MUD)
Conductor resistance	≤ 33.2 Ω/km
Characteristic impedance	75 ± 3 Ω
Nominal capacitance	67 pF/m
Attenuation	@ 10 MHz ≤ 3.0 dB/100m
	@ 200 MHz ≤ 14.2 dB/100m
	@ 500 MHz ≤ 23.5 dB/100m
	@ 3000 MHz ≤ 65.9 dB/100m

REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB)
	Tinned copper wire braid (TCWB)
	Bronze wire braid (BWB)
Outer diameter	9.5 mm

TK-SEA COAXIAL RG6_ARMOURED AND UNARMOURED

ON REQUEST

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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

Conductors	Solid copper weld 0.72 mm
Insulation	Polyetylene Ø 4.7 mm
First shield	Aluminium/Polyester/Aluminium tape + copper braid
Second shield	Copper braid
Outer sheath	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
Outer diameter	8.5 mm — SHF1 10 mm — SHF2 - SHF2 MUD

TECHNICAL DATA

Operating voltage	2500 V
Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 - SHF2 MUD)
Conductor resistance	≤ 97 Ω/km
Characteristic impedance	75 ± 3 Ω
Nominal capacitance	67 pF/m
Attenuation	@ 10 MHz ≤ 2.4 dB/100m @ 200 MHz ≤ 11.2 dB/100m @ 500 MHz ≤ 18.3 dB/100m @ 3000 MHz ≤ 52.9 dB/100m

REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	11.5 mm

TK-SEA COAXIAL RF400

ON REQUEST

CABLE SPECIFICATION

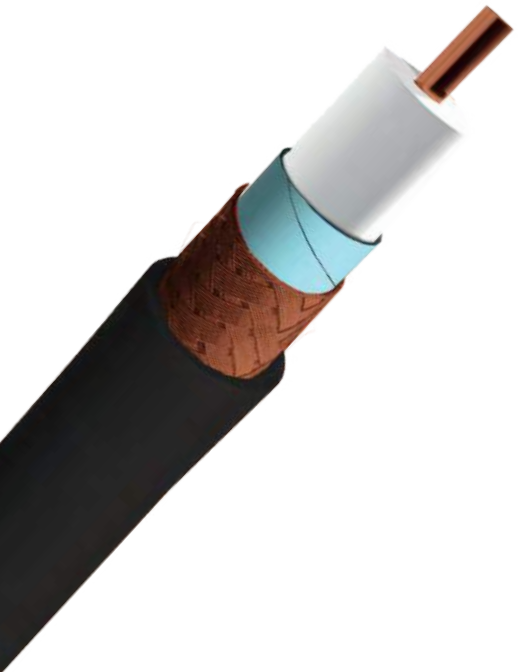
Conductors	Copper clad aluminium (CCA) 2.74 mm	
Insulation	Foam PE 7.24 mm	
Shield	Aluminium foil + tinned copper braid	
Outer sheath	Halogen free SHF1 UVR	
Outer diameter	10.3 mm	SHF1

TECHNICAL DATA

Minimun Bending Radius	5 x Ø
Temperature	- 40°C ÷ + 70°C
Conductor resistance	≤ 4.69 Ω/km
Characteristic impedance	50 ± 3 Ω
Nominal capacitance	78 pF/m
Attenuation	@ 50 MHz ≤ 3.51 dB/100m @ 450 MHz ≤ 6.89 dB/100m @ 1500 MHz ≤ 18.37 dB/100m @ 3000 MHz ≤ 27.56 dB/100m @ 5800 MHz ≤ 39.37 dB/100m

REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
U.V. radiation resistance	ASTM-D-2565-16



TK-SEA COAXIAL RF600

ON REQUEST

CABLE SPECIFICATION

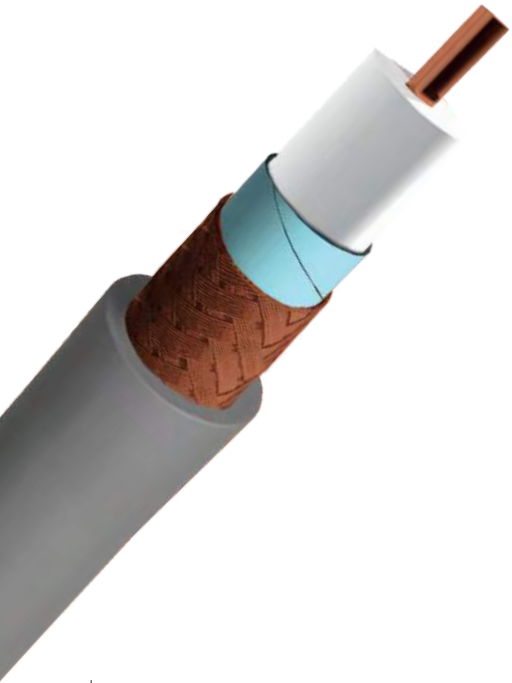
Conductors	Copper clad aluminium (CCA) 4.47 mm
Insulation	Foam PE 11.6 mm
Shield	Aluminium foil + tinned copper braid
Outer sheath	Halogen free SHF1 UVR
Outer diameter	15.0 mm

TECHNICAL DATA

Minimun Bending Radius	5 x Ø
Temperature	- 40°C ÷ + 70°C
Conductor resistance	≤ 17.4 Ω/km
Characteristic impedance	50 ± 3 Ω
Nominal capacitance	78 pF/m
Attenuation	@ 50 MHz ≤ 2.17 dB/100m @ 450 MHz ≤ 6.17 dB/100m @ 1500 MHz ≤ 11.9 dB/100m @ 3000 MHz ≤ 18.05 dB/100m @ 5800 MHz ≤ 26.9 dB/100m

REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
U.V. radiation resistance	ASTM-D-2565-16



TK-SEA COAXIAL RF900

ON REQUEST

CABLE SPECIFICATION

Conductors	BC tube 6.65 mm
Insulation	Foam PE 17.3 mm
Shield	Aluminium foil + tinned copper
Outer sheath	Halogen free SHF1 UVR
Outer diameter	22.1 mm

TECHNICAL DATA

Minimun Bending Radius	5 x Ø
Temperature	- 40°C ÷ + 70°C
Conductor resistance	≤ 1.77 Ω/km
Characteristic impedance	50 ± 3 Ω
Nominal capacitance	77 pF/m
Attenuation	@ 50 MHz ≤ 1.74 dB/100m
	@ 450 MHz ≤ 4.33 dB/100m
	@ 1500 MHz ≤ 8.36 dB/100m
	@ 3000 MHz ≤ 12.47 dB/100m
	@ 5800 MHz ≤ 17.72 dB/100m

REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
U.V. radiation resistance	ASTM-D-2565-16

TK-SEA COAXIAL RF600-75

ON REQUEST

CABLE SPECIFICATION

Conductors	Solid BCCA 2.74 mm
Insulation	Foam PE 11.6 mm
Shield	Aluminum foil + tinned copper braid
Outer sheath	Halogen free SHF1 UVR
Outer diameter	15 mm

TECHNICAL DATA

Minimun Bending Radius	50 x Ø
Temperature	- 40°C ÷ + 70°C
Conductor resistance	≤ 4.69 Ω/km
Characteristic impedance	75 ± 3 Ω
Nominal capacitance	51 pF/m
Attenuation	@ 50 MHz ≤ 2.20 dB/100m @ 450 MHz ≤ 5.91 dB/100m @ 900 MHz ≤ 8.54 dB/100m @ 1500 MHz ≤ 11.4 dB/100m @ 2500 MHz ≤ 15.10 dB/100m

REFERENCE STANDARDS

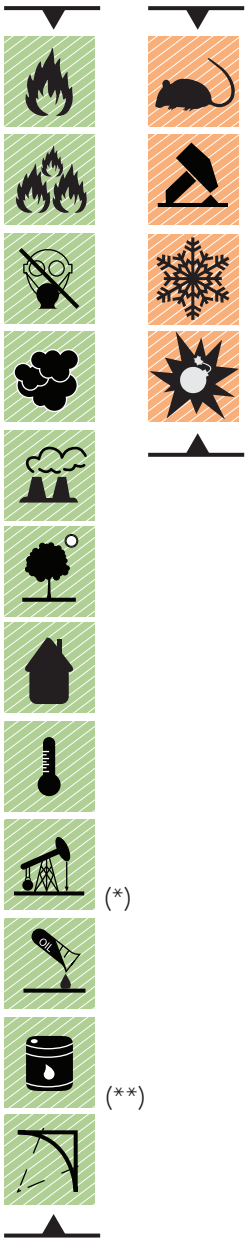
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
U.V. radiation resistance	ASTM-D-2565-16

COMPOSITE CABLES

These images are solely for illustrative purposes

TK-SEA HYBRID_ARMOURED AND UNARMOURED

ON REQUEST



(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

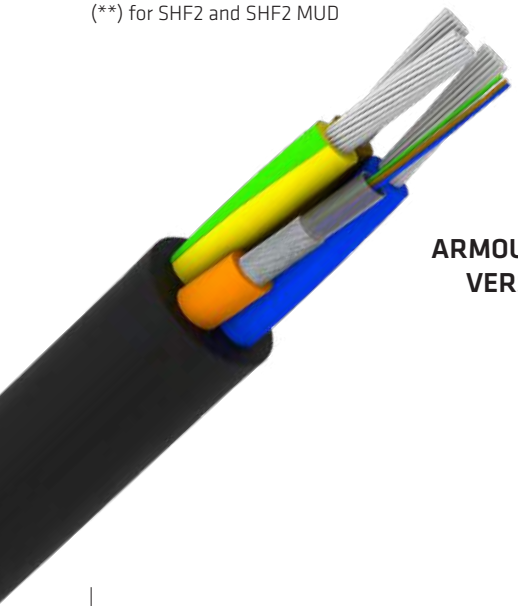
FIBER OPTIC up to 12 fibers	**Optical core**	Jelly filled loose tube (PBTP)
	Fiber colour code	See table A
	Protection	Longitudinal glass or aramidic yarns
	Outer sheath	Halogen free SHF1 Ø 3.5 mm
POWER CONDUCTOR 3 units	**Conductor**	Stranded tinned copper 2.5 mm^2
	Insulation	Cross-linked polyethylene (XLPE) Ø 3.5 mm
ASSEMBLING	**Outer sheath**	Halogen free SHF1 UVR Halogen free SHF2 UVR Halogen free SHF2 MUD UVR
	Outer diameter	11,5 mm (SHF1 - SHF2) 13 mm (SHF2 MUD)

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 8.21 Ω/km
Operating voltage	0.6/1 kV

REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

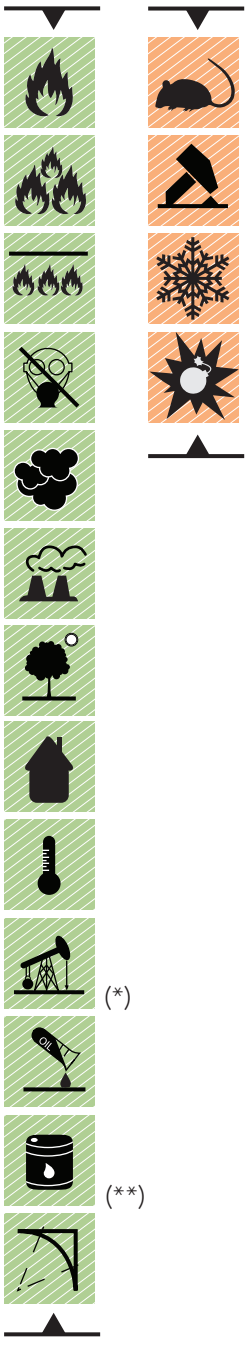


ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	14,5 mm

TK-SEA FIRE RESISTANT HYBRID_ARMOURED AND UNARMOURED

ON REQUEST



(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

FIBER OPTIC up to 12 fibers	**Optical core**	Jelly filled loose tube (PBTP)
	Fiber colour code	See table A
	Flame barrier	Mica tape
	Protection	Longitudinal glass or aramidic yarns
	Outer sheath	Halogen free SHF1 Ø 4 mm
POWER CONDUCTOR 3 units	**Conductor**	Stranded tinned copper 2.5 mm^2
	Flame barrier	Mica tape
	Insulation	Cross-linked polyethylene (XLPE) Ø 4 mm
ASSEMBLING	**Outer sheath**	Halogen free SHF1 Halogen free Cross-linked SHF2 UVR Halogen free Cross-linked SHF2 MUD UVR
	Outer diameter	13 mm (SHF1 - SHF2) 14.5 mm (SHF2 MUD)

TECHNICAL DATA

Minimun Bending Radius	10 x Ø
Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 and SHF2 MUD)
Conductor resistance	≤ 8.21 Ω/km
Operating voltage	0.6/1 kV

REFERENCE STANDARDS

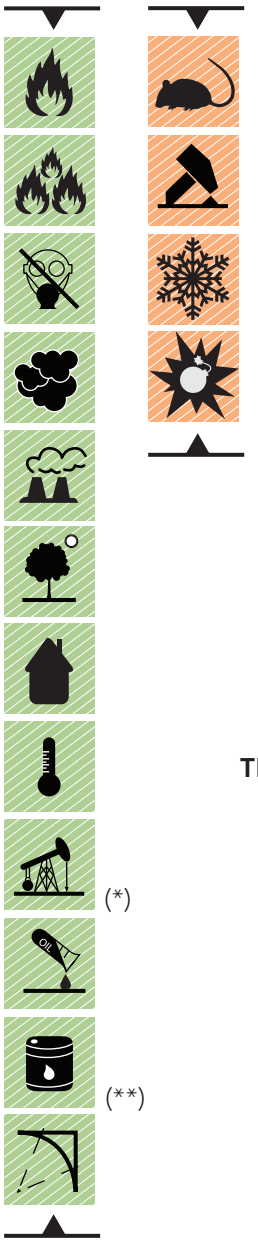
Fire resistance	IEC 60331-21 IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	16 mm

TK-SEA COMPOSITE RG59_ARMOURED AND UNARMOURED

ON REQUEST



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CABLE SPECIFICATION

COAXIAL RG 59 1 unit	**Conductor**	Solid copperweld Ø 0.58 mm
	Insulation	Polyethylene Ø 3.7 mm
	Shield	Aluminium/Polyester/Aluminium tape + copper braid
	Outer sheath	Halogen free SHF1 Ø 6.2 mm
SHIELDED TWISTED PAIR 2 units	**Conductor**	Stranded tinned copper 24 AWG
	Insulation	Polyethylene
	Individual pairs shield	Aluminium/Polyester tape
	Individual pairs sheath	Halogen free SHF1 Ø 3.5 mm
POWER CONDUCTOR 3 units	**Conductor**	Stranded tinned copper 2.5 mm^2
	Insulation	Cross-linked polyethylene (XLPE) Ø 3.5 mm
ASSEMBLING with eventual filler	**Outer sheath**	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
	Outer diameter	16.5 mm – SHF1 18 mm – SHF2 - SHF2 MUD

TECHNICAL DATA

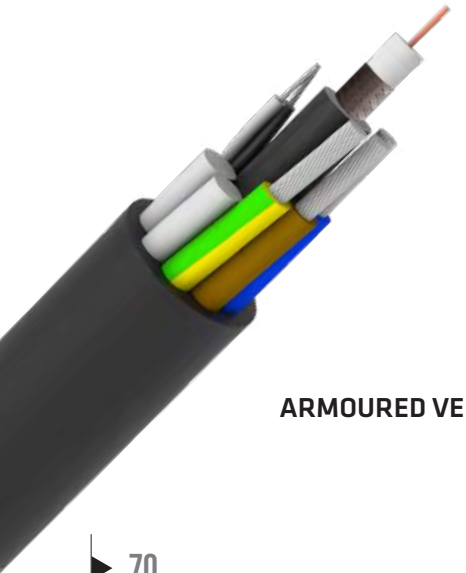
	Minimun Bending Radius	15 x Ø
	Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 - SHF2 MUD)
COAXIAL	**Conductor resistance**	≤ 158 Ω/km
	Characteristic impedance	75 ± 3 Ω
	Nominal capacitance	67 pF/m
	Attenuation	@ 10 MHz ≤ 3.0 dB/100m @ 500 MHz ≤ 23.5 dB/100m
SHIELDED TWISTED PAIR	**Conductor resistance**	≤ 90 Ω/km
POWER CONDUCTOR	**Conductor resistance**	≤ 8.21 Ω/km
	Operating voltage	0.6/1 kV

(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

REFERENCE STANDARDS

Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C



ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	20.0 mm

TK-SEA COMPOSITE RG11_ARMOURED AND UNARMOURED

ON REQUEST

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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

COAXIAL RG 11 1 unit	**Conductor**	Stranded tinned copper 7x0.40 mm
	Insulation	Polyethylene Ø 7.25 mm
	Shield	Bare copper braid
	Outer sheath	Halogen free SHF1 Ø 10.3 mm
SHIELDED TWISTED PAIR 2 units	**Conductor**	Stranded tinned copper 22 AWG
	Insulation	Polyethylene
	Individual pairs shield	Aluminium/Polyester tape
	Individual pairs sheath	Halogen free SHF1 Ø 4.5 mm
POWER CONDUCTOR 3 units	**Conductor**	Stranded tinned copper 2.5 mm^2
	Insulation	Cross-linked polyethylene (XLPE) Ø 3.5 mm
ASSEMBLING	**Outer sheath**	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
	Outer diameter	19.5 mm – SHF1 20.1 mm – SHF2 - SHF2 MUD

TECHNICAL DATA

	Minimun Bending Radius	15 x Ø
	Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 - SHF2 MUD)
COAXIAL	**Conductor resistance**	≤ 20.5 Ω/km
	Characteristic impedance	75 ± 3 Ω
	Nominal capacitance	67 pF/m
	Attenuation	@ 10 MHz ≤ 2.0 dB/100m @ 500 MHz ≤ 17.1 dB/100m
SHIELDED TWISTED PAIR	**Conductor resistance**	≤ 56 Ω/km
POWER CONDUCTOR	**Conductor resistance**	≤ 8.21 Ω/km
	Operating voltage	0.6/1 kV

REFERENCE STANDARDS

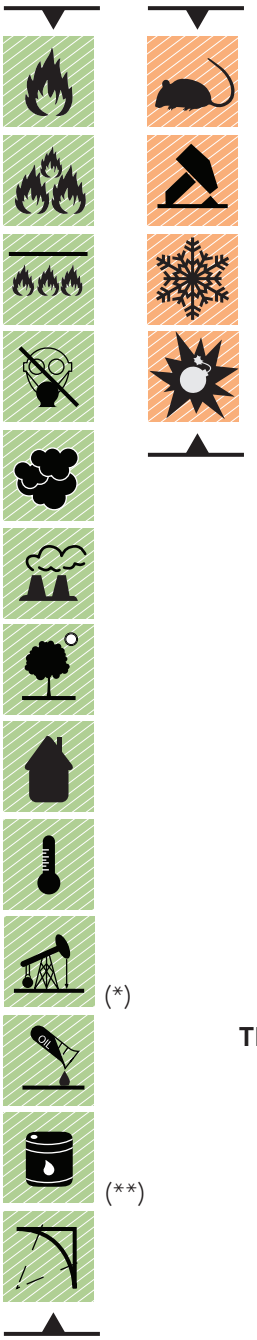
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	23.5 mm

TK-SEA FIRE RESISTANT COMPOSITE RG59_ARMOURED AND UNARMOURED

ON REQUEST



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(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

CABLE SPECIFICATION

COAXIAL RG 59 1 unit	**Conductor**	Solid copperweld Ø 0.58 mm
	Insulation	Polyethylene with silicone rubber Ø 3.7 mm
	Flame barrier	Mica tape
	Shield	Aluminium/Polyester/Aluminium tape + copper braid
	Outer sheath	Halogen free SHF1 Ø 7.2 mm
SHIELDED TWISTED PAIR 2 units	**Conductor**	Stranded tinned copper 24 AWG
	Insulation	Polyethylene
	Flame barrier	Mica tape
	Individual pairs shield	Aluminium/Polyester tape
	Individual pairs sheath	Halogen free SHF1 Ø 4.5 mm
POWER CONDUCTOR 3 units	**Conductor**	Stranded tinned copper 2.5 mm^2
	Flame barrier	Mica tape
	Insulation	Cross-linked polyethylene (XLPE) Ø 4 mm
ASSEMBLING	**Outer sheath**	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
	Outer diameter	19 mm – SHF1 20.5 mm – SHF2 - SHF2 MUD

TECHNICAL DATA

	Minimun Bending Radius	15 x Ø
	Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 - SHF2 MUD)
COAXIAL	**Conductor resistance**	≤ 158 Ω/km
	Characteristic impedance	75 ± 5 Ω
	Nominal capacitance	67 pF/m
	Attenuation	@ 10 MHz ≤ 3.0 dB/100m @ 500 MHz ≤ 23.5 dB/100m
SHIELDED TWISTED PAIR	**Conductor resistance**	≤ 90 Ω/km
POWER CONDUCTOR	**Conductor resistance**	≤ 8.21 Ω/km
	Operating voltage	0.6/1 kV

TK-SEA FIRE RESISTANT COMPOSITE RG59_ARMOURED AND UNARMOURED

REFERENCE STANDARDS

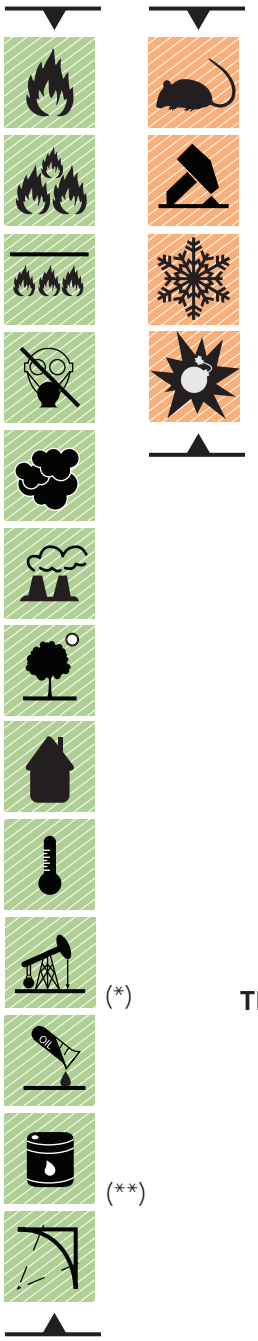
Fire resistance	IEC 60331-21 IEC 60331-23 IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gas	EN 50305 9.2
Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
Mud resistance	NEK 606 (SHF2 MUD)
U.V. radiation resistance	ASTM-D-2565-16
Cold bend	- 40°C

ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
Outer diameter	23 mm

TK-SEA FIRE RESISTANT COMPOSITE RG11_ARMOURED AND UNARMOURED

ON REQUEST



(*)

(**)

CABLE SPECIFICATION

COAXIAL RG 59 1 unit	**Conductor**	Stranded tinned copper 7x0.40 mm
	Insulation	Polyethylene with silicone rubber Ø 7.25 mm
	Flame barrier	Mica tape
	Shield	Bare copper braid
	Outer sheath	Halogen free SHF1 Ø 12 mm
SHIELDED TWISTED PAIR 2 units	**Conductor**	Stranded tinned copper 22 AWG
	Insulation	Polyethylene
	Flame barrier	Mica tape
	Individual pairs shield	Aluminium/Polyester tape
	Individual pairs sheath	Halogen free SHF1 Ø 5.5 mm
POWER CONDUCTOR 3 units	**Conductor**	Stranded tinned copper 2.5 mm^2
	Flame barrier	Mica tape
	Insulation	Cross-linked polyethylene (XLPE) Ø 4 mm
ASSEMBLING	**Outer sheath**	Halogen free SHF1 UVR Halogen free cross-linked SHF2 UVR Halogen free cross-linked SHF2 MUD UVR
	Outer diameter	23 mm — SHF1 24.5 mm — SHF2 - SHF2 MUD

TECHNICAL DATA

	Minimun Bending Radius	15 x Ø
	Temperature	- 40°C ÷ + 70°C (SHF1) - 40°C ÷ + 90°C (SHF2 - SHF2 MUD)
COAXIAL	**Conductor resistance**	≤ 20.5 Ω/km
	Characteristic impedance	75 ± 5 Ω
	Nominal capacitance	67 pF/m
	Attenuation	@ 10 MHz ≤ 2.0 dB/100m @ 500 MHz ≤ 17.1 dB/100m
SHIELDED TWISTED PAIR	**Conductor resistance**	≤ 56 Ω/km
POWER CONDUCTOR	**Conductor resistance**	≤ 8.21 Ω/km
	Operating voltage	0.6/1 kV

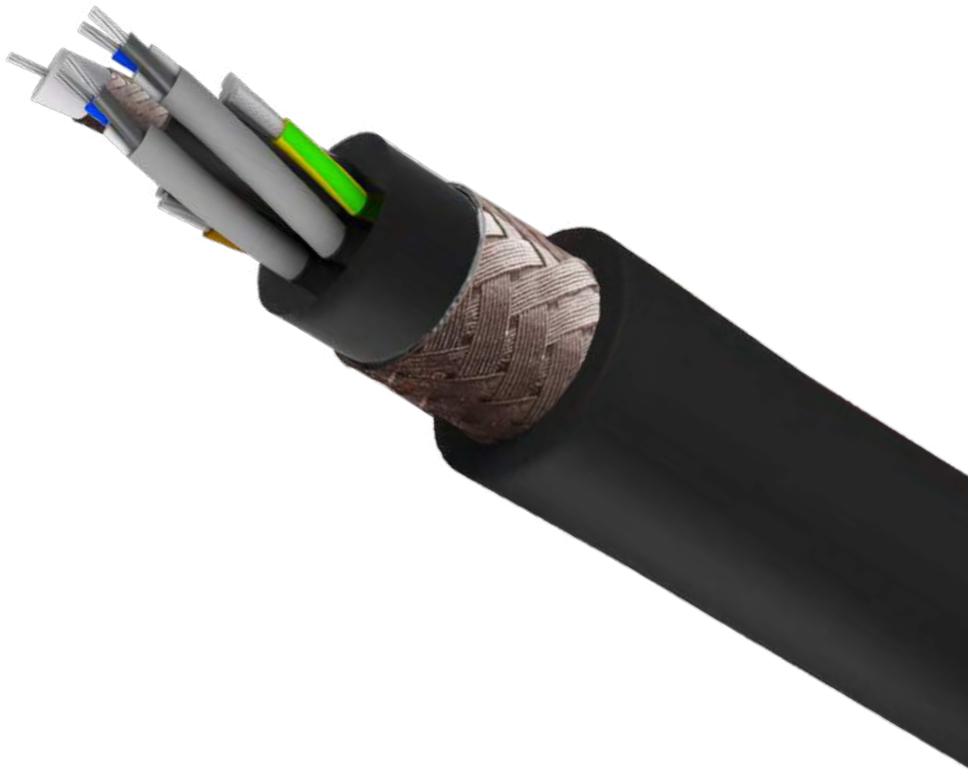
(*) for SHF2 MUD

(**) for SHF2 and SHF2 MUD

TK-SEA FIRE RESISTANT COMPOSITE RG11_ARMOURED AND UNARMOURED

REFERENCE STANDARDS		
	Fire resistance	IEC 60331-21 IEC 60331-23
	Flame retardancy	IEC 60332-1-2 IEC 60332-3-22
	Halogen-free	IEC 60754-1/2
	Low smoke density	IEC 61034-1/2
	Toxicity of evolved gas	EN 50305 9.2
	Ozone resistance	IEC 60811-403 (SHF2 and SHF2 MUD)
	Oil and fuel, hydrocarbon resistance	IEC 60811 (SHF2 and SHF2 MUD)
	Mud resistance	NEK 606 (SHF2 MUD)
	U.V. radiation resistance	ASTM-D-2565-16
	Cold bend	- 40°C

ARMOURED VERSION		
	Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
	Outer diameter	27 mm



NOTE

TecniKabel

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