



BUILDING TECHNOLOGY

**FIRE RESISTANT
CABLES**

tecniKabel

SPECIAL ELECTRICAL AND OPTICAL CABLES

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TecniKabel

SPECIAL ELECTRICAL AND OPTICAL CABLES



INTRODUCTION

Structured cabling solutions

Tecnikabel can provide a wide range of signal transmission solutions for public and private areas. Whether building entrance or roof, data center, meeting rooms, auditoriums or conference rooms, we can build management and security system control rooms for each individual office or workstation.

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

These fully integrated 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 Building sector requirements, with full-circuit integrity guaranteed during fire in accordance with IEC 60331 up to a superior extended time of 180 minutes.

Security & Alarm cables for Mass-Notification systems

Many current public and private buildings, such as offices, hospitals, airports, amusement parks, retail outlets, schools, stadiums and other such places, all have surveillance systems to track visitors and employees. The purpose of these systems is to protect people, the facility and its assets. These cables are designed to make installation as simple as possible, and thereby save time and money. In the event of fire, it is critically important that the electrical detection, warning and alarm systems continue to operate - even in extreme conditions - such as fire and high heat. To ensure the safety and evacuation of personnel, the fire alarm system must not fail. Many Tecnikabel cables are specifically designed for use during severe fires. In such circumstances, fire resistance, low smoke density and zero halogen emissions ensure there is no irremediable risk to either circuit or personnel.











Fire-resistant cables for fire detection and alarm systems and emergency lighting

BS 5839-1 provides recommendations for the planning, design, installation, commissioning and maintenance of fire detection and fire alarm systems for non-domestic premises. It does not cover voice alarm systems (which are separately addressed in BS 5839-8) and yet recommendations for fire detection and fire alarm systems in domestic premises are given in BS 5839-6. Cables are designed to ensure that the interconnections between fire alarm systems operate correctly for an appropriate length of time in the event of an emergency. With the terms of 'Standard' and 'Enhanced' the BS 5389-1 standard refers to two levels of cables performance, determining the level of fire resistance that the cables must offer.

For most applications BS5839-1 recommends the use of 'Standard' fire resisting cables. However, for particular applications, the standard recommends the use of 'Enhanced' fire resisting cables.

Test methods to determine the grade of a 'Standard' cable are described in EN 50200 while BS 8434-2 states tests methods to assess 'Enhanced' cables.

PRODUCT LINES

	TRANSPORTATION
	OIL / GAS & PETROCHEMICALS
	TELECOMMUNICATION
	OPTICAL
	AUTOMATION
	SUBMARINE
	AUDIOVIDEO
	NAVAL
	BUILDING TECHNOLOGY
	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 Teknikabel approval from American and European Authorities, complying with the most demanding international manufacturing and quality standards.



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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 BURIED



ANTIBALLISTIC PROTECTION



UV RESISTANT



WORK AT LOW TEMPERATURE

CHEMICAL PROPERTIES



MUD RESISTANCE



MINERAL OIL RESISTANCE



HYDROCARBONS RESISTANCE



ARCTIC CABLES

MECHANICAL PROPERTIES



MECHANICAL RESISTANCE



REDUCED BENDING RADIUS



BASEC

BRITISH APPROVALS SERVICE FOR CABLES

Product Certification Schedule

Schedule No:	226/001/001
Licensee:	TEKNIKABEL S.P.A., 243 VIA BRANDIZZO, 10088 VOLPIANO (TO), ITALY
Factory:	TEKNIKABEL S.P.A., VIA RIVIERA 100, 10040 ALMESE (TO), ITALY
Specification:	BS 7629-1:2015 Electric Cables - Specification for 300/500 V fire resistant, screened, fixed installations cables having low emission of smoke and corrosive gases when affected by fire. Part 1: Multicore cables
Type of Cable:	Table 2 Dimensions of 2-core, 3-core and 4-core cables
Range of Approval:	1.5sqmm to 4sqmm nominal cross-sectional area of conductors inclusive. 2-core to 4-core inclusive. ENHANCED 120. Additionally tested to BS 6387 Categories C, W & Z. Sheath - LTS3. Insulation - EI5
Origin Thread:	Not Applicable
Origin Mark:	TEKNIKABEL ELECTRIC CABLE

PERMISSIBLE MARKS

BASEC

Please refer to the BASEC Product Certification Requirements

YELLOW ACETATE THREAD

Expiry Date: 02/07/2021

Signed for and on behalf of the British Approvals Service for Cables

Jeremy Hodge

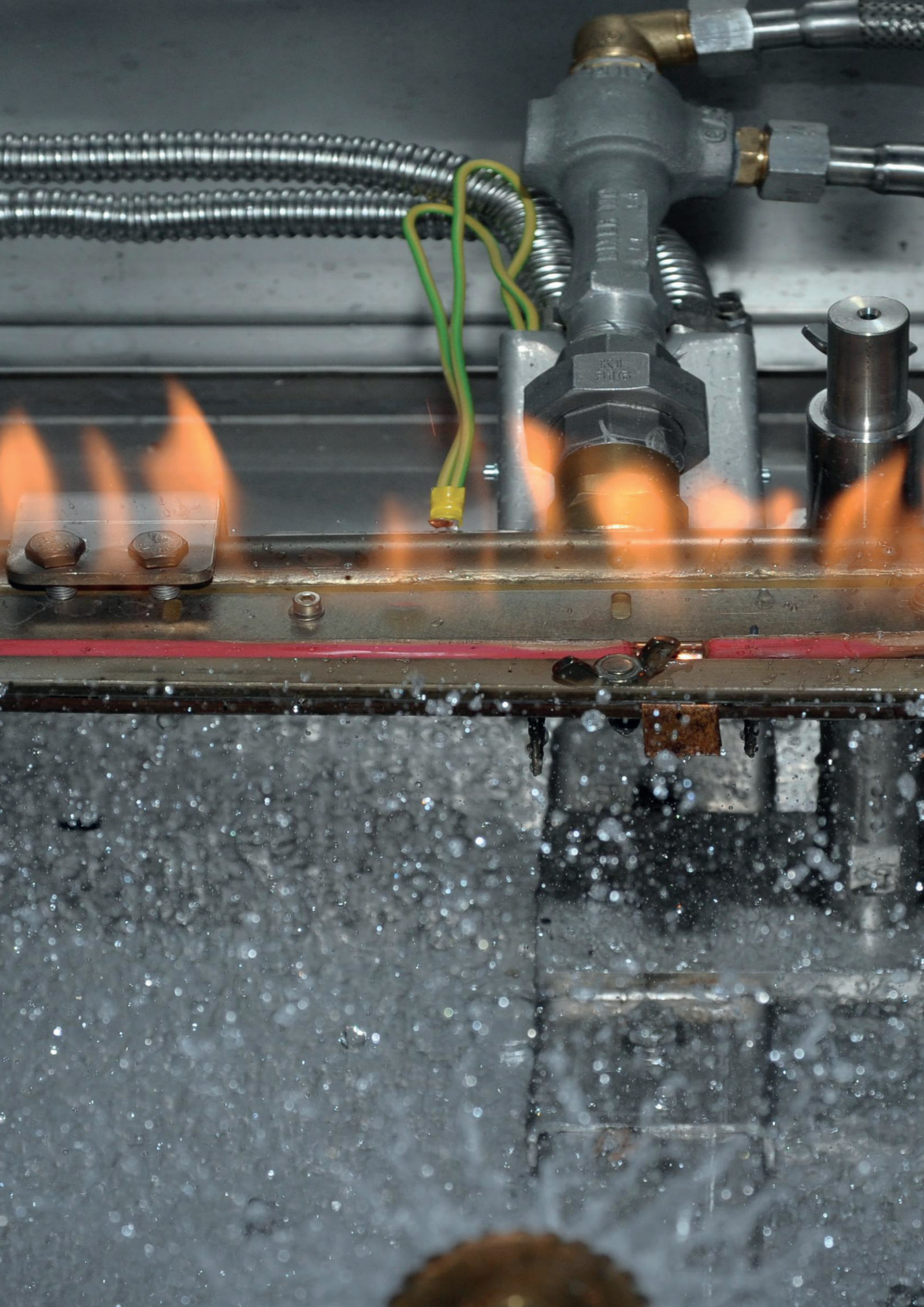
This Certificate and Schedule(s) remains the property of BASEC, and shall be returned when required.

Date: 03/07/2018

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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:

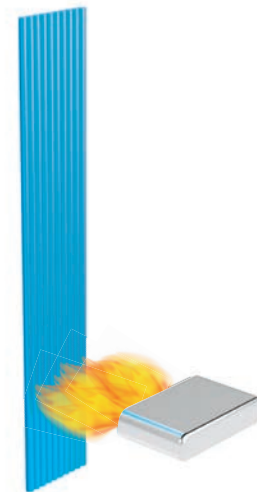
Fire propagation on a vertical cables bundle

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



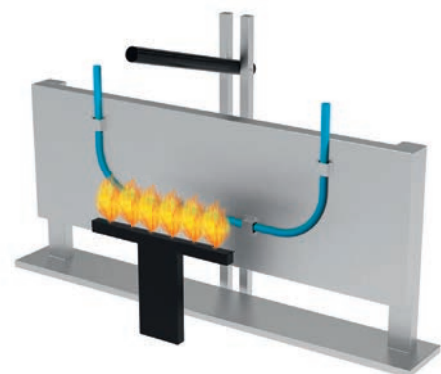
IEC 60331 / EN 50200: Fire test resistance

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.



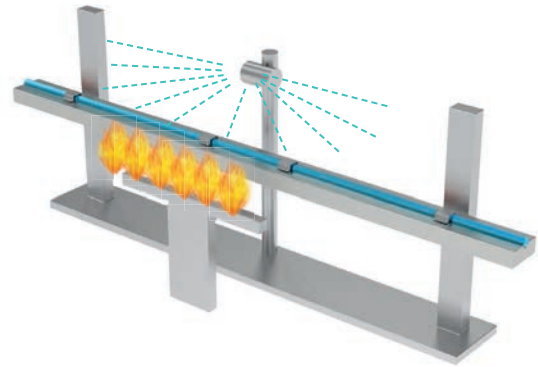
BS 6387 Category CWZ

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 (3x3x3m³) 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 $800\text{ °C} \pm 10\text{ °C}$, 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 $10\text{ }\mu\text{S}/\text{mm}$.



COPPER CABLES

These images are solely for illustrative purposes

TK-PRIME FIRE RESISTANT CABLES

EN 50200 FIRE RESISTANT CABLES



CABLE SPECIFICATIONS

Conductor	Solid Class 1 or Stranded Class 2 Plain annealed copper in accordance with EN 60228
Insulation	Fire Resistant Silicone
Core identification	Brown-Blue (2 cores) Brown-Black-Grey (3 cores) Blue-Brown-Black-Grey (4 cores)
Drain wire	Solid Tinned copper \varnothing 0.8mm (0.5 mm ²)
Shield	Polyester backed co polymer Aluminum Foil (Aluminum side in contact with Drain wire)
Sheath	Low Smoke HFFR Thermoplastic material
Colour	Red, White or Black

TECHNICAL DATA

Operating Voltage	300/500 V
Test Voltage	2000 V AC x 1'
Temperature range	-40°C ÷ + 90°C
Minimum bending radius	6 x \varnothing

REFERENCE STANDARDS

Fire resistance	EN 50200:2015 (Class PH30) BS 6387:2013 Category CWZ <ul style="list-style-type: none"> Cat. C fire @950°C - 180 min Cat. W fire and water @650°C - 15+15 min Cat. Z fire and mechanical shocks @950°C - 15min. fire
Flame retardancy	EN 60332-1-2:2004 + A11:2016 EN 60332-3-24:2009 EN 60332-3-25
Halogen emission	EN 50267-2-1:1999 (<0.5% HCl) EN 60754-2-1:2014
Low smoke density	EN 61034-2:2005 + A1:2013 (>60%)

KEY APPLICATIONS

<ul style="list-style-type: none"> Fire Alarm and fire Fighting systems Evacuation/Voice communication systems Emergency and exit lighting Systems Other control circuits for Life safety Systems, defined under 'Standard' (30min) Resistance
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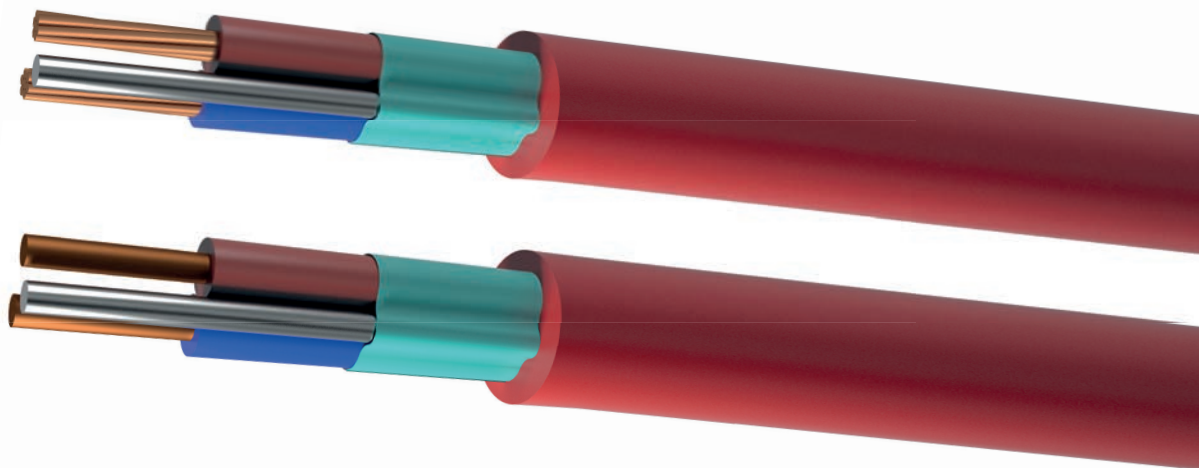
TK-PRIME FIRE RESISTANT CABLES
EN 50200 FIRE RESISTANT CABLES

SOLID CONDUCTOR ORDERING INFORMATION

TK code (p/n)			Cable Description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
Red outer sheath	White outer sheath	Black outer sheath				
445TKSRR1402	445TKSRW1402	445TKSRN1402	2 x 1.5	7.5	12.1	86
455TKSRR1402	455TKSRW1402	455TKSRN1402	2 x 2.5	8.8	7.41	119
445TKSRR1403	445TKSRW1403	445TKSRN1403	3 x 1.5	8.5	12.1	118
455TKSRR1403	455TKSRW1403	455TKSRN1403	3 x 2.5	9.1	7.41	174
445TKSRR1404	445TKSRW1404	445TKSRN1404	4 x 1.5	9.2	12.1	145
455TKSRR1404	455TKSRW1404	455TKSRN1404	4 x 2.5	11.0	7.41	200

STRANDED CONDUCTOR ORDERING INFORMATION

TK code (p/n)			Cable Description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
Red outer sheath	White outer sheath	Black outer sheath				
445TKSFR1402	445TKSFW1402	445TKSFN1402	2 x 1.5	7.8	12.1	90
455TKSFR1402	455TKSFW1402	455TKSFN1402	2 x 2.5	8.7	7.41	115
465TKSFR1402	465TKSFW1402	465TKSFN1402	2 x 4.0	10.0	4.61	180
445TKSFR1403	445TKSFW1403	445TKSFN1403	3 x 1.5	8.6	12.1	120
455TKSFR1403	455TKSFW1403	455TKSFN1403	3 x 2.5	9.5	7.41	190
465TKSFR1403	465TKSFW1403	465TKSFN1403	3 x 4.0	11.0	4.61	210
445TKSFR1404	445TKSFW1404	445TKSFN1404	4 x 1.5	9.3	12.1	150
455TKSFR1404	455TKSFW1404	455TKSFN1404	4 x 2.5	10.5	7.41	180
465TKSFR1404	465TKSFW1404	465TKSFN1404	4 x 4.0	12.2	4.61	260



TK-SUPREME FIRE RESISTANT CABLES

EN 50200 FIRE RESISTANT CABLES



CABLE SPECIFICATIONS

Conductor	Solid Class 1 or Stranded Class 2 Plain annealed copper in accordance with EN 60228
Insulation	Fire Resistant Ceramic Silicone
Core identification	Brown-Blue (2 cores) Brown-Black-Grey (3 cores) Blue-Brown-Black-Grey (4 cores)
Drain wire	Solid Tinned copper \varnothing 0.8mm (0.5 mm ²)
Shield	Polyester backed co polymer Aluminum Foil (Aluminum side in contact with Drain wire)
Sheath Colour	Low Smoke HFFR Thermoplastic material Red, White or Black

TECHNICAL DATA

Operating Voltage	300/500 V
Test Voltage	2000 V AC x 1'
Temperature range	-40°C ÷ + 90°C
Minimum bending radius	6 x \varnothing

REFERENCE STANDARDS

Fire resistance	EN 50200:2015 (Class PH 120) - Resistance to fire and mechanical shock for 120 minutes + duration of 30 Minutes in accordance with EN 50200:2015 Annex E is achieved by 15 min for the fire and mechanical shock phase and further 15 min for the fire, mechanical shock and water phase BS 6387:2013 Category CWZ <ul style="list-style-type: none"> • Cat. C fire @950°C - 180 min • Cat. W fire and water @650°C - 15+15 min • Cat. Z fire and mechanical shocks @950°C - 15min. fire
Flame retardancy	EN 60332-1-2:2004 + A11:2016 EN 60332-3-24:2009 EN 60332-3-25
Halogen emission	EN 50267-2-1:1999 (<0.5% HCl) EN 60754-1:2014
Low smoke density	EN 61034-2:2005 + A1:2013 (>60%)

KEY APPLICATIONS

<ul style="list-style-type: none"> • Fire Alarm and fire Fighting systems • Evacuation/Voice communication systems • Emergency and exit lighting Systems • Other control circuits for Life safety Systems, defined under 'Standard' (120min) Resistance



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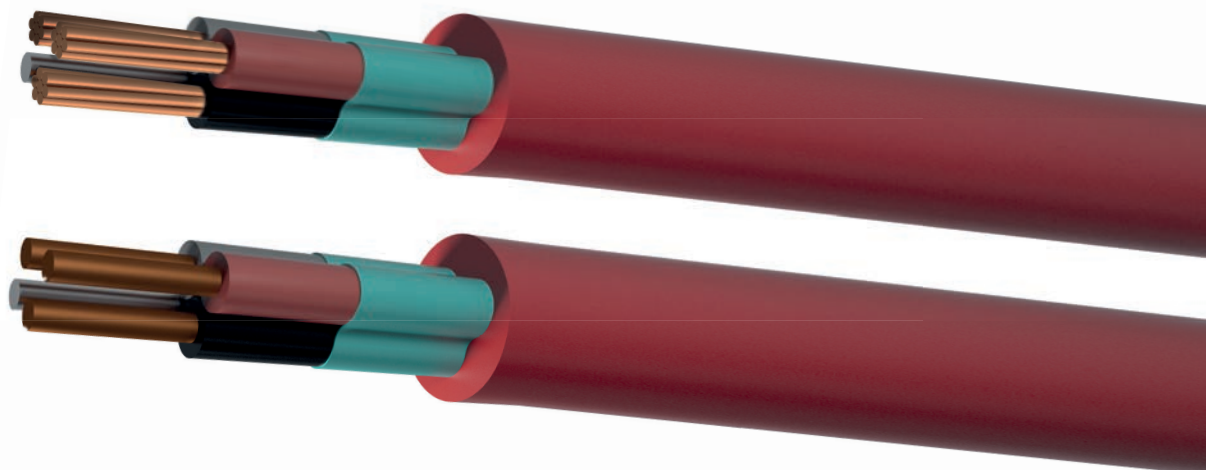
TK-SUPREME FIRE RESISTANT CABLES EN 50200 FIRE RESISTANT CABLES

SOLID CONDUCTOR ORDERING INFORMATION

TK code (p/n)			Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
Red outer sheath	White outer sheath	Black outer sheath				
445TKSRR1202	445TKSRW1202	445TKSRN1202	2 x 1.5	7.6	12.1	87
455TKSRR1202	455TKSRW1202	455TKSRN1202	2 x 2.5	8.9	7.41	121
445TKSRR1203	445TKSRW1203	445TKSRN1203	3 x 1.5	8.6	12.1	118
455TKSRR1202	455TKSRW1202	455TKSRN1202	3 x 2.5	9.2	7.41	174
445TKSRR1204	445TKSRW1204	445TKSRN1204	4 x 1.5	9.4	12.1	147
455TKSRR1204	455TKSRW1204	455TKSRN1204	4 x 2.5	11.1	7.41	202

STRANDED CONDUCTOR ORDERING INFORMATION

TK code (p/n)			Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
Red outer sheath	White outer sheath	Black outer sheath				
445TKSFR1202	445TKSFW1202	445TKSFN1202	2 x 1.5	7.8	12.1	90
455TKSFR1202	455TKSFW1202	455TKSFN1202	2 x 2.5	8.7	7.41	115
465TKSFR1202	465TKSFW1202	465TKSFN1202	2 x 4.0	10.0	4.61	180
445TKSFR1203	445TKSFW1203	445TKSFN1203	3 x 1.5	8.5	12.1	120
455TKSFR1203	455TKSFW1203	455TKSFN1203	3 x 2.5	9.5	7.41	190
465TKSFR1203	465TKSFW1203	465TKSFN1203	3 x 4.0	11.0	4.61	210
445TKSFR1204	445TKSFW1204	445TKSFN1204	4 x 1.5	9.3	12.1	150
455TKSFR1204	455TKSFW1204	455TKSFN1204	4 x 2.5	10.5	7.41	180
465TKSFR1204	465TKSFW1204	465TKSFN1204	4 x 4.0	12.2	4.61	260



TK-FLEXIBLE EXTREME FIRE SAFETY CABLES

BS 8434-2 FIRE RESISTANT CABLES FOR USE IN EMERGENCY CIRCUITS



CABLE SPECIFICATIONS

Conductor	Stranded Class 2 Plain annealed copper (1.5 - 2.5 - 4.0 mm ²) in accordance with EN 60228
Insulation	Fire barrier + Halogen free cross linked compound, type EI5
Core identification	Brown-Blue (2 cores) Brown-Black-Grey (3 cores) Blu-Brown-Black-Grey (4 cores)
CPC	Stranded Tinned copper, same size of conductor
Shield	Metallic tape
Sheath	Low Smoke HFFR Thermoplastic material
Colour	Red, White or Black

TECHNICAL DATA

Operating Voltage	300/500 V
Test Voltage	2000 V AC x 1'
Temperature range	-40°C ÷ + 90°C
Minimum bending radius	6 x Ø

REFERENCE STANDARDS

Fire resistance	BS 7629 -1:2015 Enhanced 120 EN 50200:2015 Class PH 120 BS 5839-1:2013 Clause 26.2e Enhanced BS 8434-2:2003 + A2:2009 (120mins) BS 6387:2013 Category CWZ <ul style="list-style-type: none"> • Cat. C fire @950°C - 180 min • Cat. W fire and water @650°C - 15+15 min • Cat. Z fire and mechanical shocks @950°C - 15min. fire
Flame retardancy	EN 60332-1-2:2004 + A11:2016 EN 60332-3-24:2009 EN 60332-3-25
Halogen emission	EN 60754-1: 2014 (<0.5% HCl)
Low smoke density	EN 61034-2:2005 + A1:2013 (>60%)

KEY APPLICATIONS

- Fire Alarm and fire Fighting systems
- Evacuation/Voice communication systems
- Emergency and exit lighting Systems
- Other control circuits for Life safety Systems, defined under 'Enhanced' Resistance



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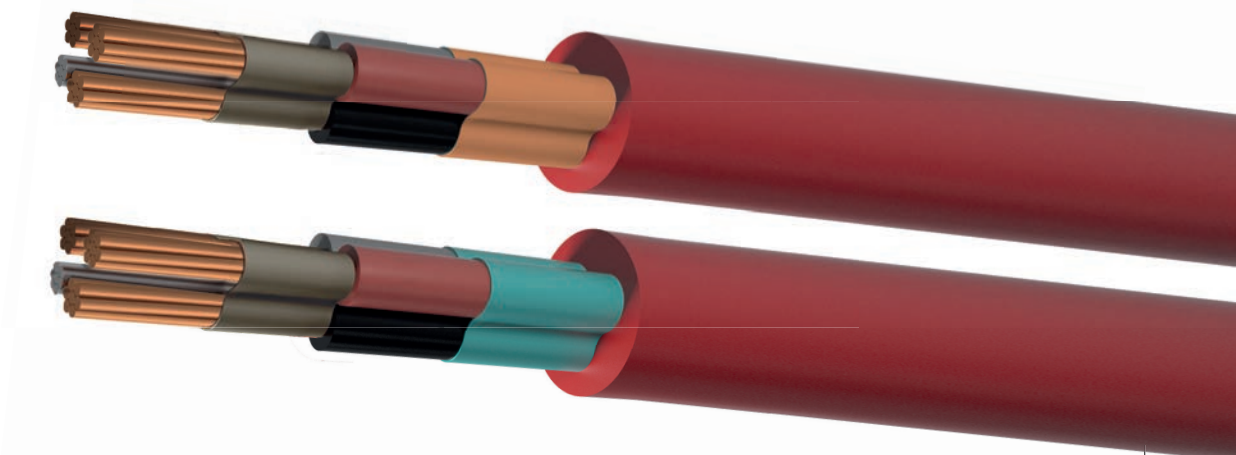
TK-FLEXIBLE EXTREME FIRE SAFETY CABLES
BS 8434-2 FIRE RESISTANT CABLES FOR USE IN EMERGENCY CIRCUITS

TAB. A_STRANDED CONDUCTOR ORDERING INFORMATION

TK code (p/n)			Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
Red outer sheath	White outer sheath	Black outer sheath				
445TKSFR1802	445TKSFW1802	445TKSFN1802	2 x 1.5	10.30	12.1	136
455TKSFR1802	455TKSFW1802	455TKSFN1802	2 x 2.5	12.10	7.41	199
465TKSFR1802	465TKSFW1802	465TKSFN1802	2 x 4.0	13.10	4.61	251
445TKSFR1803	445TKSFW1803	445TKSFN1803	3 x 1.5	10.90	12.1	169
455TKSFR1803	455TKSFW1803	455TKSFN1803	3 x 2.5	12.50	7.41	237
465TKSFR1803	465TKSFW1803	465TKSFN1803	3 x 4.0	14.10	4.61	325
445TKSFR1804	445TKSFW1804	445TKSFN1804	4 x 1.5	11.90	12.1	204
455TKSFR1804	455TKSFW1804	455TKSFN1804	4 x 2.5	13.70	7.41	290
465TKSFR1804	465TKSFW1804	465TKSFN1804	4 x 4.0	15.90	4.61	423

TAB. B_STRANDED CONDUCTOR ORDERING INFORMATION

TK code (p/n)			Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
Red outer sheath	White outer sheath	Black outer sheath				
445TKSFR1602	445TKSFW1602	445TKSFN1602	2 x 1.5	10.30	12.1	152
455TKSFR1602	455TKSFW1602	455TKSFN1602	2 x 2.5	12.10	7.41	215
465TKSFR1602	465TKSFW1602	465TKSFN1602	2 x 4.0	13.10	4.61	265
445TKSFR1603	445TKSFW1603	445TKSFN1603	3 x 1.5	10.90	12.1	180
455TKSFR1603	455TKSFW1603	455TKSFN1603	3 x 2.5	12.50	7.41	244
465TKSFR1603	465TKSFW1603	465TKSFN1603	3 x 4.0	14.10	4.61	352
445TKSFR1604	445TKSFW1604	445TKSFN1604	4 x 1.5	11.90	12.1	214
455TKSFR1604	455TKSFW1604	455TKSFN1604	4 x 2.5	13.70	7.41	300
465TKSFR1604	465TKSFW1604	465TKSFN1604	4 x 4.0	15.90	4.61	443



TK-EXTREME EDGE FIRE SAFETY CABLES

BS 8434-2 FIRE RESISTANT CABLES FOR USE IN EMERGENCY CIRCUITS



CABLE SPECIFICATIONS

Conductor	Solid Class 1 or Stranded Class 2 Plain annealed copper in accordance with EN 60228
Insulation	Fire barrier + Fire Resistant Silicone
Core identification	Brown-Blue (2 cores) Brown-Black-Grey (3 cores) Blue-Brown-Black-Grey (4 cores)
CPC	Stranded Tinned copper, same size of conductor
Shield	Aluminium/Polyester tape
Sheath	Low Smoke HFFR Thermoplastic material
Colour	Red, White or Black

TECHNICAL DATA

Operating Voltage	300/500 V
Test Voltage	2000 V AC x 1'
Temperature range	-40°C ÷ + 90°C
Minimum bending radius	6 x ø

REFERENCE STANDARDS

Fire resistance	BS 7629 -1:2015 Enhanced 120 EN 50200:2015 Class PH 120 BS 5839-1:2013 Clause 26.2e Enhanced BS 8434-2:2003 + A2:2009 (120mins) BS 6387:2013 Category CWZ <ul style="list-style-type: none"> • Cat. C fire @950°C - 180 min • Cat. W fire and water @650°C - 15+15 min • Cat. Z fire and mechanical shocks @950°C - 15min. fire
Flame retardancy	EN 60332-1-2:2004 + A11:2016
Halogen emission	EN 60754-1: 2014 (<0.5% HCl)
Low smoke density	EN 61034-2:2005 + A1:2013 (>60%)



For full approved range please visit www.redbooklive.com

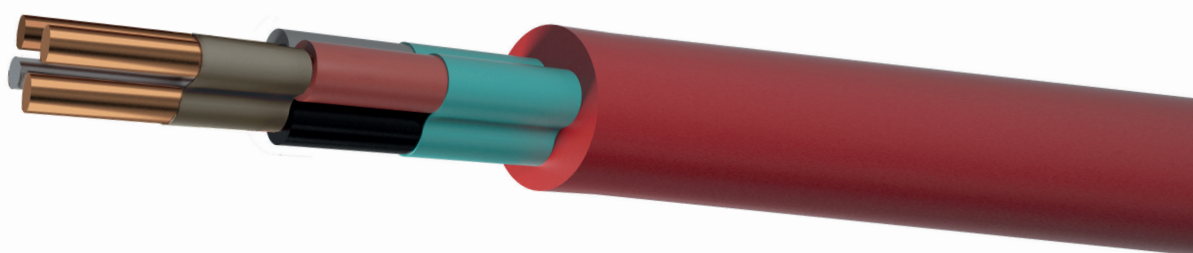
TK-EXTREME EDGE FIRE SAFETY CABLES
BS 8434-2 FIRE RESISTANT CABLES FOR USE IN EMERGENCY CIRCUITS

TAB. A SOLID CONDUCTOR ORDERING INFORMATION

TK code (p/n)			Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
Red outer sheath	White outer sheath	Black outer sheath				
445TKSRR2202	445TKSRW2202	445TKSRN2202	2 x 1.5	10.30	12.1	136
455TKSRR2202	455TKSRW2202	455TKSRN2202	2 x 2.5	12.10	7.41	199
465TKSRR2202	465TKSRW2202	465TKSRN2202	2 x 4.0	13.10	4.61	251
445TKSRR2203	445TKSRW2203	445TKSRN2203	3 x 1.5	10.90	12.1	169
455TKSRR2203	455TKSFW2203	455TKSRN2203	3 x 2.5	12.50	7.41	237
465TKSRR2203	465TKSRW2203	465TKSRN2203	3 x 4.0	14.10	4.61	325
445TKSRR2204	445TKSRW2204	445TKSRN2204	4 x 1.5	11.90	12.1	204
455TKSRR2204	455TKSRW2204	455TKSRN2204	4 x 2.5	13.70	7.41	290
465TKSRR2004	465TKSRW2004	465TKSRN2004	4 x 4.0	15.90	4.61	423

TAB. B STRANDED CONDUCTOR ORDERING INFORMATION

TK code (p/n)			Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
Red outer sheath	White outer sheath	Black outer sheath				
445TKSFR2202	445TKSFW2202	445TKSFN2202	2 x 1.5	10.30	12.1	152
455TKSFR2202	455TKSFW2202	455TKSFN2202	2 x 2.5	12.10	7.41	215
465TKSFR2202	465TKSFW2202	465TKSFN2202	2 x 4.0	13.10	4.61	265
445TKSFR2203	445TKSFW2203	445TKSFN2203	3 x 1.5	10.90	12.1	180
455TKSFR2203	455TKSFW2203	455TKSFN2203	3 x 2.5	12.50	7.41	244
465TKSFR2203	465TKSFW2203	465TKSFN2203	3 x 4.0	14.10	4.61	352
445TKSFR2204	445TKSFW2204	445TKSFN2204	4 x 1.5	11.90	12.1	214
455TKSFR2204	455TKSFW2204	455TKSFN2204	4 x 2.5	13.70	7.41	300
465TKSFR2004	465TKSFW2004	465TKSFN2004	4 x 4.0	15.90	4.61	443



TK-FIRE SUPREME ARMoured SAFETY CABLES

EN 50200 FIRE RESISTANT CABLES



CABLE SPECIFICATIONS

Conductor	Solid Class 1 or Stranded Class 2 Plain annealed copper in accordance with EN 60228
Insulation	Fire Resistant Ceramic Silicone
Core identification	Brown-Blue (2 cores) Brown-Black-Grey (3 cores) Blue-Brown-Black-Grey (4 cores)
Drain wire	Solid Tinned copper \varnothing 0.8mm (0.5 mm ²)
Shield	Polyester backed co polymer Aluminum Foil (Aluminum side in contact with Drain wire)
Sheath	Low Smoke HFFR Thermoplastic material
Armoured	Steel wire armour (SWA) or Galvanized steel wire braid (GSWB)
Colour	Red, White or Black

TECHNICAL DATA

Operating Voltage	300/500 V
Test Voltage	2000 V AC x 1'
Temperature range	-40°C ÷ + 90°C
Minimum bending radius	6 x \varnothing

REFERENCE STANDARDS

Fire resistance	EN 50200:2006 Annex E (30 mins) EN 50200:2006 (Class PH 120) BS 6387:2013 Category CWZ <ul style="list-style-type: none"> • Cat. C fire @950°C - 180 min • Cat. W fire and water @650°C - 15+15 min • Cat. Z fire and mechanical shocks @950°C - 15min. fire
Flame retardancy	EN 60332-1-2:2004 + A11:2016 EN 60332-3-24:2009 EN 60332-3-25
Halogen emission	EN 50267-2-1:1999 (<0.5% HCl) EN 60754-1:2014
Low smoke density	EN 61034-2:2005 + A1:2013 (>60%)

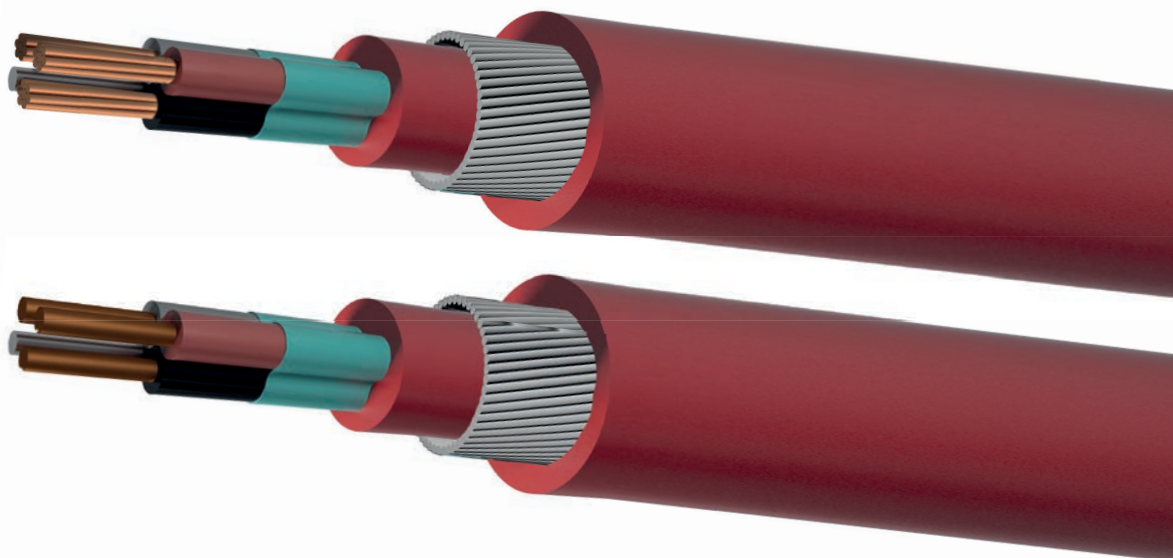
TK-FIRE SUPREME ARMoured SAFETY CABLES EN 50200 FIRE RESISTANT CABLES

TAB. A_SOLID CONDUCTOR ORDERING INFORMATION - SWA

TK code (p/n)			Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
Red outer sheath	White outer sheath	Black outer sheath				
845TKSRR2002	845TKSRW2002	845TKSRN2002	2 x 1.5	12.4	12.1	335
855TKSRR2002	855TKSRW2002	855TKSRN2002	2 x 2.5	14.0	7.41	409
845TKSRR2003	845TKSRW2003	845TKSRN2003	3 x 1.5	12.9	12.1	359
855TKSRR2003	855TKSRW2003	855TKSRN2003	3 x 2.5	14.6	7.41	465
845TKSRR2004	845TKSRW2004	845TKSRN2004	4 x 1.5	14.0	12.1	419
855TKSRR2004	855TKSRW2004	855TKSRN2004	4 x 2.5	15.6	7.41	523

TAB. B_STRANDED CONDUCTOR ORDERING INFORMATION - SWA

TK code (p/n)			Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
Red outer sheath	White outer sheath	Black outer sheath				
845TKSFR2002	845TKSFW2002	845TKSFN2002	2 x 1.5	12.8	12.1	343
855TKSFR2002	855TKSFW2002	855TKSFN2002	2 x 2.5	14.5	7.41	419
865TKSFR2002	865TKSFW2002	865TKSFN2002	2 x 4.0	16.1	4.61	483
845TKSFR2003	845TKSFW2003	845TKSFN2003	3 x 1.5	13.3	12.1	402
855TKSFR2003	855TKSFW2003	855TKSFN2003	3 x 2.5	14.9	7.41	477
865TKSFR2003	865TKSFW2003	865TKSFN2003	3 x 4.0	16.8	4.61	574
845TKSFR2004	845TKSFW2004	845TKSFN2004	4 x 1.5	14.4	12.1	493
855TKSFR2004	855TKSFW2004	855TKSFN2004	4 x 2.5	16.3	7.41	600
865TKSFR2004	865TKSFW2004	865TKSFN2004	4 x 4.0	18.3	4.61	726



TK-FIRE EXTREME EDGE ARMoured SAFETY CABLES
BS 8434-2 FIRE RESISTANT CABLES FOR USE IN EMERGENCY CIRCUITS



CABLE SPECIFICATIONS

Conductor	Solid Class 1 or Stranded Class 2 Plain annealed copper in accordance with EN 60228
Insulation	Fire barrier + Fire Resistant Silicone
Core identification	Brown-Blue (2 cores) Brown-Black-Grey (3 cores) Blu-Brown-Black-Grey (4 cores)
CPC	Stranded Tinned copper, same size of conductor
Shield	Aluminium/Polyester tape
Sheath	Low Smoke HFFR Thermoplastic material
Armoured	Steel wire armour (SWA) or Galvanized steel wire braid (GSWB)
Colour	Red, White or Black

TECHNICAL DATA

Operating Voltage	300/500 V
Test Voltage	2000 V AC x 1'
Temperature range	-40°C ÷ + 90°C
Minimum bending radius	6 x ø

REFERENCE STANDARDS

Fire resistance	BS 7629 -1:2015 Enhanced 120 EN 50200:2015 Class PH 120 BS 5839-1:2013 Clause 26.2e Enhanced BS 8434-2:2003 + A2:2009 (120mins) BS 6387:2013 Category CWZ <ul style="list-style-type: none"> • Cat. C fire @950°C - 180 min • Cat. W fire and water @650°C - 15+15 min • Cat. Z fire and mechanical shocks @950°C - 15min. fire
Flame retardancy	EN 60332-1-2:2004 + A11:2016 EN 60332-3-24:2009 EN 60332-3-25
Halogen emission	EN 60754-1: 2014 (<0.5% HCl)
Low smoke density	EN 61034-2:2005 + A1:2013 (>60%)

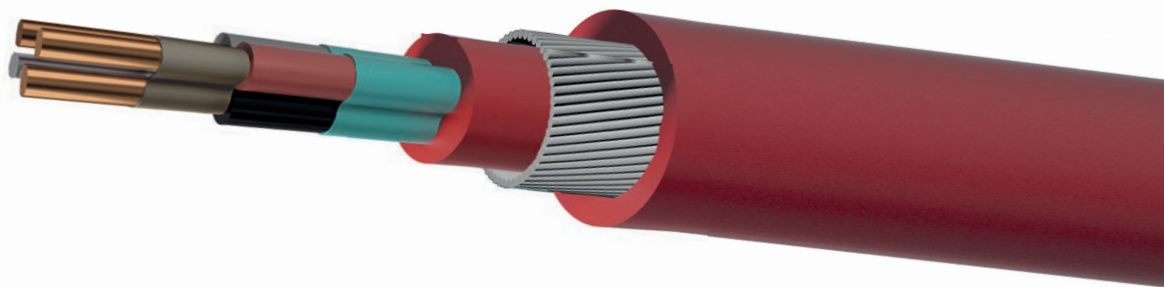
TK-FIRE EXTREME EDGE ARMoured SAFETY CABLES
BS 8434-2 FIRE RESISTANT CABLES FOR USE IN EMERGENCY CIRCUITS

TAB. A_SOLID CONDUCTOR ORDERING INFORMATION - SWA

TK code (p/n)			Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
Red outer sheath	White outer sheath	Black outer sheath				
845TKSRR2202	845TKSRW2202	845TKSRN2202	2 x 1.5	13.4	12.1	363
855TKSRR2202	855TKSRW2202	855TKSRN2202	2 x 2.5	15.0	7.41	448
865TKSRR2202	865TKSRW2202	865TKSRN2202	2 x 4.0	17.0	4.61	576
845TKSRR2203	845TKSRW2203	845TKSRN2203	3 x 1.5	14.1	12.1	410
855TKSRR2203	855TKSFW2203	855TKSRN2203	3 x 2.5	15.6	7.41	503
865TKSRR2203	865TKSRW2203	865TKSRN2203	3 x 4.0	18.0	4.61	663
845TKSRR2204	845TKSRW2204	845TKSRN2204	4 x 1.5	15.1	12.1	474
855TKSRR2204	855TKSRW2204	855TKSRN2204	4 x 2.5	16.8	7.41	584
865TKSRR2004	865TKSRW2004	865TKSRN2004	4 x 4.0	19.4	4.61	766

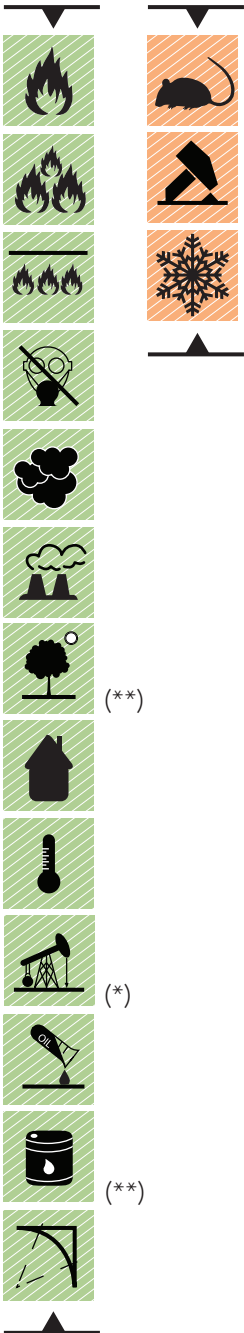
TAB. B_STRANDED CONDUCTOR ORDERING INFORMATION - SWA

TK code (p/n)			Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
Red outer sheath	White outer sheath	Black outer sheath				
845TKSFR2202	845TKSFW2202	845TKSFN2202	2 x 1.5	14.0	12.1	389
855TKSFR2202	855TKSFW2202	855TKSFN2202	2 x 2.5	15.4	7.41	467
865TKSFR2202	865TKSFW2202	865TKSFN2202	2 x 4.0	17.0	4.61	576
845TKSFR2203	845TKSFW2203	845TKSFN2203	3 x 1.5	14.5	12.1	410
855TKSFR2203	855TKSFW2203	855TKSFN2203	3 x 2.5	16.1	7.41	503
865TKSFR2203	865TKSFW2203	865TKSFN2203	3 x 4.0	18.0	4.61	663
845TKSFR2204	845TKSFW2204	845TKSFN2204	4 x 1.5	15.3	12.1	481
855TKSFR2204	855TKSFW2204	855TKSFN2204	4 x 2.5	17.5	7.41	618
865TKSFR2004	865TKSFW2004	865TKSFN2004	4 x 4.0	19.4	4.61	766



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

ON REQUEST



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 shield	Aluminium/polyester tape
Overall shield	Tinned Copper braid
Outer sheath	Halogen free LSZH UVR Halogen free cross-linked Cross-linked LSZH UVR Halogen free cross-linked Cross-linked LSZH MUD UVR
Outer diameter	9,8 mm

TECHNICAL DATA

Minimun bending radius	10 x Ø
Temperature range	- 40°C ÷ + 70°C (Operating LSZH) - 40°C ÷ + 90°C (Operating Cross-linked LSZH and Cross-linked LSZH Mud)
Conductor resistance	@ 20°C: ≤ 69,5 Ω/km
Nominal Capacitance	@ 800 Hz: 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 ≤ 3	EN 50305 9.2
Ozone resistant	IEC 60811-403 (for Cross-linked LSZH and for Cross-linked LSZH MUD version)
Oil and fuel, hydrocarbon resistance	IEC 60811 (for Cross-linked LSZH and for Cross-linked LSZH MUD version)
Mud resistant	NEK 606 (for Cross-linked LSZH MUD version)
U.V. radiation resistant	ASTM-D-2565-16
Cold bend	CSA 22/2 No. 0.3-01 210.2M90 @40°C

ARMOURED VERSION

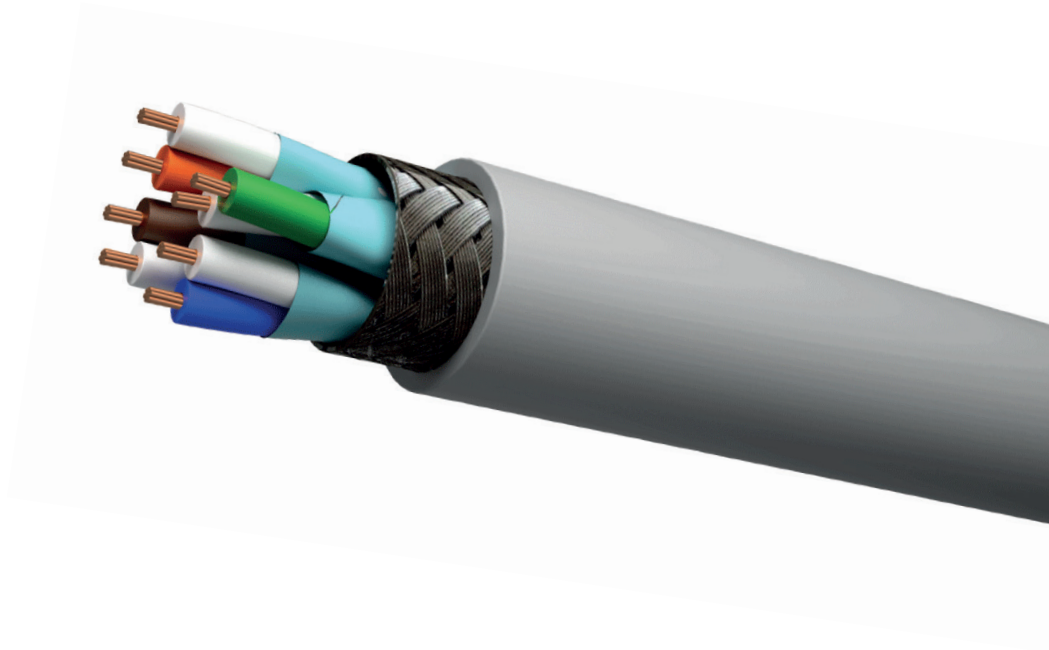
Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB) Steel wire armour (SWA) Thermowelded interlocked armour (H6)
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(*) for Cross-linked LSZH MUD
(**) for Cross-linked LSZH and Cross-linked LSZH MUD



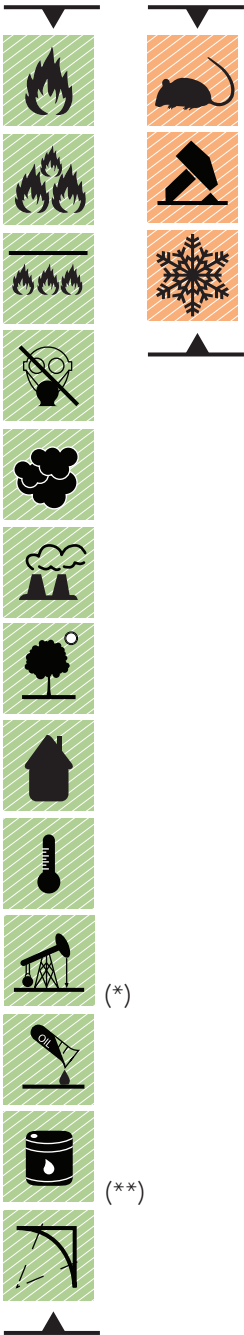
Transmission Characteristics Category 6A (IEC 61156-6)

Frequenzy	MHz	1	4	10	16	31.25	62.5	100	155	200	250	500
Maximum Attenuation	dB/100	3.12	5.70	8.89	11.23	15.75	22.48	28.70	36.13	41.36	46.60	67.89
Frequenzy	MHz	1	4	10	16	31.25	62.5	100	155	200	250	500
Minimum Return Loss	dB	20.00	23.01	25.00	25.00	23.33	20.74	18.99	17.35	16.40	15.60	15.60
Frequenzy	MHz	1	4	10	16	31.25	62.5	100	155	200	250	500
Minimum NEXT	dB	75.30	66.27	60.30	57.24	52.88	48.36	45.30	42.45	40.78	39.33	34.82
Frequenzy	MHz	1	4	10	16	31.25	62.5	100	155	200	250	500
Minimum PS-NEXT	dB	72.30	63.27	57.30	54.24	49.88	45.36	42.30	39.45	37.78	36.33	31.82



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

ON REQUEST



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 shield	Aluminium/polyester tape
Overall shield	Tinned Copper braid
Outer sheath	Halogen free LSZH UVR Halogen free cross-linked Cross-linked LSZH UVR Halogen free cross-linked Cross-linked LSZH MUD UVR
Outer diameter	9,8 mm

TECHNICAL DATA

Minimun bending radius	10 x Ø
Temperature range	- 40°C ÷ + 70°C (Operating LSZH) - 40°C ÷ + 90°C (Operating Cross-linked LSZH and Cross-linked LSZH Mud)
Conductor resistance	@ 20°C: ≤ 69,5 Ω/km
Nominal Capacitance	@ 800 Hz: 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 ≤ 3	EN 50305 9.2
Ozone resistant	IEC 60811-403 (for Cross-linked LSZH and for Cross-linked LSZH MUD version)
Oil and fuel, hydrocarbon resistance	IEC 60811 (for Cross-linked LSZH and for Cross-linked LSZH MUD version)
Mud resistant	NEK 606 (for Cross-linked LSZH MUD version)
U.V. radiation resistant	ASTM-D-2565-16
Cold bend	CSA 22/2 No. 0.3-01 210.2M90 @40°C

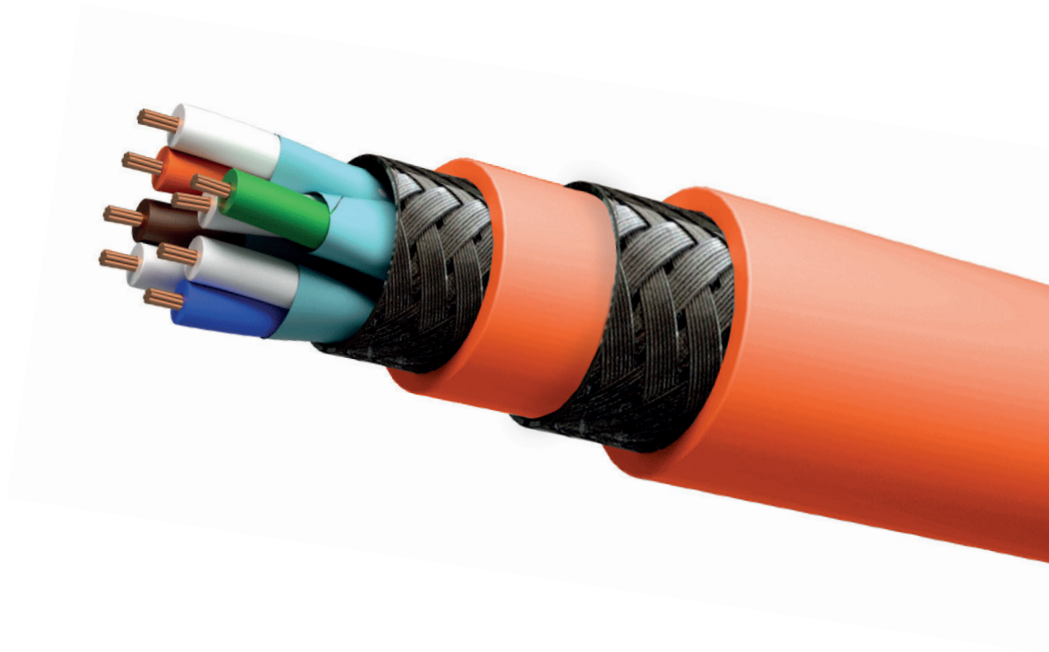
ARMOURED VERSION

Material	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB) Steel wire armour (SWA) Thermowelded interlocked armour (H6)
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(*) for Cross-linked LSZH MUD
(**) for Cross-linked LSZH and Cross-linked LSZH MUD



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





CABLE SPECIFICATIONS

Conductor	Bare copper Class. 2 or Class. 5 according to IEC 60228
Insulation	Fire barrier + Cross-linked LSZH compound
Core identification	DIN 47100
Overall shield	Aluminium/polyester tape, tinned copper drain wire
Sheath	LSZH thermoplastic material
Colour	Red or other colours upon request

TECHNICAL DATA

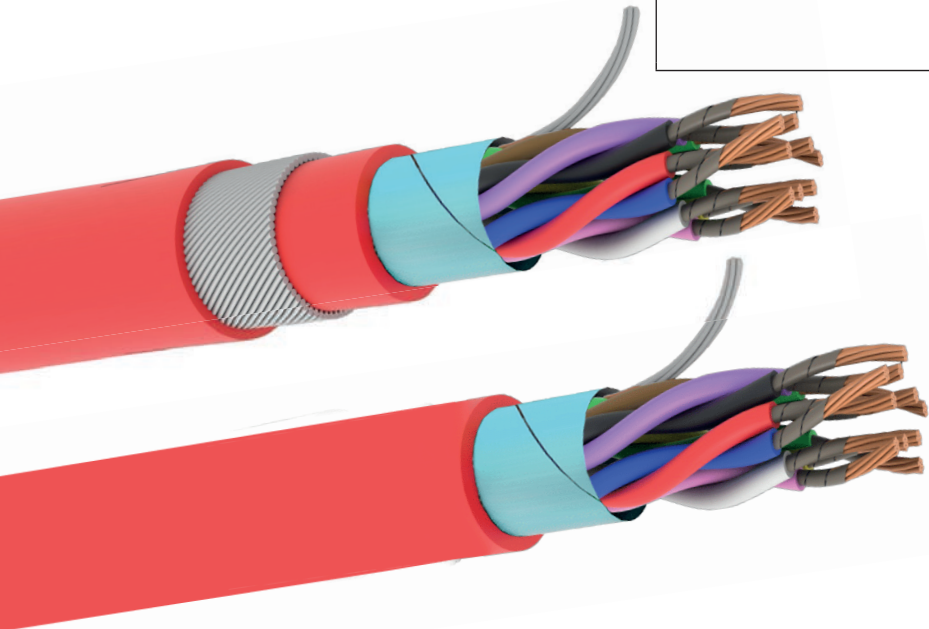
Operating Voltage	300/500 V
Test Voltage	2000 V
Minimum bending radius	10 x \varnothing unarmoured; 15 x \varnothing armoured
Temperature range	-40°C ÷ +70°C
Minimum bending radius	12 x \varnothing - not armoured type 15 x \varnothing - armoured type
Nominal capacitance (pF/m)	150 0.75 150 1 150 1.5
L/R (μH/Ohm)	25 0.75 25 1 40 1.5

FIRE STANDARDS

Fire resistance	IEC 60331-23
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 (cat. C.)
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

ARMOURED VERSION

Armoured	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB) Steel wire armour (SWA) Thermowelded interlocked armour (H6) Corrugated steel tape (CST) Steel tape armour (STA)
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TAB. A_UNARMOURED

Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
1x2x0.75	7.8	24.5	64
2x2x0.75	10.7	24.5	118
5x2x0.75	14.8	24.5	218
10x2x0.75	20.1	24.5	380
15x2x0.75	24.9	24.5	535
20x2x0.75	28.2	24.5	680
1x2x1	8.4	18.1	73
2x2x1	11.5	18.1	136
5x2x1	15.7	18.1	266
10x2x1	21.3	18.1	455
15x2x1	26.5	18.1	646
20x2x1	30.2	18.1	839
1x2x1.5	9.3	12.1	87
2x2x1.5	13.0	12.1	165
5x2x1.5	18.1	12.1	342
10x2x1.5	24.8	12.1	606
15x2x1.5	30.8	12.1	862
20x2x1.5	34.9	12.1	1121

TAB. B_ARMOURED - SWA

Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
1x2x0.75	12.3	24.5	292
2x2x0.75	15.5	24.5	504
5x2x0.75	22.2	24.5	703
10x2x0.75	25.8	24.5	1005
15x2x0.75	31.0	24.5	1434
20x2x0.75	34.6	24.5	1715
1x2x1	12.7	18.1	316
2x2x1	18.3	18.1	549
5x2x1	23.7	18.1	798
10x2x1	28.8	18.1	1279
15x2x1	32.9	18.1	1622
20x2x1	36.9	18.1	1971
1x2x1.5	13.7	12.1	346
2x2x1.5	19.6	12.1	622
5x2x1.5	25.5	12.1	927
10x2x1.5	31.3	12.1	1535
15x2x1.5	35.8	12.1	1954
20x2x1.5	40.8	12.1	2631



CABLE SPECIFICATIONS

Conductor	Bare copper Class. 2 or Class. 5 according to IEC 60228
Insulation	Fire barrier + Cross-linked LSZH compound
Core identification pair	Balck - White numbered
Individual shield	Aluminium/polyester tape, tinned copper drain wire 0.5 mm ²
Overall shield	Aluminium/polyester tape, tinned copper drain wire 0.5 mm ²
Inner sheath	LSZH thermoplastic material
Colour	Red or other colours upon request

TECHNICAL DATA

Operating Voltage	300/500 V
Test Voltage	2000 V
Minimum bending radius	10 x ø unarmoured; 15 x ø armoured
Temperature range	-40°C ÷ + 70°C
Minimum bending radius	12 x ø - not armoured type 15 x ø - armoured type

FIRE STANDARDS

Fire resistance	IEC 60331-23
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 (cat. C.)
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

ARMOURED VERSION

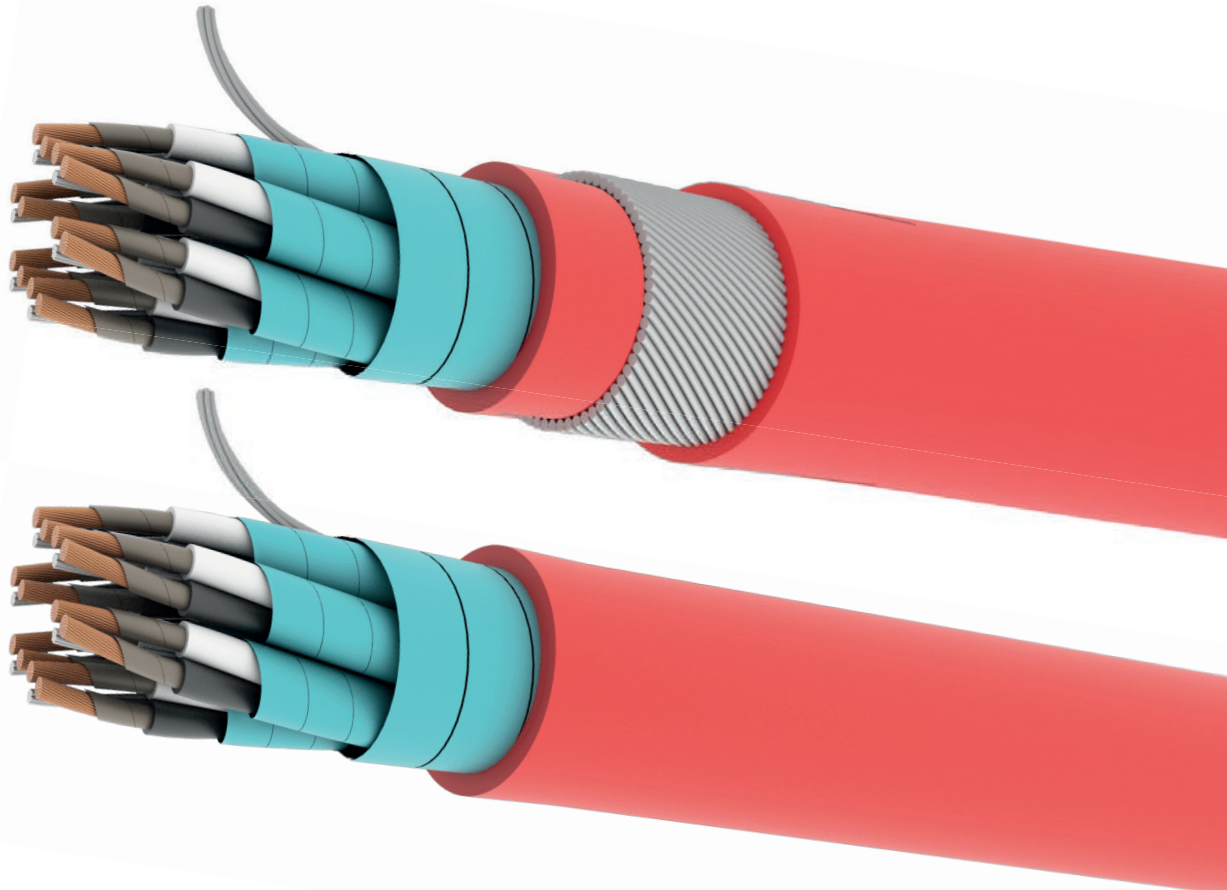
Armoured	Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB) Steel wire armour (SWA) Thermowelded interlocked armour (H6) Corrugated steel tape (CST) Steel tape armour (STA)
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TAB. A_UNARMOURED

Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
1x2x2.5	9.3	7.98	120
2x2x2.5	14.7	7.98	270
2x2x4.0	16.7	4.95	370
4x2x4.0	19.8	4.95	600
6x2x4.0	24.1	4.95	920
2x2x6.0	18.7	3.3	500

TAB. B_ARMOURED - SWA

Cable description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
1x2x2.5	14.1	7.98	370
2x2x2.5	20.0	7.98	670
2x2x4.0	22.0	4.95	820
4x2x4.0	25.2	4.95	1120
6x2x4.0	29.7	4.95	1570
2x2x6.0	24.1	3.3	990



TK-FIRE SINGLE AND TWISTED CORE



CABLE SPECIFICATIONS

Conductor

Tinned copper Class. 2 or Class. 5 according to IEC 60228

Insulation

Fire barrier + Cross-linked LSZH compound
Red single core
Red - Black twisted core

Twisting (only TAB B.)

Two cores twisted

TECHNICAL DATA

Operating Voltage

0.6 - 1 kV

Test Voltage

2000 V

Temperature range

-40°C ÷ + 90°C

Minimum bending radius

5 x \varnothing - unscreened

10 x \varnothing - screened

FIRE STANDARDS

Fire resistance

EN 50200 PH90 (90 min)

Flame retardancy

IEC 60332-1-2

IEC 60332-3-24 (cat. C.)

Halogen-free

IEC 60754-1/2

Low smoke density

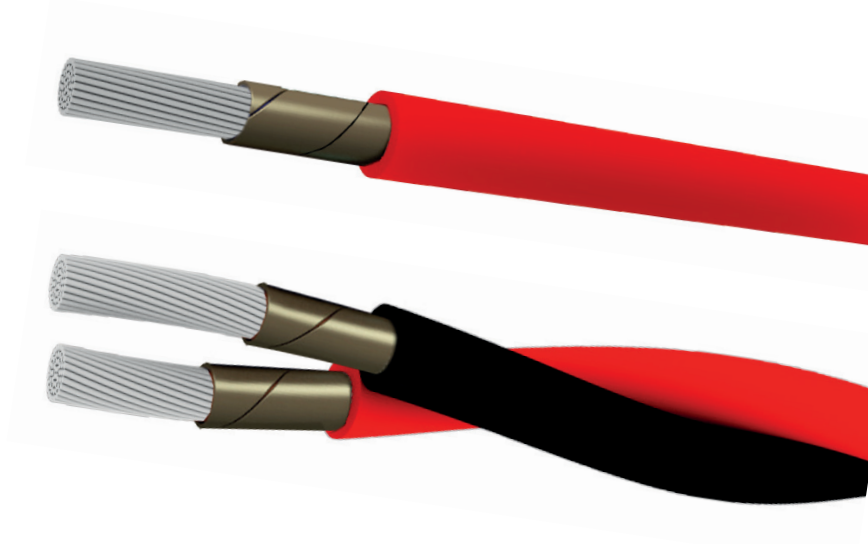
IEC 61034-1/2

TAB. A_SINGLE CORE

Cable Description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
1x0.5	2.6	40.1	11
1x0.75	2.8	26.7	14
1x1	3.0	20.0	17
1x1.5	3.6	13.7	25
1x2.5	4.0	8.21	36
1x4	4.6	5.09	53
1x6	5.2	3.39	75
1x10	6.4	1.95	123
1x16	7.4	1.24	181
1x25	9.0	0.795	280
1x35	10.8	0.565	385
1x50	12.8	0.393	537

TAB. B_TWISTED CORES

Cable Description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
2x0.5	5.2	40.1	22
2x0.75	5.6	26.7	28
2x1	6.0	20.0	34
2x1.5	7.2	13.7	50
2x.25	8.0	8.21	72
2x4	9.2	5.09	106
2x6	10.4	3.39	150
2x10	12.8	1.95	246
2x16	14.8	1.24	382
2x25	18.0	0.795	560
2x35	21.6	0.565	770
2x50	25.6	0.393	1074



TK-FIRE MULTICORES



CABLE SPECIFICATIONS

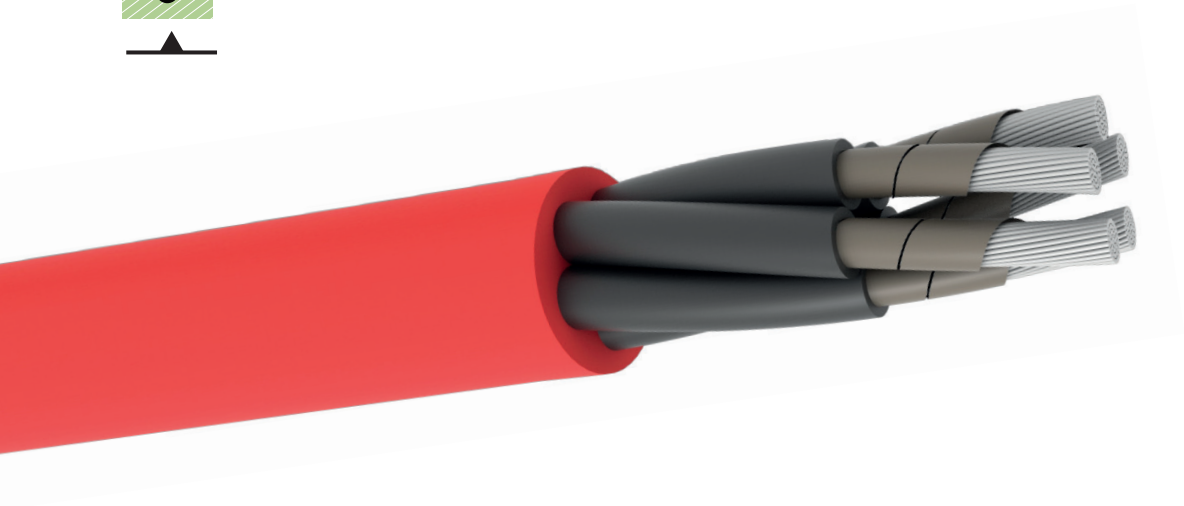
Conductor	Tinned copper Class. 2 or Class. 5 according to IEC 60228
Insulation	Fire barrier + Cross-linked LSZH compound Black numbered
Sheath	Cross-linked LSZH compound Red

TECHNICAL DATA

Operating Voltage	0.6 - 1 kV
Test Voltage	2000 V
Temperature range	-40°C ÷ + 90°C
Minimum bending radius	5 x Ø - unscreened 10 x Ø - screened

FIRE STANDARDS

Fire resistance	EN 50200 PH90 (90 min)
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 (cat. C.)
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2



TAB. A_MULTICORES

Cable Description (mm ²)	Nominal Diameter [mm]	Nominal conductor Resistance (@ 20°C max.)	Nominal cable weight [Kg/km]
2x1.5	9.3	13.3	121
3x1.5	9.8	13.3	142
4x1.5	10.8	13.3	172
5x1.5	11.8	13.3	202
2x2.5	10.6	7.98	167
3x2.5	11.2	7.98	199
4x2.5	12.3	7.98	242
5x2.5	13.6	7.98	291
2x4	11.4	4.95	209
3x4	12.1	4.95	256
4x4	13.3	4.95	314
5x4	14.7	4.95	378
2x6	12.3	3.3	265
3x6	13.0	3.3	328
4x6	14.4	3.3	409
5x6	15.9	3.3	492
2x10	15.3	1.91	425
3x10	16.3	1.91	536
4x10	18.0	1.91	668
5x10	19.9	1.91	807
2x16	17.4	1.21	610
3x16	18.6	1.21	785
4x16	20.6	1.21	989
5x16	22.8	1.21	1201
2x25	20.8	0.78	879
3x25	22.2	0.78	1131
4x25	24.7	0.78	1433
5x25	27.4	0.78	1742

TK-FIRE RS 485 LSZH CABLE_ARMOURED AND UNARMOURED

ON REQUEST



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	Aluminium/polyester tape + Tinned copper braid	
Outer sheath	Halogen free LSZH Halogen free cross-linked Cross-linked LSZH Halogen free cross-linked Cross-linked LSZH MUD	
Outer diameter	9,6 mm 11,6 mm 10,5 mm 12,5 mm 14,7 mm 16,7 mm	1 pair LSZH 1 pair Cross-linked LSZH - Cross-linked LSZH MUD 2 pairs (1 star quad) LSZH 2 pairs (1 star quad) Cross-linked LSZH - Cross-linked LSZH MUD 4 pairs LSZH 4 pairs Cross-linked LSZH - Cross-linked LSZH MUD

TECHNICAL DATA

Minimum bending radius	10 x Ø
Temperature range	-40°C ÷ +70°C (Operating LSZH) -40°C ÷ +90°C (Operating Cross-linked LSZH and Cross-linked LSZH Mud)
Conductor resistance	@ 20°C: ≤ 33 Ω/km
Nominal Capacitance	@ 800 Hz: 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 ≤ 3	EN 50305 9.2
Ozone resistant	IEC 60811-403 (for Cross-linked LSZH and for Cross-linked LSZH MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (for Cross-linked LSZH and for Cross-linked LSZH MUD)
Mud resistant	NEK 606 (for Cross-linked LSZH MUD)
U.V. radiation resistant	ASTM-D-2565-16
Cold bend	CSA 22/2 No. 0.3-01 210.2M90 @40°C

ARMOURED VERSION

Material	Steel wire armour (SWA) Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
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(*) for Cross-linked LSZH MUD
(**) for Cross-linked LSZH and Cross-linked LSZH MUD



TK-FIRE PROFIBUS_ARMOURED AND UNARMOURED

ON REQUEST



CABLE SPECIFICATION

Conductors	Bare Copper 0,35 mm ²
Insulation	Foam skin polyolefin
Core identification	Green - Red
Flame barrier	Mica tape
Shield	Alluminium/polyester tape + tinned copper braid
Outer sheath	Halogen free LSZH UVR Halogen free cross-linked Cross-linked LSZH UVR Halogen free cross-linked Cross-linked LSZH MUD UVR
Outer diameter	9.6 mm (LSZH - Cross-linked LSZH) 11 mm (Cross-linked LSZH MUD)

TECHNICAL DATA



Minimum bending radius	10 x Ø
Temperature range	- 40°C ÷ + 70°C (Operating LSZH) - 40°C ÷ + 90°C (Operating Cross-linked LSZH and Cross-linked LSZH Mud)
Conductor resistance	@ 20°C: ≤ 55 Ω/km
Nominal Capacitance	@ 800 Hz: 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 ≤ 3	EN 50305 9.2
Ozone resistant	IEC 60811-403 (for Cross-linked LSZH and for Cross-linked LSZH MUD version)
Oil and fuel, hydrocarbon resistance	IEC 60811 (for Cross-linked LSZH and for Cross-linked LSZH MUD version)
Mud resistant	NEK 606 (for Cross-linked LSZH MUD version)
U.V. radiation resistant	ASTM-D-2565-16
Cold bend	CSA 22/2 No. 0.3-01 210.2M90 @40°C

ARMOURED VERSION

Material	Steel wire armour (SWA) Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
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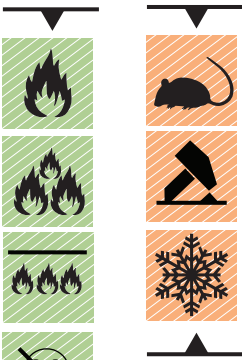


(*) for Cross-linked LSZH MUD
(**) for Cross-linked LSZH and Cross-linked LSZH MUD



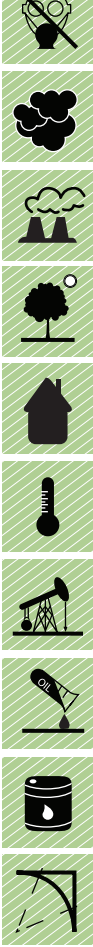
TK-FIRE CANBUS LSZH CABLE 1 PAIR_ARMOURED AND UNARMOURED

ON REQUEST



CABLE SPECIFICATION

Conductors	Stranded bare copper 0,75 mm ²	
Insulation	Foam-Skin Polyolefin	
Core identification	White - Blue	
Flame barrier	Mica tape	
Individual shield	Aluminium/polyester tape	
Earth conductor	Stranded tinned copper Yellow/Green	
Overall shield	Tinned Copper braid	
Outer sheath	Halogen free LSZH UVR Halogen free cross-linked Cross-linked LSZH UVR Halogen free cross-linked Cross-linked LSZH MUD UVR	
Outer diameter	11,5 mm 14 mm	LSZH - Cross-linked LSZH Cross-linked LSZH MUD



TECHNICAL DATA

Minimum bending radius	10 x Ø
Temperature range	- 40°C ÷ + 70°C (Operating LSZH) - 40°C ÷ + 90°C (Operating Cross-linked LSZH and Cross-linked LSZH Mud)
Conductor resistance	@ 20°C: ≤ 26 Ω/km (Bare copper) @ 20°C: ≤ 26,7 Ω/km (Tinned copper)
Nominal Capacitance	@ 800 Hz: 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 ≤ 3	EN 50305 9.2
Ozone resistant	IEC 60811-403 (for Cross-linked LSZH and for Cross-linked LSZH MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (for Cross-linked LSZH and for Cross-linked LSZH MUD)
Mud resistant	NEK 606 (for Cross-linked LSZH MUD)
U.V. radiation resistant	ASTM-D-2565-16
Cold bend	CSA 22/2 No. 0.3-01 210.2M90 @40°C

ARMOURED VERSION

Material	Steel wire armour (SWA) Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
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(*) for Cross-linked LSZH MUD
(**) for Cross-linked LSZH and Cross-linked LSZH MUD



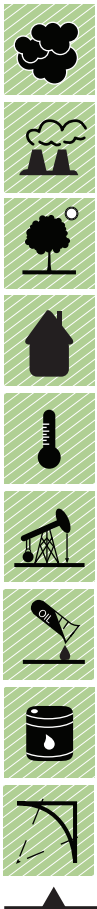
TK-FIRE CANBUS LSZH CABLE 2 PAIR_ARMOURED AND UNARMOURED

ON REQUEST



CABLE SPECIFICATION

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



TECHNICAL DATA

Minimum bending radius	10 x Ø
Temperature range	- 40°C ÷ + 70°C (Operating LSZH) - 40°C ÷ + 90°C (Operating Cross-linked LSZH and Cross-linked LSZH Mud)
Conductor resistance	@ 20°C: ≤ 26 Ω/km (Bare copper) @ 20°C: ≤ 26,7 Ω/km (Tinned copper)
Nominal Capacitance	@ 800 Hz: 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 ≤ 3	EN 50305 9.2
Ozone resistant	IEC 60811-403 (for Cross-linked LSZH and for Cross-linked LSZH MUD)
Oil and fuel, hydrocarbon resistance	IEC 60811 (for Cross-linked LSZH and for Cross-linked LSZH MUD)
Mud resistant	NEK 606 (for Cross-linked LSZH MUD)
U.V. radiation resistant	ASTM-D-2565-16
Cold bend	CSA 22/2 No. 0.3-01 210.2M90 @40°C

(*) for Cross-linked LSZH MUD
(**) for Cross-linked LSZH and Cross-linked LSZH MUD

ARMOURED VERSION

Material	Steel wire armour (SWA) Galvanized steel wire braid (GSWB) Tinned copper wire braid (TCWB) Bronze wire braid (BWB)
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TK-FIRE TELEPHONE MULTIPAIRS LSZH CABLE_ARMOURED AND UNARMOURED

ON REQUEST



CABLE SPECIFICATION

Conductors	Solid bare copper from 0.4 mm to 0.9 mm	
Insulation	Polyethylene	
Core identification	White - Blue	White - Green
	White - Orange	White - Brown
Flame Barrier	Mica tape on each conductor	
Shield	Aluminium / Mylar tape on each pair	
Flame Barrier	Mica tape on the assembly	
Inner sheath	Halogen free LSZH	
Outer sheath	Halogen free LSZH UVR	
	Halogen free cross-linked Cross-linked LSZH UVR	
	Halogen free cross-linked Cross-linked LSZH MUD UVR	

TECHNICAL DATA

Conductor resistance	≤ 96 Ω/km
Operating voltage	250 V
Temperature range	- 40°C ÷ + 70°C (Operating LSZH)
	- 40°C ÷ + 90°C (Operating Cross-linked LSZH and Cross-linked LSZH Mud)
Nominal capacitance	50 pF/m (@800Hz)
Characteristic impedance	100 ± 15 Ω (@ 1 - 16 MHz)

REFERENCE STANDARDS

Fire resistance	IEC 60331-23
Flame retardancy	IEC 60332-1
	IEC 60332-3-22 Cat. A
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2
Toxicity of evolved gases ≤ 3	EN 50305 9.2
Ozone resistance	EN 50305 7.4.2
UV Radiation resistance	ASTM-D-2565-92A
Cold bend	CSA C.22.2
Cold impact	CSA C.22.2
Oil & fuel, hydrocarbons resistance	IEC 60811
MUD resistance (*)	NEK 606

ARMOURED VERSION

Material	Corrugated Steel Tape (CST)
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(*) for Cross-linked LSZH MUD
 (***) for Cross-linked LSZH and Cross-linked LSZH MUD



OPTICAL FIBER CABLES



These images are solely for illustrative purposes

▶ OPTICAL FIBER CABLES GENERAL INFORMATION

FIBER TYPES

- Singlemode ITU-T G.652D - IEC 60793-2-50 Type B.1.3
- Singlemode ITU-T G.657A1 - IEC 60793-2-50 Type B.1.3 and B.6.A
- Singlemode ITU-T G.657A2 / B2 - IEC 60793-2-50 Type B.1.3 and B.6.A&B
- Singlemode ITU-T G.657A1 / A2 / B2 Type 200micron
- Singlemode NZD ITU-T G.655E/656 - IEC 60793-2-50 Type B4/B5
- Multimode 62.5/125 OM1 IEC 60793-2-10 Type A1b
- Multimode 50/125 OM2 ITU-T G.651 IEC 60793-2-10 Type A1a.1
- Multimode 50/125 OM3 - ISO/IEC 11801 - IEC 60793-2-10 Type A1a.2
- Multimode 50/125 OM4 - ISO/IEC 11801 - IEC 60793-2-10 Type A1a.3
- Multimode 50/125 OM5 - ISO/IEC 11801 - IEC 60793-2-10 Type A1a.3

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

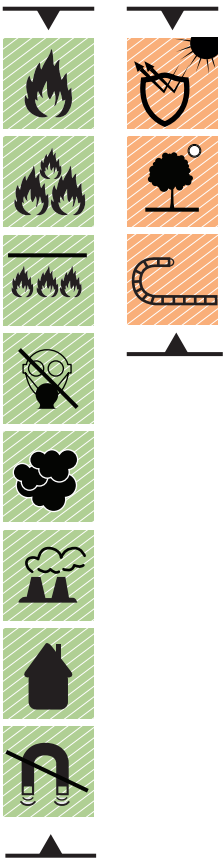
▶ SINGLEMODE FIBER PROPERTIES

	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.A2	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 (λ_o)	1300-1324 nm	1300-1324 nm	1300-1324 nm	1300-1324 nm	
Dispersion slope (S_o) @ (λ_o)	≤ 0.090 ps/(nm ² *km)	≤ 0.090 ps/(nm ² *km)	≤ 0.092 ps/(nm ² *km)	≤ 0.092 ps/(nm ² *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	≤ 0.03 dB	
Mandrel Radius 15mm@1625 10 turns		≤ 1.0 dB	≤ 0.1 dB	≤ 0.1 dB	
Mandrel Radius 10mm@1550 1 turns		≤ 0.75 dB	≤ 0.1 dB	≤ 0.1 dB	
Mandrel Radius 10mm@1625 1 turns		≤ 1.5 dB	≤ 0.2 dB	≤ 0.2 dB	
Mandrel Radius 7.5mm@1550 1 turns			≤ 0.5 dB	≤ 0.5 dB	
Mandrel Radius 7.5mm@1625 1 turns			≤ 1.0 dB	≤ 1.0 dB	
Proof test	≥ 0.7 GPa	≥ 0.7 GPa	≥ 0.7 GPa	≥ 0.7 GPa	≥ 0.7 GPa

	MM62.5 OM1	MM50 OM2	MM50 OM3	MM50 OM4	MM50 OM5
Core diameter	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 %
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
Coating diameter	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 %
Core/cladding concentricity error	≤ 1 µm	≤ 1 µm	≤ 1 µm	≤ 1 µm	≤ 1 µm
Coating/cladding concentricity error	≤ 10 µm	≤ 6 µm	≤ 6 µm	≤ 6 µm	≤ 6 µm
Numerical Aperture	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	≤ 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	≤ 0.80 dB/km	≤ 0.80 dB/km	≤ 0.80 dB/km	≤ 0.80 dB/km
Overfilled Modal Bandwidth @ 850 nm	≥ 200 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	≥ 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	83 m	300 m	550 m	550 m
Fibre capacity 100GBASE-SX	274 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

TK-MTB FIRE BREAKOUT CABLES - LSZH

ON REQUEST



OPTICAL CORE

Fiber Structure	Tight Buffer 900 μm Semitight Buffer 900 μm
Tight Colour Code	White
Strain relief	Aramid yarns
Sub unit Sheath	Numbered flame retardant, low smoke and halogen-free material
Flame barrier	Mica tape
Assembling	4 to 24 sub units
Outer Sheath	Flame retardant, low smoke and halogen-free material

All cables are available with all type of fibers.

TECHNICAL DATA

Temperature range	-40°C to + 80°C
Installation temperature	-10°C to + 50°C
Minimum bending radius	Static: 10 x outer diameter

FIRE PERFORMANCE

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 Cat. C
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

MAIN FEATURES

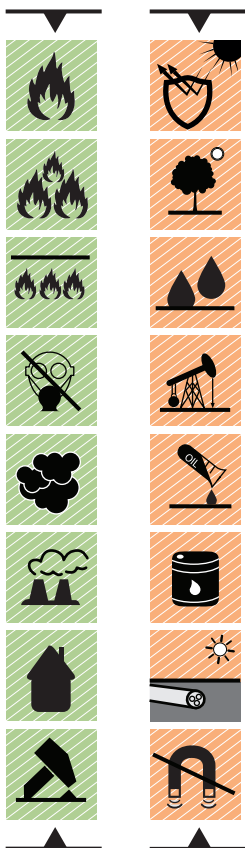
No. of Fiber	Nominal Diameter (mm)	Nominal cable Weight (kg/km)	Max pulling Force (N)	Max Crush (N/dm)	Impact (J)
4	6.8	45	500	1000	10
6	8.0	60	1000	1000	10
8	9.8	90	1500	1000	10
12	12.6	165	2000	1000	10
16	12.0	150	3000	1000	10
24	15.0	210	4000	1000	10

Types mentioned here are standard. Different mechanical performance is available upon request.



TK-MTBA FIRE ARMoured BREAKOUT CABLES - LSZH

ON REQUEST



OPTICAL CORE

Fiber Structure	Tight Buffer 900 μm Semitight Buffer 900 μm
Tight Colour Code	White
Strain relief	Aramid yarns
Sub unit Sheath	Numbered flame retardant, low smoke and halogen-free material - Ø 2mm
Flame barrier	Mica tape
Assembling	4 to 24 sub units
Inner Sheath	Flame retardant, low smoke and halogen-free material
Armouring	Galvanized steel wire braid (GSWB)
Outer Sheath	Flame retardant, low smoke and halogen-free material

All cables are available with all type of fibers.

TECHNICAL DATA

Temperature range	-40°C to + 80°C
Installation temperature	-10°C to + 50°C
Minimum bending radius	Static: 12 x outer diameter

FIRE PERFORMANCE

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 Cat. C
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

MAIN FEATURES

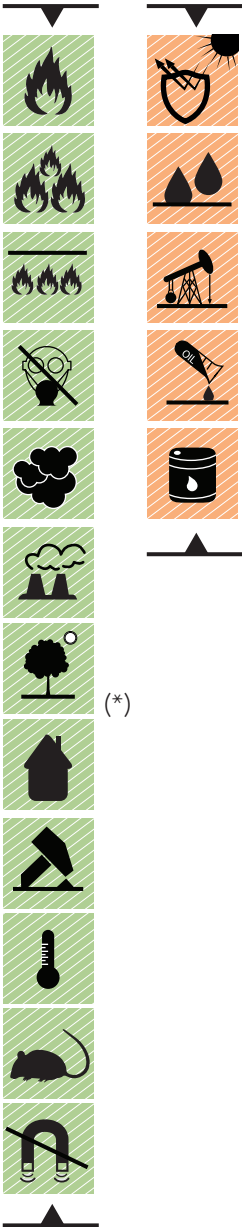
No. of Fiber	Nominal diameter (mm)	Nominal cable Weight (kg/km)	Max pulling Force (N)	Max Crush (N/dm)	Impact (J)
4	11.0	180	1000	2000	20
6	12.0	200	1500	2000	20
8	13.8	230	2000	2000	20
12	16.5	300	2500	2000	20
16	16.0	280	3500	2000	20
24	19.0	350	4500	2000	20

Types mentioned here are standard. Different mechanical performance is available upon request.



TK-FIRE UTX UNITUBE DIELECTRIC CABLES

ON REQUEST



OPTICAL CORE

Fiber Structure	Jelly filled loose tube
Fiber Colour Code	See table A
Loose tube Colour	Natural
Flame barrier	Mica tape
Protection	Aramid/Glass yarns
Outer Sheath	Flame retardant, low smoke and halogen-free or Cross-linked LSZH

All cables are available with all type of fibers.

TECHNICAL DATA

Temperature range	-40°C to + 80°C
Installation temperature	-10°C to + 50°C
Minimum bending radius	Static: 10 x outer diameter

FIRE PERFORMANCE

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 Cat. C
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

(*) for Cross-linked LSZH MUD

TK-FIRE UTX UNITUBE DIELECTRIC CABLES

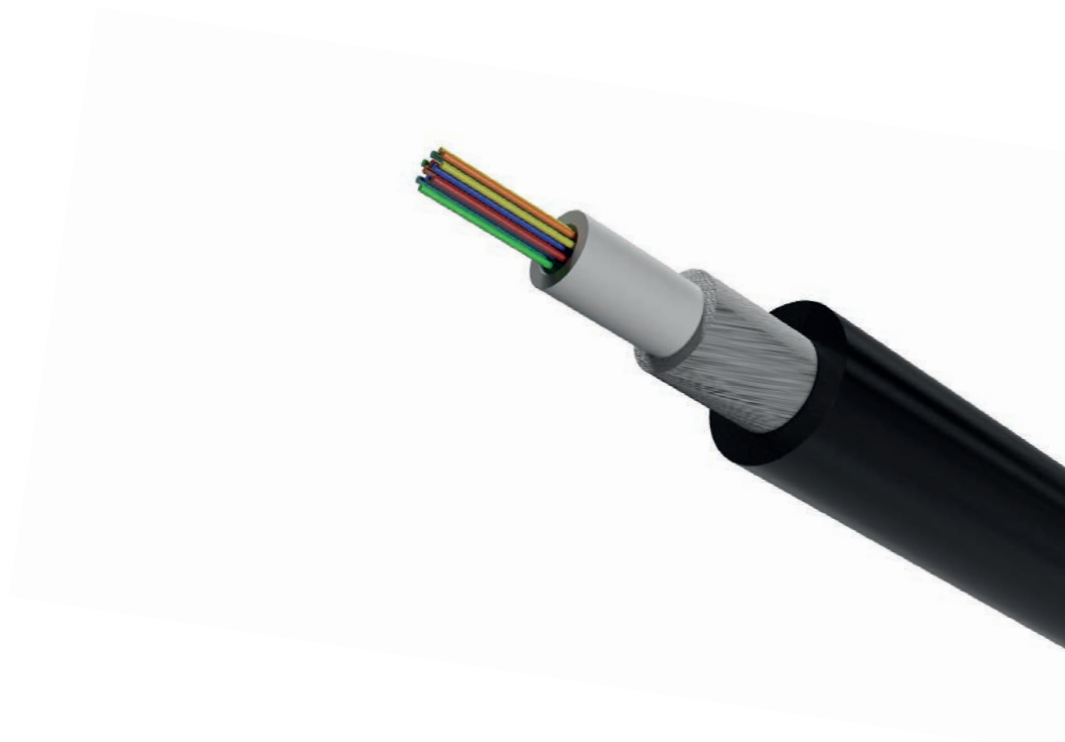
MAIN FEATURES ARAMID YARNS + LSZH SHEATH

No. of Fiber	Nominal diameter loose (mm)	Nominal diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling Force (N)	Max Crush (N/dm)	Impact (J)
2 to 12	2.8	6.4	40	1500	2000	10
13 to 24	3.5	6.9	50	1500	2000	10

MAIN FEATURES GLASS YARNS + LSZH SHEATH

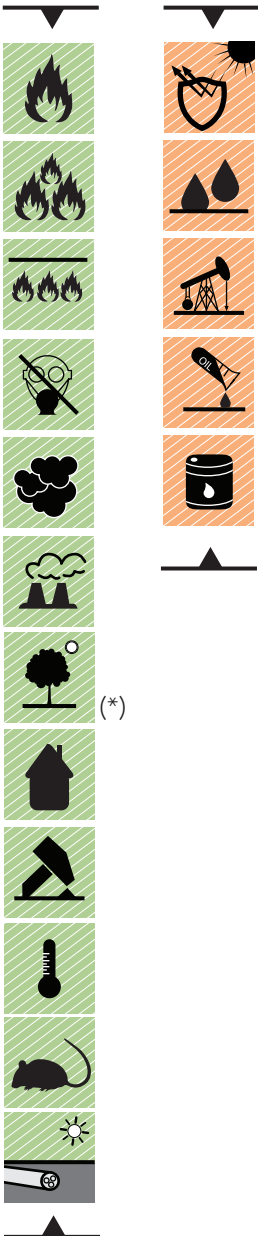
No. of Fiber	Nominal diameter loose (mm)	Nominal diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling Force (N)	Max Crush (N/dm)	Impact (J)
2 to 12	2.8	7.0	55	2500	2000	10
13 to 24	3.5	8.0	65	2500	2000	10

Types mentioned here are standard. Different mechanical performance is available upon request.



TK-FIRE UT9X ARMoured UNITUBE CABLES

ON REQUEST



OPTICAL CORE

Fiber Structure	Jelly filled loose tube
Fiber Colour Code	See table A
Flame barrier	Mica tape
Loose tube Colour	Natural
Assembling	2 to 24 fibers
Protection	With or without Aramid/Glass yarns
Armouring	Corrugated and thermowelded steel tape (CST)
Outer Sheath	Flame retardant, low smoke and halogen-free or Cross-linked LSZH

All cables are available with all type of fibers.

TECHNICAL DATA

Temperature range	-40°C to + 80°C
Installation temperature	-10°C to + 50°C
Minimum bending radius	Static: 10 x outer diameter

FIRE PERFORMANCE

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 Cat. C
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

(*) for Cross-linked LSZH MUD

TK-FIRE UT9X ARMOURED UNITUBE CABLES

MAIN FEATURES CST + LSZH SHEATH

No. of Fiber	Nominal diameter loose (mm)	Nominal diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling Force (N)	Max Crush (N/dm)	Impact (J)
2 to 24	3.5	9.0	95	750	2500	10

MAIN FEATURES CST + ARAMID YARNS + LSZH SHEATH

No. of Fiber	Nominal diameter loose (mm)	Nominal diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling Force (N)	Max Crush (N/dm)	Impact (J)
2 to 24	3.5	9.0	110	1500	3000	15

MAIN FEATURES CST + GLASS YARNS + LSZH SHEATH

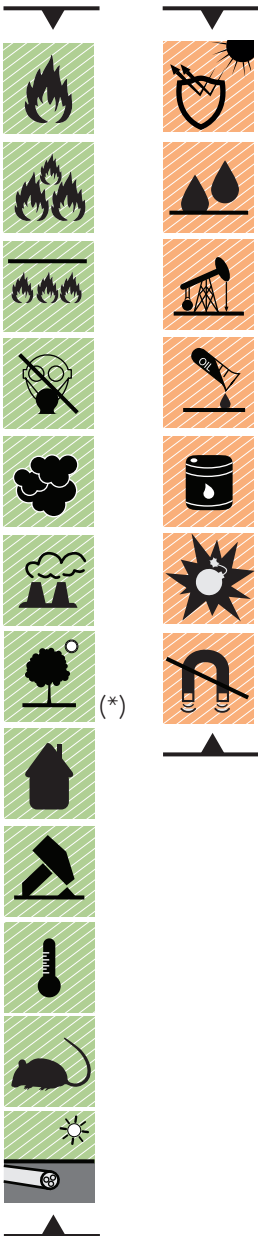
No. of Fiber	Nominal diameter loose (mm)	Nominal diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling Force (N)	Max Crush (N/dm)	Impact (J)
2 to 24	3.5	10	140	3000	3500	20

Types mentioned here are standard. Different mechanical performance is available upon request.



TK-FIRE UTXD ARMoured UNITUBE DOUBLE SHEATH CABLES

ON REQUEST



OPTICAL CORE

Fiber Structure	Jelly filled loose tube
Fiber Colour Code	See table A
Loose tube Colour	Natural
Flame barrier	Mica tape
Assembling	2 to 24 fibers
Strain relief	Aramid/Glass yarns
Inner Sheath	Flame retardant, low smoke and halogen-free
Armouring	Galvanized steel wire braid (GSWB) or corrugated and thermowelded steel tape (CST)
Outer Sheath	Flame retardant, low smoke and halogen-free or Cross-linked LSZH

All cables are available with all type of fibers.

TECHNICAL DATA

Temperature range	-40°C to + 80°C
Installation temperature	-10°C to + 50°C
Minimum bending radius	Static: 10 x outer diameter

FIRE PERFORMANCE

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22 Cat. A
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

(*) for Cross-linked LSZH MUD

TK-FIRE UTXD ARMoured UNITUBE DOUBLE SHEATH CABLES

MAIN FEATURES LSZH + GSWB + LSZH SHEATH

No. of Fiber	Nominal diameter loose (mm)	Nominal diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling Force (N)	Max Crush (N/dm)	Impact (J)
2 to 12	2.8	8.6	100	1500	2500	10
13 to 24	3.5	10	130	1500	2500	10

MAIN FEATURES LSZH + CST + LSZH SHEATH

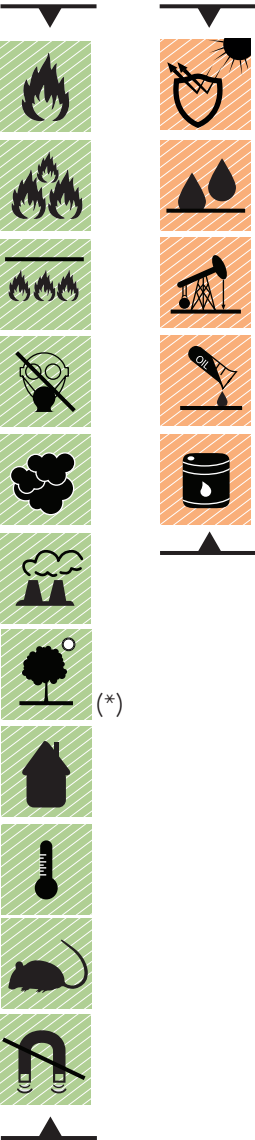
No. of Fiber	Nominal diameter loose (mm)	Nominal diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling Force (N)	Max Crush (N/dm)	Impact (J)
2 to 12	2.8	10	125	2000	3000	15
13 to 24	3.5	10.5	145	2000	3000	15

Types mentioned here are standard. Different mechanical performance is available upon request.



TK-FIRE MTX MULTITUBE DIELECTRIC CABLES

ON REQUEST



OPTICAL CORE

Fiber Structure	Jelly filled loose tube
Fiber Colour Code	See table A
Loose tube Colour	See table B
Flame barrier	Mica tape
Assembling	6 to 24 loose tubes/fillers 12 to 288 fibers
Central element	fiber reinforced polymer
Protection	Aramid/Glass yarns
Outer Sheath	Flame retardant, low smoke and halogen-free or Cross-linked LSZH

All cables are available with all type of fibers.

TECHNICAL DATA

Temperature range	-40°C to + 80°C
Installation temperature	-10°C to + 50°C
Minimum bending radius	Static: 10 x outer diameter

FIRE PERFORMANCE

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 Cat. C
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

(*) for Cross-linked LSZH MUD

TK-FIRE MTX MULTITUBE DIELECTRIC CABLES

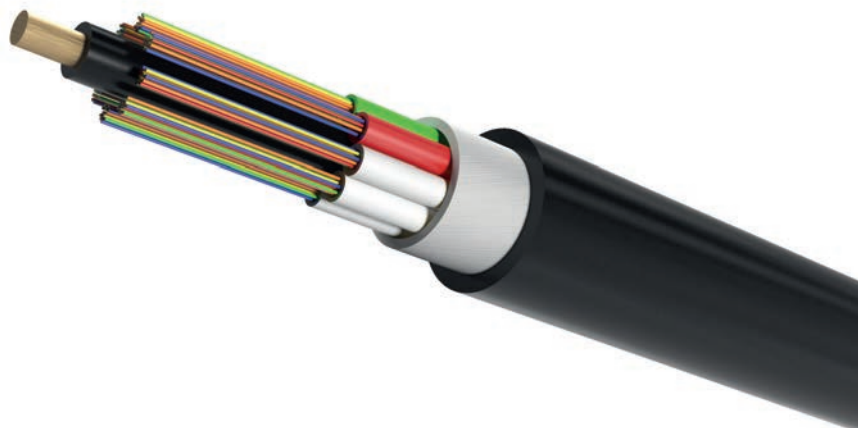
MAIN FEATURES ARAMID YARNS + LSZH SHEATH

No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	9	80	1500	1500	15
24	1.9	2	4	9	80	1500	1500	15
36	1.9	3	3	9	80	1500	1500	15
48	1.9	4	2	9	80	1500	1500	15
60	1.9	5	1	9	80	1500	1500	15
72	1.9	6	/	9	80	1500	1500	15
96	1.9	8	/	10	95	2000	2000	20
144	1.9	12	/	13	150	2500	2000	20
192	1.9	16	/	13	150	2500	2000	20
216	1.9	18	/	13.5	160	2500	2000	20
288	1.9	24	/	15	180	3000	3000	25

MAIN FEATURES GLASS YARNS + LSZH SHEATH

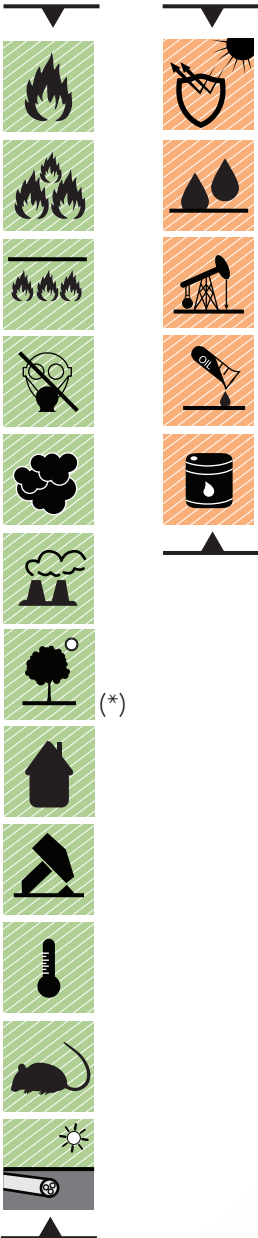
No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	9.5	90	2500	2000	15
24	1.9	2	4	9.5	90	2500	2000	15
36	1.9	3	3	9.5	90	2500	2000	15
48	1.9	4	2	9.5	90	2500	2000	15
60	1.9	5	1	9.5	90	2500	2000	15
72	1.9	6	/	9.5	90	2500	2000	15
96	1.9	8	/	10.5	105	3000	3000	20
144	1.9	12	/	13.5	160	3500	3000	20
192	1.9	16	/	13.5	160	3500	3000	20
216	1.9	18	/	14	170	3500	3000	20
288	1.9	24	/	15.5	190	4000	4000	25

Types mentioned here are standard. Different mechanical performance is available upon request.



TK-MT9X ARMoured MULTITUBE CABLES

ON REQUEST



OPTICAL CORE

Fiber Structure	Jelly filled loose tube
Fiber Colour Code	See table A
Loose tube Colour	See table B
Flame barrier	Mica tape
Assembling	6 to 24 loose tubes/filler 12 to 288 fibers
Central element	fiber reinforced polymer
Protection	With or without Aramid/Glass yarns
Armouring	Corrugated and thermowelded steel tape (CST)
Outer Sheath	Flame retardant, low smoke and halogen-free or Cross-linked LSZH

All cables are available with all type of fibers.

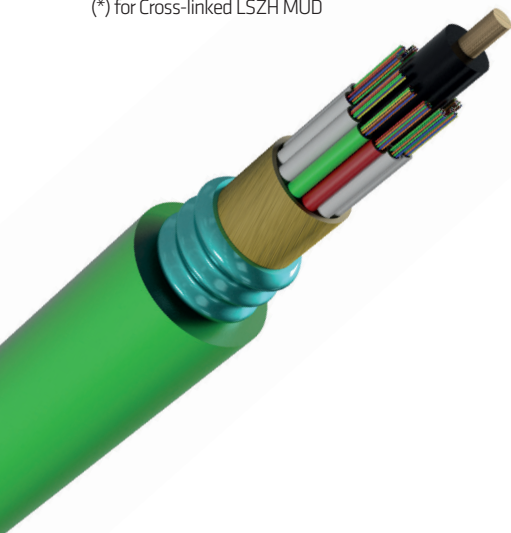
TECHNICAL DATA

Temperature range	-40°C to + 80°C
Installation temperature	-10°C to + 50°C
Minimum bending radius	Static: 10 x outer diameter

FIRE PERFORMANCE

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 Cat. C
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

(*) for Cross-linked LSZH MUD



TK-MT9X ARMOURED MULTITUBE CABLES

MAIN FEATURES CST+LSZH SHEATH

No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	11	150	1500	2000	15
24	1.9	2	4	11	150	1500	2000	15
36	1.9	3	3	11	150	1500	2000	15
48	1.9	4	2	11	150	1500	2000	15
60	1.9	5	1	11	150	1500	2000	15
72	1.9	6	/	11	150	1500	2000	15
96	1.9	8	/	12	170	2000	2500	20
144	1.9	12	/	14.5	230	2000	2500	20
192	1.9	16	/	14.5	230	2000	2000	20
216	1.9	18	/	15.5	260	2000	2000	25
288	1.9	24	/	17.5	350	2500	3000	25

MAIN FEATURES ARAMID+CST +LSZH SHEATH

No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	12	160	2000	2000	15
24	1.9	2	4	12	160	2000	2000	15
36	1.9	3	3	12	160	2000	2000	15
48	1.9	4	2	12	160	2000	2000	15
60	1.9	5	1	12	160	2000	2000	15
72	1.9	6	/	12	160	2000	2000	15
96	1.9	8	/	13	180	2500	2500	20
144	1.9	12	/	15.5	250	2500	2500	20
192	1.9	16	/	15.5	250	3000	3000	25
216	1.9	18	/	16.5	280	3000	3000	25
288	1.9	24	/	18.5	360	3500	3000	25

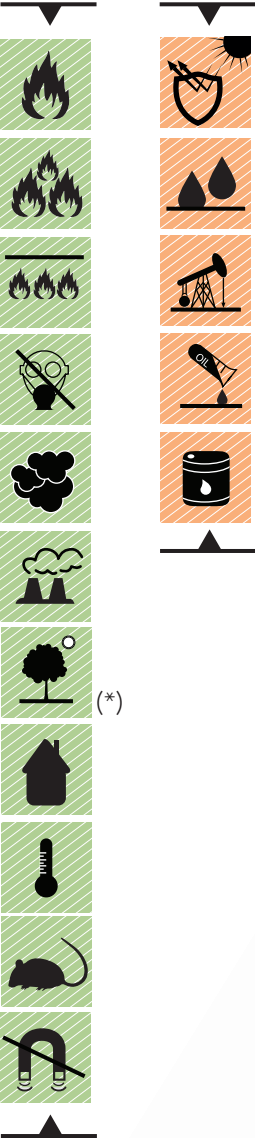
MAIN FEATURES GLASS YARNS +CST +LSZH SHEATH

No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	12	170	2500	2000	15
24	1.9	2	4	12	170	2500	2000	15
36	1.9	3	3	12	170	2500	2000	15
48	1.9	4	2	12	170	2500	2000	15
60	1.9	5	1	12	170	2500	2000	15
72	1.9	6	/	12	170	2500	2000	15
96	1.9	8	/	13	190	3000	2500	20
144	1.9	12	/	15.5	270	2500	2500	20
192	1.9	16	/	15.5	270	3000	3000	25
216	1.9	18	/	15.5	300	3000	3000	25
288	1.9	24	/	17.5	380	3500	3000	25

Types mentioned here are standard. Different mechanical performance is available upon request.

TK-FIRE MTXD DIELECTRIC MULTITUBE DOUBLE SHEATH CABLES

ON REQUEST



OPTICAL CORE

Fiber Structure	Jelly filled loose tube
Fiber Colour Code	See table A
Loose tube Colour	See table B
Flame barrier	Mica tape
Assembling	6 to 24 loose tubes/fillers 12 to 288 fibers
Central element	Fiber reinforced polymer
Inner Sheath	Flame retardant, low smoke and halogen-free
Protection	Aramid/Glass yarns
Outer Sheath	Flame retardant, low smoke and halogen-free or Cross-linked LSZH

All cables are available with all type of fibers.

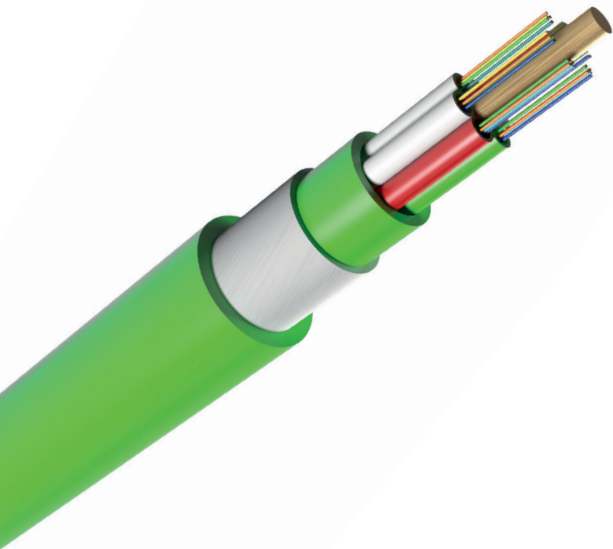
TECHNICAL DATA

Temperature range	-40°C to + 80°C
Installation temperature	-10°C to + 50°C
Minimum bending radius	Static: 10 x outer diameter

FIRE PERFORMANCE

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 Cat. C
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

(*) for Cross-linked LSZH MUD



TK-FIRE MTXD DIELECTRIC MULTITUBE DOUBLE SHEATH CABLES

MAIN FEATURES LSZH+ARAMID YARNS +LSZH SHEATH

No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	11.5	130	1500	2500	15
24	1.9	2	4	11.5	130	1500	2500	15
36	1.9	3	3	11.5	130	1500	2500	15
48	1.9	4	2	11.5	130	1500	2500	15
60	1.9	5	1	11.5	130	1500	2500	15
72	1.9	6	0	11.5	130	1500	2500	15
96	1.9	8	0	12.5	170	2000	3000	20
144	1.9	12	0	15	210	2500	3000	25
192	1.9	16	0	15	210	2500	3000	25
216	1.9	18	0	15.5	240	2500	3000	25
288	1.9	24	0	17.5	320	3000	3500	30

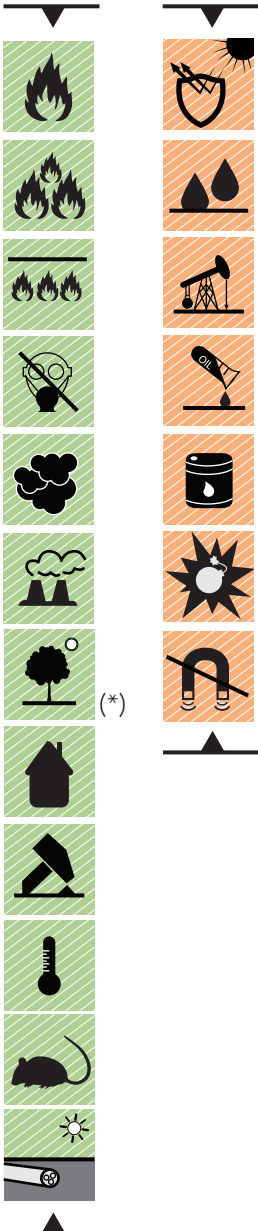
MAIN FEATURES LSZH+GLASS YARNS +LSZH SHEATH

No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	12	150	2500	3000	20
24	1.9	2	4	12	150	2500	3000	20
36	1.9	3	3	12	150	2500	3000	20
48	1.9	4	2	12	150	2500	3000	20
60	1.9	5	1	12	150	2500	3000	20
72	1.9	6	0	12	150	2500	3000	20
96	1.9	8	0	13.5	190	3000	3000	25
144	1.9	12	0	16	250	3500	3000	25
192	1.9	16	0	16	250	3500	3000	25
216	1.9	18	0	16.5	280	3500	3500	30
288	1.9	24	0	18.5	350	4000	4000	30

Types mentioned here are standard. Different mechanical performance is available upon request.

TK-MTAX FIRE ARMoured MULTITUBE DOUBLE SHEATH CABLES

ON REQUEST



(*)

OPTICAL CORE

Fiber Structure	Jelly filled loose tube
Fiber Colour Code	See table A
Loose tube Colour	See table B
Flame barrier	Mica tape
Assembling	6 to 12 loose tubes/fillers 12 to 144 fibers
Central element	Fiber reinforced polymer
Inner Sheath	Flame retardant, low smoke and halogen-free
Armouring	Galvanized steel tapes (GSTA) / Galvanized steel wires braid (GSWB) / Steel wires armoured (SWA) / Corrugated and thermowelded steel tape (CST)
Outer Sheath	Flame retardant, low smoke and halogen-free or Cross-linked LSZH

All cables are available with all type of fibers.

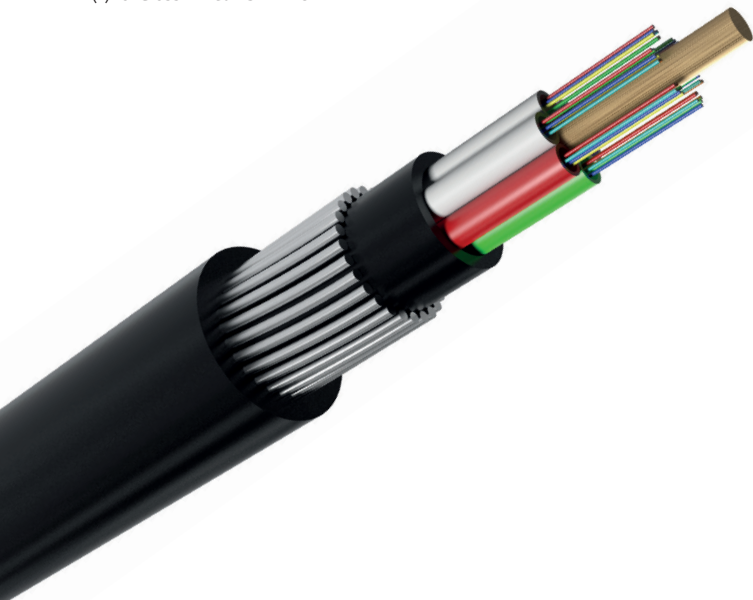
TECHNICAL DATA

Temperature range	-40°C to + 80°C
Installation temperature	-10°C to + 50°C
Minimum bending radius	Static: 10 x outer diameter

FIRE PERFORMANCE

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-22 Cat. A
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

(*) for Cross-linked LSZH MUD



Types mentioned here are standard. Different mechanical performance is available upon request.

TK-MTAX FIRE ARMoured MULTITUBE DOUBLE SHEATH CABLES

MAIN FEATURES LSZH+GSWB+LSZH SHEATH

No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	12	190	2000	2000	10
24	1.9	2	4	12	190	2000	2000	10
36	1.9	3	3	12	190	2000	2000	10
48	1.9	4	2	12	190	2000	2000	10
60	1.9	5	1	12	190	2000	2000	10
72	1.9	6	0	12	190	2000	2000	10
96	1.9	8	0	13	205	2000	2000	10
144	1.9	12	0	15.5	300	2000	2000	10
192	1.9	16	0	15.5	300	2000	2000	10
216	1.9	18	0	16.5	330	2500	2500	15
288	1.9	24	0	18.0	390	2500	2500	15

MAIN FEATURES LSZH+SWA+LSZH SHEATH

No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	13.5	350	3000	3000	20
24	1.9	2	4	13.5	350	3000	3000	20
36	1.9	3	3	13.5	350	3000	3000	20
48	1.9	4	2	13.5	350	3000	3000	20
60	1.9	5	1	13.5	350	3000	3000	20
72	1.9	6	0	13.5	350	3000	3000	20
96	1.9	8	0	15	400	4000	3000	25
144	1.9	12	0	17	460	5000	3000	25
192	1.9	16	0	17	460	5000	3000	25
216	1.9	18	0	18	500	5000	3000	25
288	1.9	24	0	19.5	580	5000	3000	25

MAIN FEATURES LSZH+GSTA+LSZH SHEATH

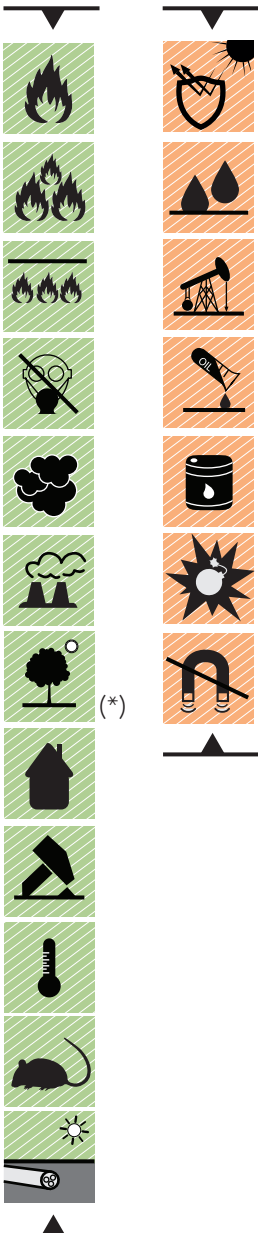
No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	12	200	2000	2500	10
24	1.9	2	4	12	200	2000	2500	10
36	1.9	3	3	12	200	2000	2500	10
48	1.9	4	2	12	200	2000	2500	10
60	1.9	5	1	12	200	2000	2500	10
72	1.9	6	0	12	200	2000	2500	10
96	1.9	8	0	13	225	2000	2500	10
144	1.9	12	0	15.5	320	2000	2500	10
192	1.9	16	0	15.5	320	2000	2500	10
216	1.9	18	0	16.5	360	2500	2500	15
288	1.9	24	0	18.0	420	2500	2500	15

MAIN FEATURES LSZH+CST+LSZH SHEATH

No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	13.5	190	2000	3000	15
24	1.9	2	4	13.5	190	2000	3000	15
36	1.9	3	3	13.5	190	2000	3000	15
48	1.9	4	2	13.5	190	2000	3000	15
60	1.9	5	1	13.5	190	2000	3000	15
72	1.9	6	0	13.5	190	2000	3000	15
96	1.9	8	0	15	205	2000	3000	20
144	1.9	12	0	17	300	2000	3000	20
192	1.9	16	0	17	300	2000	3000	20
216	1.9	18	0	18	330	2500	3000	20
288	1.9	24	0	19.5	390	2500	3000	20

TK-FIRE API AIRBAG PROTECTION CABLES

ON REQUEST



(*)

OPTICAL CORE

Fiber Structure	Jelly filled loose tube
Fiber Colour Code	See table A
Loose tube Colour	See table B
Flame barrier	Mica tape
Assembling	8 loose tubes/fillers 16 to 96 fibers
Central element	Fiber reinforced polymer
Inner Sheath	Flame retardant, low smoke and halogen-free
Mechanical protection	Dielectric layer
Armouring	Anti rodent Glass protection
Outer Sheath	Flame retardant, low smoke and halogen-free or Cross-linked LSZH

All cables are available with all type of fibers.

TECHNICAL DATA

Temperature range	-40°C to + 80°C
Installation temperature	-10°C to + 50°C
Minimum bending radius	Static: 15 x outer diameter

FIRE PERFORMANCE

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 Cat. C
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

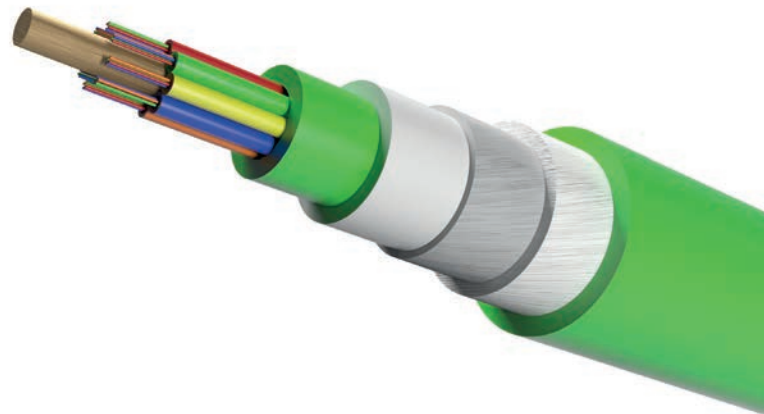
(*) for Cross-linked LSZH MUD

TK-FIRE API AIRBAG PROTECTION CABLES

MAIN FEATURES LSZH+AIRBAG+GLASS TAPE AND YARNS+LSZH SHEATH

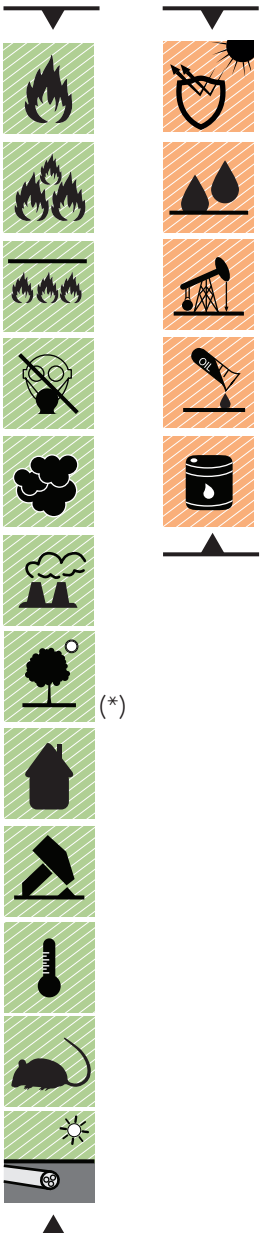
No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
16	1.8	4	4	18	290	3000	10000	30
32	1.8	8	0	18	290	3000	10000	30
48	1.8	6	2	20	345	3000	10000	30
64	1.8	8	0	20	345	3000	10000	30
96	1.8	8	0	20	345	3000	10000	30

Types mentioned here are standard. Different mechanical performance is available upon request.



TK-MT6X FIRE ARMoured MULTITUBE CABLES

ON REQUEST



OPTICAL CORE

Fiber Structure	Jelly filled loose tube
Fiber Colour Code	See table A
Loose tube Colour	See table B
Flame barrier	Mica tape
Assembling	8 loose tubes/fillers 16 to 96 fibers
Central element	Fiber reinforced polymer
Inner Sheath	Flame retardant, low smoke and halogen-free
Strain Relief	Aramid yarns
Armouring	Welded and corrugated steel tape (H6)
Anticorrosion Protection	Bituminous/jelly layer
Outer Sheath	Flame retardant, low smoke and halogen-free or Cross-linked LSZH

All cables are available with all type of fibers.

TECHNICAL DATA

Temperature range	-40°C to + 80°C
Installation temperature	-10°C to + 50°C
Minimum bending radius	Static: 15 x outer diameter

FIRE PERFORMANCE

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 Cat. C
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

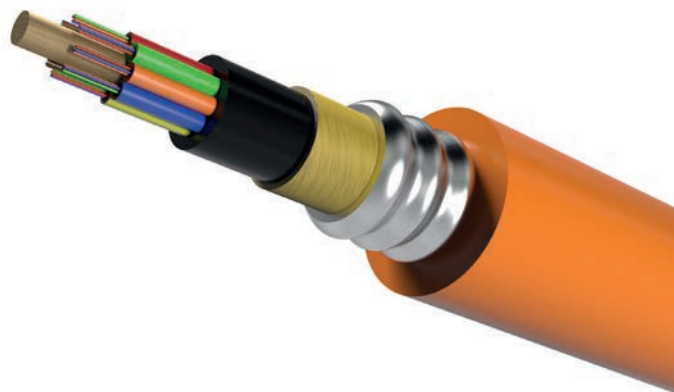
(*) for Cross-linked LSZH MUD

TK-MT6X FIRE ARMOURED MULTITUBE CABLES

MAIN FEATURES LSZH+ARAMID YARNS+H6+LSZH SHEATH

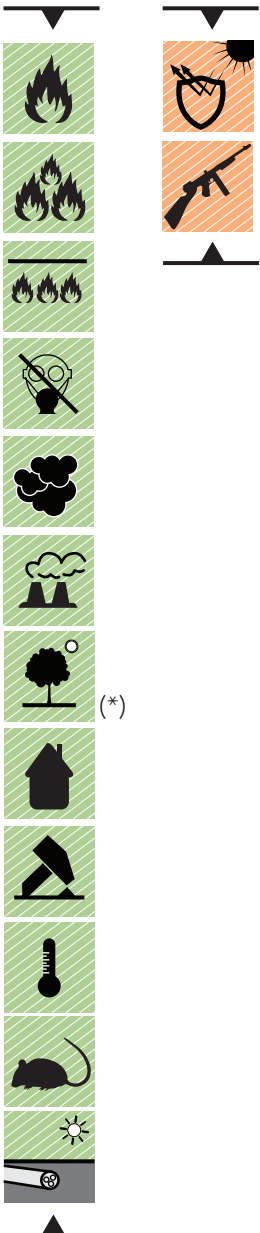
No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
16	1.8	4	4	20	460	3000	10000	30
32	1.8	8	0	20	460	3000	10000	30
48	1.8	6	2	20	460	3000	10000	30
64	1.8	8	0	20	460	3000	10000	30
96	1.8	8	0	20	460	3000	10000	30

Types mentioned here are standard. Different mechanical performance is available upon request.



TK-MTAS FIRE MULTITUBE ADSS CABLES

ON REQUEST



OPTICAL CORE

Fiber Structure	Jelly filled loose tube
Fiber Colour Code	See table A
Loose tube Colour	See table B
Flame barrier	Mica tape
Assembling	6 to 24 loose tubes/fillers 12 to 288 fibers
Central element	Fiber reinforced polymer
Inner Sheath	Flame retardant, low smoke and halogen-free
*Antibalistic protection	Aramid tapes or glass flats
Strain Relief	Aramid yarns
Outer Sheath	Flame retardant, low smoke and halogen-free or Cross-linked LSZH

All cables are available with all type of fibers.

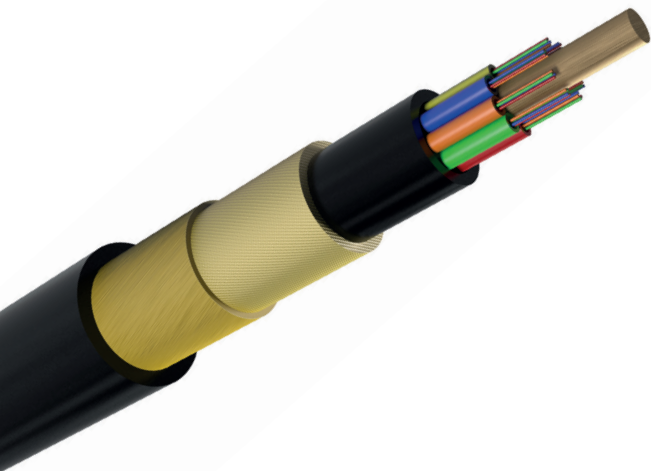
TECHNICAL DATA

Temperature range	-40°C to + 80°C
Installation temperature	-10°C to + 50°C
Minimum bending radius	Static: 10 x outer diameter

FIRE PERFORMANCE

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 Cat. C
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

(*) for Cross-linked LSZH MUD



TK-MTAS FIRE MULTITUBE ADSS CABLES

MAIN FEATURES LSZH+ARAMID YARNS+LSZH SHEATH

No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	13	160	7500	3000	20
24	1.9	2	4	13	160	7500	3000	20
36	1.9	3	3	13	160	7500	3000	20
48	1.9	4	2	13	190	7500	3000	20
60	1.9	5	1	13	160	7500	3000	20
72	1.9	6	0	13	160	7500	3000	20
96	1.9	8	0	14	200	7500	3000	20
144	1.9	12	0	16.5	240	7500	3000	20
192	1.9	16	0	16.5	240	7500	3000	20
216	1.9	18	0	17	280	7500	3000	20
288	1.9	24	0	19	370	7500	3000	20

MAIN FEATURES LSZH+ARAMID YARNS AND TAPES +LSZH SHEATH

No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	15	190	7500	3000	20
24	1.9	2	4	15	190	7500	3000	20
36	1.9	3	3	15	190	7500	3000	20
48	1.9	4	2	15	190	7500	3000	20
60	1.9	5	1	15	190	7500	3000	20
72	1.9	6	0	15	190	7500	3000	20
96	1.9	8	0	16	230	7500	3000	20
144	1.9	12	0	18.5	280	7500	3000	20
192	1.9	16	0	18.5	280	7500	3000	20
216	1.9	18	0	19	320	7500	3000	20
288	1.9	24	0	21	420	7500	3000	20
288	1.9	24	0	21	420	7500	3000	20

MAIN FEATURES LSZH+ARAMID YARNS+GLASS FLAT + LSZH SHEATH

No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	15	210	7500	3000	20
24	1.9	2	4	15	210	7500	3000	20
36	1.9	3	3	15	210	7500	3000	20
48	1.9	4	2	15	210	7500	3000	20
60	1.9	5	1	15	210	7500	3000	20
72	1.9	6	0	15	210	7500	3000	20
96	1.9	8	0	16	260	7500	3000	20
144	1.9	12	0	18.5	320	7500	3000	20
192	1.9	16	0	18.5	320	7500	3000	20
216	1.9	18	0	19	360	7500	3000	20
288	1.9	24	0	21	480	7500	3000	20

Types mentioned here are standard. Different mechanical performance is available upon request.

TK-MTS8 FIRE MULTITUBE SELF SUPPORTING CABLES

ON REQUEST



(*) for Cross-linked LSZH MUD

OPTICAL CORE

Fiber Structure	Jelly filled loose tube
Fiber Colour Code	See table A
Loose tube Colour	See table B
Flame barrier	Mica tape
Assembling	6 to 24 loose tubes/fillers 12 to 288 fibers
Central element	Fiber reinforced polymer or galvanized steel wire
Metallic suspension	Galvanized steel wire 7x1.7 mm
Outer Sheath	Flame retardant, low smoke and halogen-free or Cross-linked LSZH

All cables are available with all type of fibers.

TECHNICAL DATA

Temperature range	-40°C to + 80°C
Installation temperature	-10°C to + 50°C
Minimum bending radius	Static: 10 x outer diameter

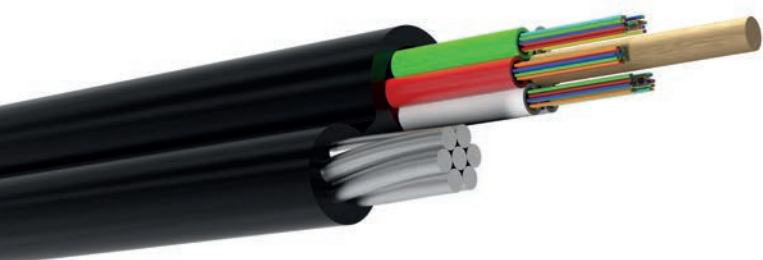
FIRE PERFORMANCE

Fire resistance	IEC 60331-25
Flame retardancy	IEC 60332-1-2 IEC 60332-3-24 Cat. C
Halogen-free	IEC 60754-1/2
Low smoke density	IEC 61034-1/2

MAIN FEATURES S8 LSZH SHEATH

No. of Fiber	Nominal Diameter loose (mm)	No. loose	No. filler	Nominal Diameter cable (mm)	Nominal cable Weight (kg/km)	Max pulling force (N)	Max crush (N/dm)	Impact (J)
12	1.9	1	5	18x9	255	6000	2000	15
24	1.9	2	4	18x9	255	6000	2000	15
36	1.9	3	3	18x9	255	6000	2000	15
48	1.9	4	2	18x9	255	6000	2000	15
60	1.9	5	1	18x9	255	6000	2000	15
72	1.9	6	0	18x9	255	6000	2000	15
96	1.9	8	0	19x10	270	6000	2000	15
144	1.9	12	0	22x13	320	6000	2000	15
192	1.9	16	0	22x13	320	6000	2000	15
216	1.9	18	0	23x14	335	6000	2000	15
288	1.9	24	0	24x15	360	6000	2000	15

Types mentioned here are standard. Different mechanical performance is available upon request.



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