
BUILDING TECHNOLOGY
FIRE RESISTANT
CABLES
tecniKabel
SPECIAL ELECTRICAL AND OPTICAL CABLES
WWW.TECNIKABEL.COM

SPECIAL ELECTRICAL AND OPTICAL CABLES


Tecni Kabel

INTRODUCTION

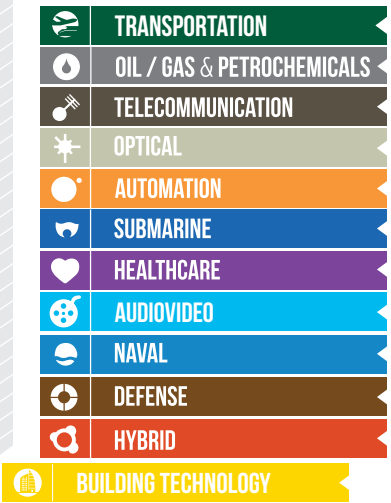
Structured cabling solutions.
Tecnikabel can provide a wide of signal transmission solutions for public and private areas. Whether building entrance or roof, data center, meeting rooms, auditoriums or conference rooms, we can build management and security system control rooms for each individual office or workstation. Fully integrated solutions employing copper cable and fiber to carry voice, video and data.

Security & alarm cables
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 clear: 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 emission and zero halogen emissions ensure there is no irremediable risk to either circuit or personnel.
These cables are ideal for fire detection systems, emergency lighting, video surveillance and public address systems.
The cables must ensure the following main features are complied with:
• high level of alarm circuit efficiency
• continuous operation in the event of fire

Fire-resistant cables for fire detection and alarm systems and emergency lighting.
British standard BS 5839-1: 2002 "Fire detection and fire alarm systems for buildings. Part 1: Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises". We have two levels of cable resistance to fire. Most STANDARD applications employ TK FR 30 Standard cables (30 minutes at 830°C) or TK FR 120 Enhanced cables (120 minutes at 830°C).

TK FR 30 and TK FR 120 are used in most applications:
- Fire-resistant cables in fire detection and alarm systems for the construction industry. Voice alarm systems.
- Emergency voice communication systems.
- Emergency lighting of premises.
- Fire-resistant cable control systems for life safety and fire-fighting applications - Category 1.

PRODUCT LINES



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 every production process each cable is checked in its electrical 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 tests required by current norms, we invest on new special equipment for additional mechanical and electrical testing, heading to a steady increase of standard performance of our cables.

MATERIALS RESEARCH AND DEVELOPMENT

Our thirty year experience took us to carry on research of new materials in order to improve performances, costs and fulfill 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.

ISO 9001:2008 9125 TEKA

USTED

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 TOXIC GASES (IEC 60754-1; EN 50267-2-1)


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


FLEXIBLE INSTALLATION


FULLY DIELECTRIC


DIRECT BURIAL


ANTIBALLISTIC PROTECTION

CHEMICAL PROPERTIES


MUD RESISTANCE


MINERAL OIL RESISTANCE


HYDROCARBONS RESISTANCE

MECHANICAL PROPERTIES


MECHANICAL RESISTANCE


REDUCED BENDING RADIUS


WORK AT LOW TEMPERATURE

FIRE PERFORMANCES

IEC 60332-1 / 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.

Temperature 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 samples 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/FR 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

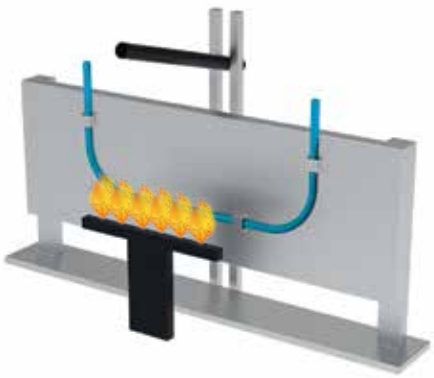
IEC 60331 / EN 50200 : Fire test resistance.

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.

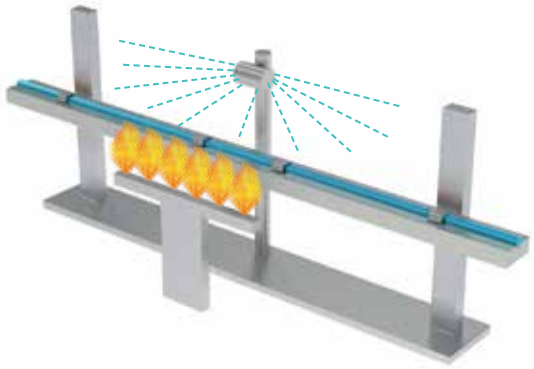
The test and the temperature of burner are described in the reference standards. In U shape test, the fireproof wall is hit every five minutes by a mechanical shock, to simulate a potential collapse during the fire.

The time of fire application, and the temperature of flame are described in the reference standards (typical 750°C or 830°C). During the test a current for continuity checking is passed through all conductors of the cable and the voltage must be maintained during the test duration.



BS 6387 Category C-W-Z.

The test equipment is different from the previous test. In this case, in addition to the mechanical shock , a jet of water to simulate a sprinkler fire extinguishing system is also applied.



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) 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 by the quantity and composition of the liquid fuel. At the end of the test the light transmittance of the smoke must be 60% minimum.

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 50267-2-2 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.

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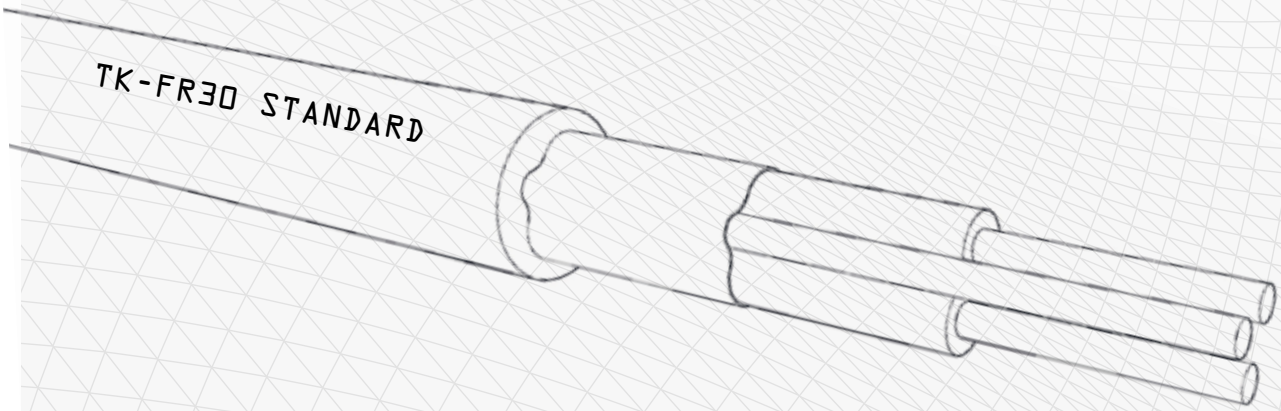

TK-FR30 STANDARD

MULTICORE CABLE TK-FR30 STANDARD

CABLE SPECIFICATIONS

Conductor	Solid Plain annealed copper (0.5 – 0.75 - 1-1.5-2.5 mm^2) Stranded Plain annealed copper (for 4 mm^2)
Insulation	Fire Resistant Silicone
Core identification	Brown-Blue (2 core) Brown-Black-Grey (3 core) Blue-Brown-Black-Grey (4 core)
Drain wire	Solid Tinned copper ø 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 or White

TECHNICAL DATA

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

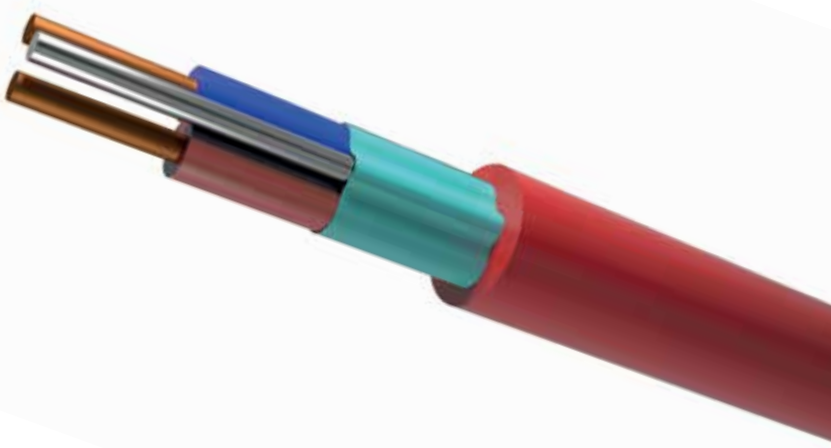
FIRE PERFORMANCE

Resistance to fire	EN 50200:2006 PH30
Resistance to fire required to maintain circuit integrity under fire conditions	BS 6387:2013 Category CWZ
Flame propagation	EN 60332-1-2:2004
Acid gas emission	EN 50267-2-1 (<0.5% HCl)
Low smoke density	EN 61034-2:2005 + A1:2013 (>60%)

MULTICORE CABLE TK-FR30 STANDARD

MAIN FEATURES

Cable Description	Nominal Diameter [mm]	Conductor Resistance (@ 20°C max.)	Cable Weight [Kg/km]	TK code (p/n)
2 x 0.5	6.50	36	68.0	430TKFR3002
2 x 0.75	6.70	24.5	72.0	435TKFR3002
2 x 1.0	7.15	18.1	82.0	440TKFR3002
2 x 1.5	7.50	12.1	86.0	445TKFR3002
2 x 2.5	8.80	7.41	119.0	455TKFR3002
2 x 4.0	10.90	4.61	208.0	465TKFR3002
3 x 0.5	7.30	36	77.5	430TKFR3003
3 x 0.75	7.45	24.5	81.5	435TKFR3003
3 x 1.0	7.65	18.1	91.5	440TKFR3003
3 x 1.5	8.45	12.1	117.5	445TKFR3003
3 x 2.5	9.10	7.41	173.5	455TKFR3003
3 x 4.0	12.40	4.61	248.5	465TKFR3003
4 x 0.5	7.50	36	82.5	430TKFR3004
4 x 0.75	7.70	24.5	87.5	435TKFR3004
4 x 1.0	7.90	18.1	96.0	440TKFR3004
4 x 1.5	9.20	12.1	145.0	445TKFR3004
4 x 2.5	11.00	7.41	200.0	455TKFR3004
4 x 4.0	13.64	4.61	307.0	465TKFR3004



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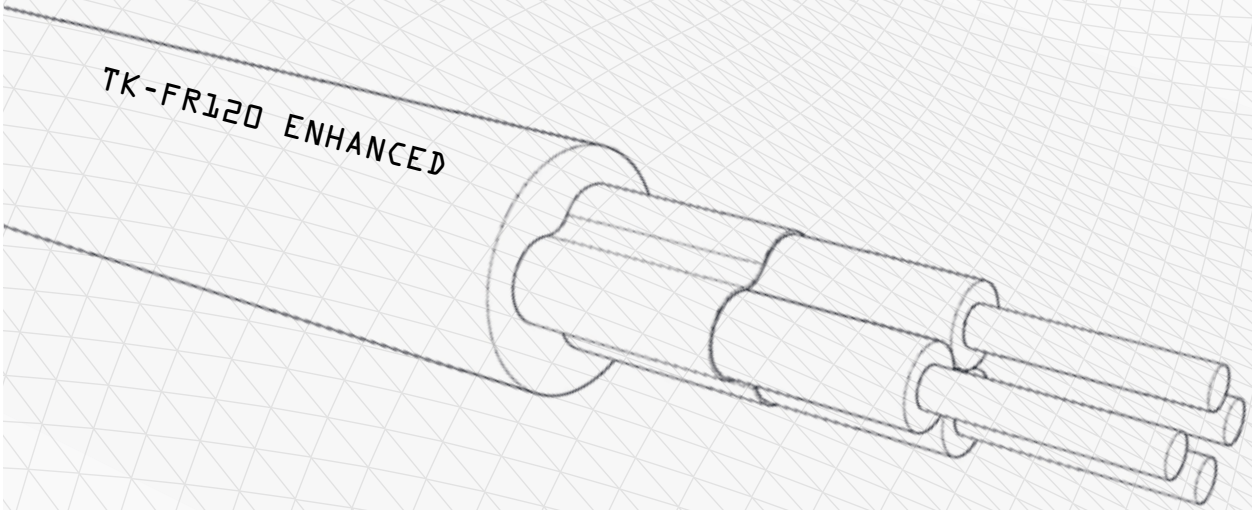

TK-FR120 ENHANCED

MULTICORE CABLE TK-FR120 ENHANCED

CABLE SPECIFICATIONS

Conductor	Solid Plain annealed copper (0.5 - 0.75 - 1.0 -1.5 - 2.5 mm^2) Stranded Plain annealed copper (4.0 mm^2)
Insulation	Fire Resistant Ceramic Silicone
Core identification	Brown-Blue (2 core) Brown-Black-Grey (3 core) Blue-Brown-Black-Grey (4 core)
Drain wire	Solid Tinned copper ø 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 or White

TECHNICAL DATA

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

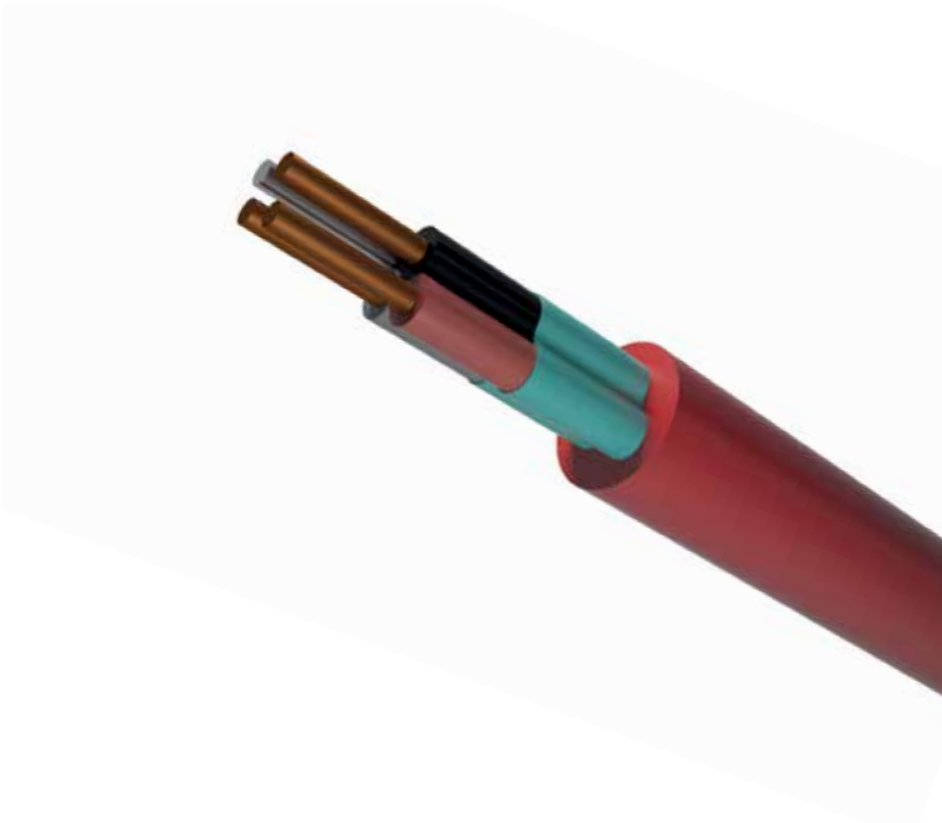
FIRE PERFORMANCE

Resistance to fire	EN 50200:2006 PH120 EN 50200:2006 Annex E 30 min
Resistance to fire required to maintain circuit integrity under fire conditions	BS 6387:2013 Category CWZ
Flame propagation	EN 60332-1-2:2004
Acid gas emission	EN 50267-2-1 (<0.5% HCl)
Low smoke density	EN 61034-2:2005 + A1:2013 (>60%)

MULTICORE CABLE TK-FR120 ENHANCED

MAIN FEATURES

Cable Description	Nominal Diameter [mm]	Conductor Resistance (@ 20°C max.)	Cable Weight [Kg/km]	TK code (p/n)
2 x 0.5	6.70	36	69.0	430TKFR1202
2 x 0.75	6.90	24.5	73.0	435TKFR1202
2 x 1.0	7.25	18.1	83.0	440TKFR1202
2 x 1.5	7.60	12.1	87.0	445TKFR1202
2 x 2.5	8.90	7.41	121.0	455TKFR1202
2 x 4.0	11.00	4.61	209.0	465TKFR1202
3 x 0.5	7.40	36	78.0	430TKFR1203
3 x 0.75	7.55	24.5	82.0	435TKFR1203
3 x 1.0	7.75	18.1	92.0	440TKFR1203
3 x 1.5	8.55	12.1	118.0	445TKFR1203
3 x 2.5	9.20	7.41	174.0	455TKFR1203
3 x 4.0	12.50	4.61	249.0	465TKFR1203
4 x 0.5	7.60	36	83.0	430TKFR1204
4 x 0.75	7.80	24.5	88.0	435TKFR1204
4 x 1.0	8.00	18.1	97.0	440TKFR1204
4 x 1.5	9.40	12.1	147.0	445TKFR1204
4 x 2.5	11.10	7.41	202.0	455TKFR1204
4 x 4.0	13.74	4.61	309.0	465TKFR1204



FIRE AND FLAME BEHAVIOUR TESTS

It is essential to stay within the fire behavior and flame-fire-retardant limits set by the strictest reference standards and our own internal QA. Four tests are carried out to assess specific properties under fire conditions:

Test for vertical flame propagation for a single insulated wire or cable.

- According to UL standards
  (Cable Flame, VW1, Horizontal Flame Test)
- CSA (FT1, FT2)
- CEI EN or IEC 60332-1-2 / 60332-1-3 /60332-2-2

Test for vertical flame spread of vertically -mounted bunched wires or cables

- According to UL standards
  (Vertical Tray Flame Test, UL 1685)
- CEI EN or IEC 60332-3 series

Tests for electric cables under fire conditions - Circuit integrity

- According to CEI EN 50200 and CEI IEC 60331 series
- According to British Standards BS 6387 type CWZ

Measurement of smoke density of cables burning under defined conditions

- According to IEC 61034-1 and IEC 61034-2

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