Cable catalogue for electric power distribution

Top Cable

Top Cable

Driving your energy

INTRODUCTION

PRODUCT RANGE

Top Cable


Top Cable


Top Cable

INTRODUCTION

A TEAM COMMITTED TO MANUFACTURING **CABLES OF THE HIGHEST STANDARD**

Teamwork is at the core of everything we do. Just like our cables, our carefully selected workforce is bound together by strength of purpose. We are committed to investing in the skills and wellbeing of our human capital, which ensures our electric cables are manufactured to the highest standards for our clients worldwide.

All Top Cable products meet the standards set by European certifying bodies. We pride ourselves on high company standards and select the best raw materials, adopt rigorous quality control systems and employ the latest technology for all our products.

Teamwork centred on excellence is why Top Cable is one of Europe's leading cable manufacturers.

VALUE ADDED SERVICE

We value our clients, and prompt service comes as standard. As we continue to improve the customer experience, we have invested in two state-of-the-art logistics centres that boast the latest warehouse management systems. These sophisticated infrastructures enable our clients to make significant reductions to their storage, distribution and administration costs.

Top Cable are a reliable manufacturer and supplier of a comprehensive range of industrial power cables. We also offer expert technical support with design and cable selection, as well as project management and logistics through to after-sales service support.

AN **INTEGRATED** MANUFACTURING PROCESS

Since its founding in 1985, Top Cable has continued to invest in technological advancement through ongoing R&D&I programmes. We develop new cable solutions for new incoming markets, meeting our customers' most pressing needs. As our reputation goes before us, customers worldwide appreciate Top Cable as a leading technical cable manufacturer of outstanding quality.

We established our Top Cable Design & Development Centre with research laboratories to support our constant drive to deliver high-performance cables suitable for multiple applications in various industries.

EUROPEAN **CONSTRUCTION PRODUCTS REGULATION**

The Construction Products Regulation (CPR) was issued 1st July 2016 by the European Union. Its purpose is to ensure that the manufacture and selection of materials used in construction across the European Union meet recognised quality standards. By harmonising EU standards, higher safety levels for fire and dangerous substances are created, as well as greater clarity and traceability of the materials used in construction.

The CPR applies to all products intended for use in construction in public places, housing, civil engineering works, electrical connections for buildings, or external lighting. When you choose Top Cable products, the compliance of your cables with the current CPR requirements is guaranteed, giving you certainty you can rely on.

CPR
COMPLIANT
Construction Products Regulation
EN 50575

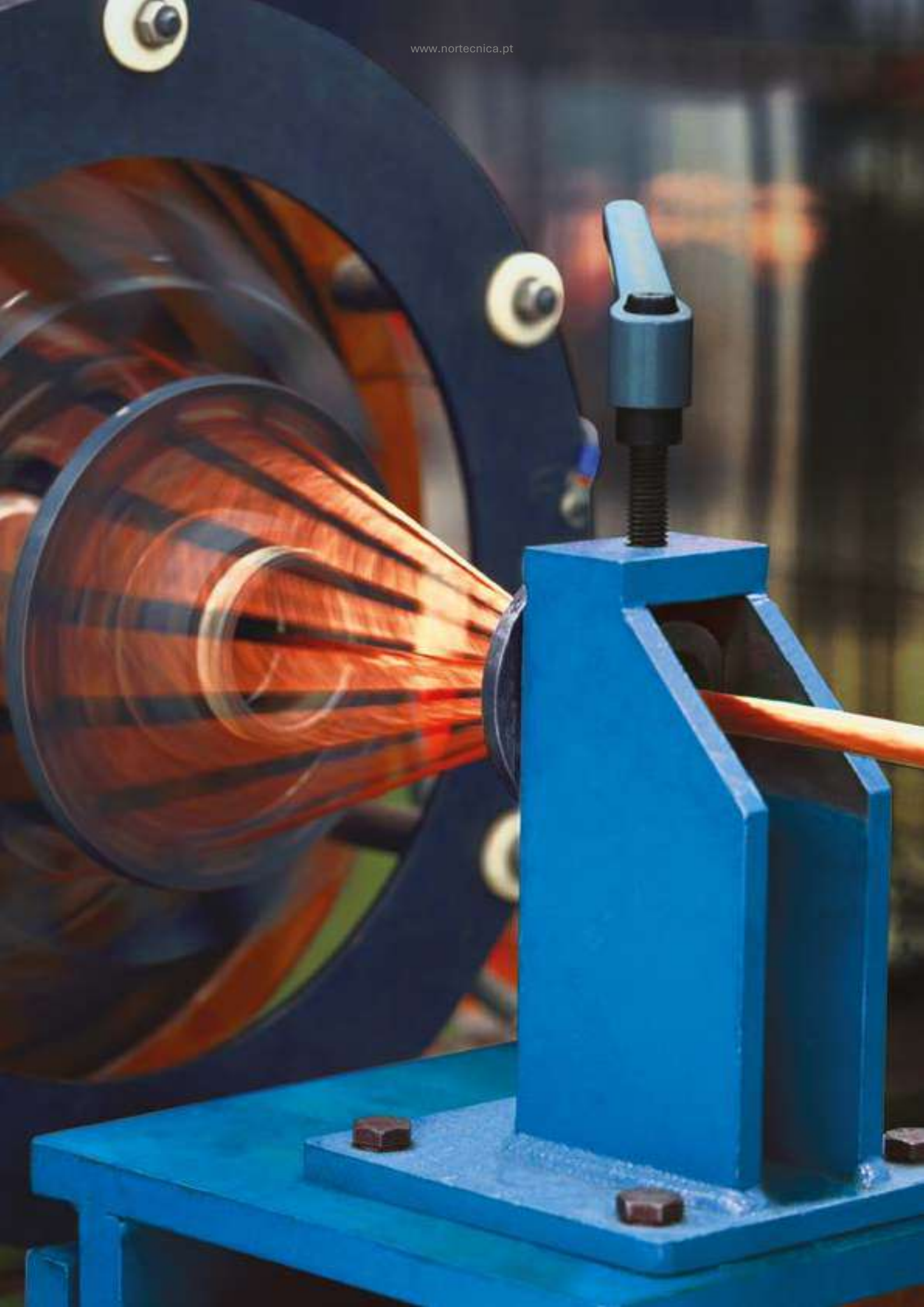
Top Cable


Top Cable

MEDIUM VOLTAGE CABLES MANUFACTURER

Our medium voltage product range is produced at our plant close to the vibrant city of Barcelona, using state of the art technology and the latest generation of machinery.

The factory is equipped with a modern Research, Development and Innovation centre staffed by a team of cable production experts. The Centre designs and produces cables according to most international quality standards, and conducts development testing and certification of medium voltage cables.



A **COMPREHENSIVE CABLE** RANGE

We manufacture a broad selection of cables that range from control cables for specialised applications to larger power cables for medium voltage applications across various industries. We supply cables for construction projects, railway, mining, marine, aeronautical, military, OEMs, and renewable energy plants.

Conductors are available for manufacture in copper and aluminium, with insulating materials varying depending on the application. We select each cable component according to specific requirements, and then the end product is manufactured to the highest specifications, meeting international standards such as ISO 9002, IEC, EN and CE.

OUR CORPORATE **SOCIAL & ENVIRONMENTAL** RESPONSIBILITIES

Any statements we could make about sales growth, benefits or assets would be misplaced if we as a company lacked awareness of our social and environmental responsibilities.

Top Cable is committed to protecting the environment and we express this belief by using processes that are friendly to the environment through all stages of our production. Sustainable Social Development is an essential goal for our company, and we work to educate the general public on the importance of sustaining our green planet for future generations.

PRODUCT RANGE

RUBBER
CABLES

Top Cable

XTREM® H07RN-F

Flexible rubber cable, for industrial use.

ACCORDING TO: EN 50525-2-21 / IEC 60092-353 / IEC 60245-4

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

Xtrem® H07RN-F rubber cables are designed to supply power to low voltage appliances including electric motors and submersible pumps in deep water installations, as well as many other electrical equipment.
Thanks to its extraordinary flexibility and mechanical strength, the Xtrem® H07RN-F cable is ideal for power transmission in both fixed installation or mobile service.
The use nominal voltage up to 1000 V is accepted in fixed protected assemblies.
Top Cable Xtrem® H07RN-F cables are designed to power all types of electrical equipment including motors and submersible pumps in deep water installations (AD8).

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Thermosetting rubber, type EI7 according to EN 50363-1.
The standard identification according to HD 308 and EN 50334 is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
3 x	Brown + Black + Grey
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Blue + Green/Yellow
5 x	Brown + Black + Grey + Black + Blue
6 or more	Black numbered + Green/Yellow

Outer sheath
Thermosetting flexible rubber, type EM2 according to EN 50363-2-1.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 450/750 V.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations) and -25°C (mobile use).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: E_{ca} according to EN 50575.

Mechanical performance
Minimum bending radius:
3x cable diameter < 12 mm.
4x cable diameter ≥ 12 mm.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Excellent.
Grease & mineral oils resistance: Excellent.
UV Resistant according to EN 50618.
Water resistance: AD8 Submersion.
Cable for submersible pumps in drinkable water according to AS/ NZS 4020.
Deep wells. AWQC.

Installation conditions
Open Air.
Submersible pumps cable.

Other
Meter by meter marking.

STANDARDS / COMPLIANCE

According to
EN 50525-2-21 / IEC 60092-353 / IEC 60245-4

Standards and approvals
HAR / AENOR / DNV / RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

XTREM®
DN-F 0,6/1 kV

Flexible rubber cable, for industrial use.

BASED ON: UNE 21150

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

Xtrem® DN-F is a flexible and rubber cable for mobile heavy duty.
Suitable for installations in dry, damp or wet locations, outdoors, for hazardous areas with explosive gas atmospheres, machines in industrial workshops, motors and transportable machines; on construction sites and for agricultural exploitations.
Suitable for submerged installations (AD8).

CONSTRUCTION

Conductor
Electrolytic annealed copper class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Thermosetting rubber type EPR according to IEC 60502-1.
The standard identification according to HD 308 is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
3 x	Brown + Black + Grey
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Blue + Green/Yellow
6 or more	Black numbered + Green/Yellow

Outer sheath
Thermosetting flexible rubber type SE1 according to IEC 60502-1.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 KV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations) and -25°C (mobile use).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: E_{ca} according to EN 50575.

Mechanical performance
Minimum bending radius:
3x cable diameter < 12 mm.
4x cable diameter ≥ 12 mm.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Excellent.
Grease & mineral oils resistance: Excellent.
UV Resistant according to EN 50618.
Water resistance: AD8 Submersion.
Submersible pumps in drinkable water according to AS/NZS 4020.
Deep wells.
Drinkable water. AWQC.

Installation conditions
Open Air.
Submersible pumps cable.

Other
Meter by meter marking.

STANDARDS / COMPLIANCE

Based on
UNE 21150

Standards and approvals
RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

TOXFREE®XTREM ZH H07ZZ-F (AS)

The extra-flexible LSHF rubber cable for mobile service.

ACCORDING TO: EN 50525-3-21

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}/C_{ca}$

APPLICATION

Toxfree® Xtrem ZH H07ZZ-F (AS) is a flexible cable for mobile service, suitable for installations where low smoke and halogen free fumes under fire conditions are required. The use nominal voltage up to 1000 V is accepted in fixed protected assemblies.
Suitable for installations where the cable must withstand medium mechanical stress, for machines in industrial and agricultural workshops, for motors and transportable machines on construction sites, for windmills and for agricultural applications.

- Industrial use.
- Mobile use.
- Windmills.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Halogen free thermosetting rubber, type EI8 according to EN 50363-5.
The standard identification according to HD 308, is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
4 G	Brown + Black + Grey + Green/Yellow
5 G	Brown + Black + Grey + Blue + Green/Yellow
6 or more	Black numbered + Green/Yellow

Outer sheath
Halogen free thermosetting flexible rubber, type EM8 according to EN 50363-6.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 450/750 V.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum temperature in mobile service: -40°C.

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3-24 / IEC 60332-3-24 and EN 50399.
Reaction to fire CPR: $B2_{ca}$-s1b, d1, a1 or Cca-s1b, d2, a1 according to EN 50575 (see cross-section).
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to UNE-EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 60%.

Mechanical performance
Minimum bending radius: 3x cable diameter < 12 mm.
4x cable diameter ≥ 12 mm.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Excellent.
Grease & mineral oils resistance: Excellent.
Water resistance: AD7 immersion.

Installation conditions
Open Air.
In conduit.

Other
Meter by meter marking.

STANDARDS / COMPLIANCE

According to
EN 50525-3-21

Standards and approvals
HAR / AENOR / CE

CPR (Construction Products Regulation)
$B2_{ca}$-s1b, d1, a1. (according to cross-section) or
C_{ca}-s1b, d2, a1. (according to cross-section)

CE AENOR CPR HAR

TOPWELD® H01N2-D

The special cable for welding.

ACCORDING TO: EN 50525-2-81

APPLICATION

Topweld® H01N2-D is a harmonized, flexible, rubber welding cable specially designed for transmitting high currents between the welding generator and the electrode.
Its flexibility makes using the welding tool easier and it also prevents knots from forming in the cable that could cause the internal conductor to break.
It can also be used in automatic welding and machine tools, conveyor systems and production or assembly lines, for example in automobile assembly lines.

- Welding.
- Industrial use.
- Mobile use.
- Robotics.
- Conveyors.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class D (extra-flexible) according to EN 50525-2-81.

Insulation
Flexible rubber, type EM5, according to EN 50363-2-2.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 100/100 V.

Thermal performance
Maximum conductor temperature: 85°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -20°C (mobile use).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Excellent.
Grease & mineral oils resistance: Excellent.

Installation conditions
Open Air.

Other
Meter by meter marking.

STANDARDS / COMPLIANCE

According to
EN 50525-2-81

Standards and approvals
HAR / AENOR / RoHS / CE

PANEL WIRE **CABLES**

TOPFLEX® V-K
H05V-K & H07V-K

Electric cabinet wiring and domestic use.

ACCORDING TO: EN 50525-2-31 / IEC 60227-3

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}$

APPLICATION

Topflex®V-K H05V-K & H07V-K cable has been specially designed for installations that require a flexible cable due to the complex nature of their layout.
This cable is especially suitable for domestic wiring.
It may also be used for equipment wiring, distributors, cabinets and lighting.
It is also recommended for installation under false ceilings. Cables with cross section up to 1 mm² are especially suited for signalling and monitoring installations.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Extra sliding flexible polyvinyl chloride type TI1 according to EN 50363-3.
The standard identification of insulated conductors is the following:

Blue	RAL 5012
Brown	RAL 8003
Black	RAL 9005
Red	RAL 3000
Green/Yellow	RAL 6018/1021
Grey	RAL 7000
Dark Blue	RAL 5010
White	RAL 9010
Orange	RAL 2003
Violet	RAL 4005
Pink	RAL 3015

Other colours available on request.

CHARACTERISTICS

Electrical performance
Low voltage 300/500 V · 450/750 V.
Rated Voltage: H05V-K (up to 1 mm²): 300/500 V.
H07V-K (from 1,5 mm² onwards): 450/750 V.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum installation and handling temperature: 5°C.
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: E_{ca} according to EN 50575.
Reduced halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius: 5x cable diameter.

Environmental performance
Chemical & Oil resistance: Acceptable.

Installation conditions
In conduit.

Other
Meter by meter marking. (from 10 mm² onwards).

STANDARDS / COMPLIANCE

According to
EN 50525-2-31 / IEC 60227-3

Standards and approvals
HAR / AENOR / SEC / RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

TOXFREE® ZH

ES05Z1-K (AS) & H07Z1-K(AS)

Flexible and halogen free power cable for electrical panel wiring.

ACCORDING TO: EN 50525-3-31 / UNE 211002

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}$

APPLICATION

Toxfree® ES05Z1-K (AS)/H05Z1-K & H07Z1-K (AS) Type 2 is a LSHF safety cable. In the event of fire, it does not emit toxic gases, nor does it give off corrosive gases, avoiding any possible damage to people or electronic equipment.
For these reasons it is highly recommended for use in public places such as: hospitals, schools, museums, airports, bus terminals, shopping malls, offices, laboratories, etc.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Polyolefin, halogen free and low smoke under fire conditions, type TIZ1 according to UNE 211002 and type TI7 according to EN 50363-7.
The standard identification of insulated conductors is the following:

Blue	RAL 5015
Brown	RAL 8003
Black	RAL 9005
Red	RAL 3000
Green/Yellow	RAL 6018/1021
Grey	RAL 7000
Dark Blue	RAL 5010
White	RAL 9010

Other colours available on request.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V and 450/750 V.
Rated Voltage: ES05Z1-K/H05Z1-K (up to 1 mm^2): 300/500 V.
H07Z1-K (from 1,5 mm^2 onwards): 450/750 V.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: B2ca-s1a, d1, a1 (cable H07Z1-K from 1,5 mm^2 to 240 mm^2) according to EN 50575.
Low smoke halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 5x cable diameter.

Environmental performance
Chemical & Oil resistance: Acceptable.

STANDARDS / COMPLIANCE

According to
EN 50525-3-31 / UNE 211002

Standards and approvals
HAR / AENOR / BUREAU VERITAS / RoHS / SEC / CE

CPR (Construction Products Regulation)
$B2_{ca}$-s1a, d1, a1 (cable H07Z1-K from 1,5 mm^2 to 240 mm^2)

TOPFLEX® MS TRI-RATED / H07V2-K

Internal wiring of electrical cabinets. (UL, CSA, BS, UNE)

ACCORDING TO: EN 50525-2-31 / BS 6231 / UL 758 / CSA C22.2

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

Topflex® MS Tri-rated H07V2-K cable has been designed for the internal wiring of electrical cabinets, switch boards and small electrical devices.
Due to its manufacturing characteristics, it can be used in conduit or in flexible motor ducts, transformers and other machinery in general.
•. Industrial use.
• Electrical panel wiring.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible), according to EN 60228, IEC 60228 and BS 6360.

Insulation
Flexible PVC, extra sliding, high service temperature type TI3 according to EN 50363-3 and Class 43 UL 1581.
The special characteristics of the material ensure good easy-slide properties to the cable.
The standard identification of insulated conductors is the following:

Blue	RAL 5012
Brown	RAL 8003
Black	RAL 9005
Red	RAL 3000
Green/Yellow	RAL 6018/1021
Grey	RAL 7000
Dark Blue	RAL 5010
White	RAL 9010
Orange	RAL 2003
Violet	RAL 4005
Pink	RAL 3015

CHARACTERISTICS

Electrical performance
Low voltage: According to EN (H05V2-K) 300/500 V
According to EN (H07V2-K) 450/750 V
According to BS (CK) 600/1000 V
According to UL (AWM) 600 V
According to CSA (TEW) 600 V

Thermal performance
Maximum conductor temperature: 90°C according to EN and BS, 105°C according to UL and CSA.
Maximum short-circuit temperature: 160°C (max 5 s).
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1 and VW-1, FT1 and FT2 according to UL 2556.
Reaction to fire CPR: Eca according to EN 50575.

Mechanical performance
Minimum bending radius: 5x cable diameter.

Environmental performance
Chemical & Oil resistance: Acceptable.
Water resistance: AD3 Sprays.

Installation conditions
In conduit.

Other
Meter by meter marking (from 10 mm^2 onwards).

Packaging
These cables are supplied in reels, barrels or bulk drums.

CROSS SECTION	PACKAGING
0,50-6 mm^2	100 m reels (or barrels upon request)
10-16 mm^2	100 m reels or bulk drums
25 mm^2 onwards	bulk drums

STANDARDS / COMPLIANCE

According to
EN 50525-2-31 / UL 758 / CSA C22.2 / BS 6231

Standards and approvals
HAR / AENOR / UL LISTED / RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

TOXFREE® ZH H05Z-K & H07Z-K

Flexible and halogen free 90°C cable for electrical panel wiring.

ACCORDING TO: EN 50525-3-41

CPR COMPLIANT
Construction Products Regulation
EN 50575

D_{ca}

APPLICATION

Toxfree® ZH H05Z-K & H07Z-K is a flexible cable for fixed and protected installations.
It is highly recommended for use in public places such as: hospitals, schools, museums, airports, bus terminals, shopping malls, offices, laboratories, etc.
Not suitable for wet places or immersed.

- Domestic use.
- Public places.
- Electrical panel wiring.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Halogen free thermosetting flexible rubber, type EI5 according to EN 50363-5.
The standard identification of insulated conductors is the following:

Blue	RAL 5015
Brown	RAL 8003
Black	RAL 9005
Red	RAL 3000
Green/Yellow	RAL 6018/1021
Grey	RAL 7000
White	RAL 9010

Other colours available on request.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V.
450/750 V.
Rated Voltage:
H05Z-K (up to 1 mm^2): 300/500 V.
H07Z-K (from 1,5 mm^2 onwards): 450/750 V.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: D_{ca}-s1b, d1, a1 according to EN 50575 (see cross-section).
Low Smoke Zero Halogen according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 60%.

Mechanical performance
Minimum bending radius: 5x cable diameter.

Environmental performance
Chemical & Oil resistance: Acceptable.

Installation conditions
In conduit.

STANDARDS / COMPLIANCE

According to
EN 50525-3-41

Standards and approvals
HAR / AENOR / RoHS / CE

CPR (Construction Products Regulation)
D_{ca}-s1b, d1, a1 (according to cross-section)

TOXFREE® ZH H07Z1-U/R (AS)

Halogen free power cable for electrical panel wiring.

ACCORDING TO: EN 50525-3-31 / UNE 211002

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}$

APPLICATION

Toxfree® ZH H07Z1-U/R Type 2 is a LSHF safety cable. In the event of fire, it does not emit toxic gases, nor does it give off corrosive gases, avoiding any possible damage to people or electronic equipment. For these reasons it is highly recommended for use in public places such as: hospitals, schools, museums, airports, bus terminals, shopping malls, offices, laboratories, etc.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 1 (H07Z1-U) or class 2 (H07Z1-R) according to EN 60228 and IEC 60228.

Insulation
Polyolefin, halogen free and low smoke under fire conditions, type TIZ1 according to UNE 211002 and type TI7 according to EN 50363-7.
The standard identification of insulated conductors is the following:

Blue	RAL 5015
Brown	RAL 8003
Black	RAL 9005
Red	RAL 3000
Green/Yellow	RAL 6018/1021
Grey	RAL 7000
Dark Blue	RAL 5010
White	RAL 9010

Other colours available on request.

CHARACTERISTICS

Electrical performance
Low voltage: 450/750 V.

Thermal performance
Maximum conductor temperature: 70˚C.
Maximum short-circuit temperature: 160˚C (max. 5 s).
Minimum service temperature: -40˚C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: B2ca-s1a, d1, a1, according to EN 50575.
Low Smoke Halogen Free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 5x cable diameter.

Environmental performance
Chemical & Oil resistance: Acceptable.

STANDARDS / COMPLIANCE

According to
EN 50525-3-31 / UNE 211002

Standards and approvals
HAR / AENOR / RoHS / CE

CPR (Construction Products Regulation)
$B2_{ca}$-s1a, d1, a1

XLPE / PVC POWER **CABLES**

POWERFLEX® RV-K

Industrial flexible cable for power transmission.

ACCORDING TO: IEC 60502-1 / UNE 21123-2

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

Powerflex® RV-K cable is suitable for all types of low voltage industrial-type connections, in urban grids, building installations, etc.
Its high flexibility makes the installation process substantially easier and, as a result, is particularly suitable for use in difficult layouts. It can be buried or installed in a tube as well as outdoors without requiring additional protection.
This cable can withstand damp conditions including total submersion in water (AD8).

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene type DIX-3 according to HD 603-1 and type XLPE according to IEC 60502-1.
The standard identification of insulated conductors according to HD 308 is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
3 x	Brown + Black + Grey
3 x + 1 x	Brown + Black + Grey + Blue (reduced cross-section)
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Blue + Green/Yellow
6 or more	Black numbered + Green/Yellow

Outer sheath
Flexible PVC type DMV-18 according to HD 603-1 and type ST2 according to IEC 60502-1.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).
Minimum installation and handling temperature: 0°C (on cable surface).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: E_{ca} according to EN 50575.
Reduced halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Good.
UV Resistant according to UNE 211605.
Water resistance: AD8 Submersion.

Installation conditions
Open Air.
Buried.
In conduit.
In tray.

STANDARDS / COMPLIANCE

According to
IEC 60502-1 / UNE 21123-2

Standards and approvals
AENOR / BUREAU VERITAS / KEMA-KEUR /RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

POWERFLEX® PLUS
YMvKf 0,6/1 kV

The universal cable for power transmission with improved fire proof properties.

ACCORDING TO: IEC 60502-1

CPR COMPLIANT
Construction Products Regulation
EN 50575

C_{ca}

APPLICATION

Powerflex® Plus YMvKf cable is suitable for all types of industrial low voltage connections, urban grids, building installations, etc. This cable is fire retardant and is recommended for use in public places and hazardous industries. Its flexibility makes installation substantially easier, making it highly suitable for difficult layouts. This cable can also be used in buried installations or in tubes or outdoors without requiring additional protection.
This cable withstands damp conditions and even total submersion in water (AD7).

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-1.
The standard identification of insulated conductors, according to HD 308 is the following:

1 x	Black
2 x	Blue + Brown
3 x	Blue + Brown + Grey
4 G	Brown + Black + Grey + Green/Yellow
5 G	Brown + Black + Grey + Blue + Green/Yellow

Outer sheath
Flexible PVC type ST2 according to IEC 60502-1.
Grey colour.

CHARACTERISTICS

Electrical performance
Low voltage 0,6/1kV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3-24 / IEC 60332-3-24 and EN 50399.
Reaction to fire CPR: C_{ca}-s2,d2,a3 according to EN 50575.
Reduced halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius during installation: 5x cable diameter.
Minimum bending radius, fixed: 3x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to UNE 211605.
Water resistance AD7 immersion.

STANDARDS / COMPLIANCE

According to
IEC 60502-1

Standards and approvals
AENOR / BUREAU VERITAS / KEMA-KEUR /RoHS / CE

CPR (Construction Products Regulation)
C_{ca}-s2,d2,a3

POWERHARD® F RVFV-K

Armoured cable with double steel or aluminium tape armour.

ACCORDING TO: IEC 60502-1 / UNE 21123-2

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

Powerhard® F RVFV-K cable is especially suitable for fixed installations that may be subject to mechanical aggression. It is highly recommended for use in installations where the presence of rodents could imply a threat to the cable (such as warehouses, production plants and agricultural facilities). At the same time, its use is recommended for street lighting installations.

CONSTRUCTION

Conductor
Electrolytic copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene type DIX-3 according to UNE-HD 603 and type XLPE according to IEC 60502-1.
The standard identification according to HD 308 is:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
3 x	Brown + Black + Grey
3 x + 1 x	Brown + Black + Grey + Blue (reduced cross-section)
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Blue + Green/Yellow
6 or more	Black numbered + Green/Yellow

Separation sheath
PVC type DMV-18 according to UNE-HD 603 and type ST2 according to IEC 60502-1.

Armour
Double steel or aluminium tape armour.
Aluminium armour is used in single-core cables to avoid parasite currents that may overheat the cable.
Steel tape armour is used in multicore cables.

Outer sheath
Flexible PVC typeDMV-18 according to UNE-HD 603 and type ST2 according to IEC 60502-1.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).
Minimum installation and handling temperature: 0°C.

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: Eca, according to EN 50575.
Reduced halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius: 10x cable diameter.
Impact resistance: AG4 High severity.
Rodent proof.

Environmental performance
Chemical & Oil resistance: Good.
UV Resistant according to UNE 211605.
Water resistance: AD7 immersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-1 / UNE 21123-2

Standards and approvals
BUREAU VERITAS / RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

POWERHARD® M RVhMVh-K

Galvanized steel wire armour cable.

ACCORDING TO: IEC 60502-1

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

POWERHAR® M RVhMVh-K cable is highly recommended for petrol stations, petrochemical plants, etc. It can also be used in production plants, agricultural facilities, street lighting and installations where the cable is subject to high mechanical aggression.
This cable is also available in hydrocarbon resistant version.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene, type DIX-3 according to HD 603 and type XLPE according to IEC 60502-1.
The standard identification of insulated conductors according to HD 308, is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
3 x	Brown + Black + Grey
3 x + 1 x	Brown + Black + Grey + Blue (reduced cross-section)
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Blue + Green/Yellow
6 or more	Black numbered + Green/Yellow

Inner covering
PVC.

Armour
Galvanized steel wire armour.
Aluminium armour is used in single-core cables to avoid parasite currents that may overheat the cable.

Outer sheath
PVC type ST2 according to IEC 60502-1.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage 0,6/1 kV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).
Minimum installation and handling temperature: 0°C (on cable surface).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: Eca according to EN 50575.
Reduced halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius: 10x cable diameter.
Impact resistance: AG4 High severity.
Rodent proof.

Environmental performance
Chemical & Oil resistance: Good.
UV Resistant according to UNE 211605.
Water resistance: AD7 immersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-1

Standards and approvals
BUREAU VERITAS / RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

POWERHARD® AL RV Al / U-1000 AR2V

Aluminium cable for power transmission.

ACCORDING TO: UNE-HD 603-5N / NF C 32-321 / IEC 60502-1

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

Powerhard® RV Al/ U-1000 AR2V cable is suitable for all types of underground networks for public power distribution, as well as low voltage connexions in industrial plants, urban networks, buildings, etc.
Due to its rigidity, its use is recommended in installations with a simple configuration where a flexible cable is not needed.

- Industrial use.
- Distribution network.

CONSTRUCTION

Conductor
Aluminium class 2 according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene type DIX-3 according to HD 603, type XLPE according to IEC 60502-1 and compound insulation according to NF C 32-321.
The standard identification of insulated conductors according to HD 308, is the following:

1 x	Natural
2 x	Blue + Brown
3 x	Brown + Black + Grey
3 x + 1 x	Brown + Black + Grey + Blue (reduced cross-section)
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue

Outer sheath
Flexible PVC type DMV-18 according to HD 603, type ST2 according to IEC 60502-1 and compound outer sheath according to NF C 32-321.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Category C2 according to NF C 32-070.
Reaction to fire CPR: E_{ca} according to EN 50575.
Reduced halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG3 High severity (<= 5J).

Environmental performance
Chemical & Oil resistance: Good.
UV Resistant according to UNE 211605 and NF C 32-321.
Water resistance: AD8 Submersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
UNE-HD 603-5N / NF C 32-321 / IEC 60502-1

Standards and approvals
AENOR / NF-USE / RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

XLPE LSHF SAFETY **CABLES**

TOXFREE® ZH N2XH Flex

Halogen free (LSHF) power cable for public places.

ACCORDING TO: IEC 60502-1

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}/C_{ca}$

APPLICATION

Toxfree® ZH N2XH Flex is a LSHF safety cable for fixed installations. In the event of fire, it does not emit toxic or corrosives gases, preventing any possible harm to people or electronic equipment. For these reasons this cable is highly recommended for use in public places such as hospitals, schools, museums, airports, bus terminals, shopping centers, offices, laboratories, etc.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene, type XLPE according to IEC 60502-1.
The standard identification of insulated conductors according to HD 308 is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
3 x	Brown + Black + Grey
3 x+1 x	Brown + Black + Grey + Blue (reduced cross-section)
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Blue + Green/Yellow

Outer sheath
Low smoke halogen free polyolefin. Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).
Minimum installation and handling temperature: 0°C (on cable surface).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: $B2_{ca}$-s1a, d1, a1 or C_{ca}-s1a, d1, a1, according to EN 50575 (see cross-section).
Low Smoke Halogen Free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: acceptable.
UV Resistant according to EN 50618.
Water resistance: AD8 Submersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-1

Standards and approvals
KEMA-KEUR / / RoHS / CE

CPR (Construction Products Regulation)
$B2_{ca}$-s1a, d1, a1 (according to cross-section) or
C_{ca}-s1a,d1,a1 (according to cross-section)

TOXFREE® ZH
RZ1-K (AS) / YMz1Kf

Flexible LSHF power cable, for public places.

ACCORDING TO: IEC 60502-1 / UNE 21123-4

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}/C_{ca}$

APPLICATION

Toxfree® ZH RZ1-K (AS) / YMz1Kf is a LSHF safety cable. In the event of fire, it does not emit toxic gases, nor does it give off corrosive gases, avoiding any possible damage to people or electronic equipment. For these reasons it is highly recommended for use in public places such as: hospitals, schools, museums, airports, bus terminals, shopping centers, offices, laboratories, etc.

- Industrial use.
- Public places.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-1 and type DIX-3 according to HD 603.
The standard identification of insulated conductors according to HD 308 is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
3 x	Brown + Black + Grey
3 x + 1 x	Brown + Black + Grey + Blue (reduced cross-section)
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Blue + Green/Yellow
6 or more	Black numbered + Green/Yellow

Outer sheath
Low smoke halogen free polyolefin, type ST8 according to IEC 60502-1 and type DMZ-E according to UNE 21123-4.
Green colour.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations)
Minimum installation and handling temperature: 0°C.

Fire performance
Flame non-propagation according to IEC 60332-1 / EN 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: $B2_{ca}$-s1a,d1, a1 or C_{ca}-s1a,d1,a1 according to EN 50575 (see cross-section).
Low Smoke Halogen Free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to EN 50618.
Water resistance: AD8 Submersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-1 / UNE 21123-4

Standards and approvals
AENOR / SEC / KEMA-KEUR / RoHS / CE

CPR (Construction Products Regulation)
$B2_{ca}$-s1a,d1,a1 (according to cross-section) or
C_{ca}-s1a,d1,a1 (according to cross-section)

TOXFREE® ZH YMz1K

Halogen free (LSHF) power cable for public places.

ACCORDING TO: HD 604 / DEKRA K 42D-1-5-C

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}$

APPLICATION

Toxfree® ZH YMz1K is a LSHF safety cable for fixed installations. In the event of fire, it does not emit toxic gases, nor does it give off corrosive gases, avoiding any possible damage to people or electronic equipment. For these reasons it is highly recommended for use in public places such as: hospitals, schools, museums, airports, bus terminals, shopping malls, offices, laboratories, etc.

- Industrial use.
- Public places.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 1 according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene type XLPE according to HD 604.
The standard identification of insulated conductors, according to HD 308 is the following:

1 x	Black
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
4 G	Brown + Black + Grey + Green/Yellow
5 G	Brown + Black + Grey + Blue + Green/Yellow

Outer sheath
Low smoke halogen free polyolefin.
Grey colour, non-toxic and fire retardant.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: $B2_{ca}$-s1a,d1,a1 according to 50575.
Low smoke halogen free according to EN60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 8x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to EN 50618.
Water resistance: AD5 Jets.

STANDARDS / COMPLIANCE

According to
HD 604 / DEKRA K 42D-1-5-C.

Standards and approvals
AENOR / KEMA-KEUR / RoHS / CE

CPR (Construction Products Regulation)
$B2_{ca}$-s1a, d1, a1.

TOXFREE® ZH N1 X1G1 Flex

Flexible LSHF power cable, for public places.

BASED ON: NF-C 32-323 ACCORDING TO: IEC 60502-1

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}/C_{ca}$

APPLICATION

Toxfree® ZH N1 X1G1 Flex is a LSHF safety cable. In the event of fire, it does not emit toxic gases, nor does it give off corrosive gases, avoiding any possible damage to people or electronic equipment. For these reasons it is highly recommended for use in public places such as: hospitals, schools, museums, airports, bus terminals, shopping centers, offices, laboratories, etc.

- Industrial use.
- Public places.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-1 and type DIX-3 according to HD 603.
The standard identification of insulated conductors according to HD 308 is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
3 x	Brown + Black + Grey
3 x + 1 x	Brown + Black + Grey + Blue (reduced cross-section)
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Blue + Green/Yellow

Outer sheath
Low smoke halogen free polyolefin, type ST8 according to IEC 60502-1.
Green colour.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).
Minimum installation and handling temperature: -0°C.

Fire performance
Flame non-propagation according to IEC 60332-1 / EN 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: $B2_{ca}$-s1a,d1, a1 or C_{ca}-s1a,d1,a1 according to EN 50575 (see cross-section).
Low smoke halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to EN 50618.
Water resistance: AD8 Submersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

Based on
NF-C 32-321
According to
IEC 60502-1

Standards and approvals
AENOR / SEC / KEMA-KEUR / RoHS / CE / UKCA

CPR (Construction Products Regulation)
$B2_{ca}$-s1a,d1,a1 (according to cross-section) or
C_{ca}-s1a,d1,a1 (according to cross-section)

TOXFREE® PLUS 331 ZH RZ1-K (AS+) FR2

LSHF and fire resistant power cable, for emergency circuits.

ACCORDING TO: IEC 60502-1 / UNE 211025

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}/C_{ca}$

APPLICATION

Toxfree® Plus 331 ZH RZ1-K (AS+) is a fire resistant cable, specially designed to ensure the power supply to emergency circuits in the event of fire. During a fire you need critical circuits to work for life safety (signalling lights, fume extractors, acoustic alarms, water pumps, etc) and a secure plant shutdown. For this reason, its use is highly recommended in public places such as: hospitals, tunnels, offices, production plants, laboratories, hotels, etc.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Mica tape + Cross-linked polyethylene type DIX-3 according to HD 603.
The standard identification of insulated conductors according to HD 308 is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
3 x	Brown + Black + Grey
3 x + 1 x	Brown + Black + Grey + Blue (reduced cross-section)
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Blue + Green/Yellow

Outer sheath
Fireproof polyolefin with low smoke and halogen free fumes under fire conditions.
Orange colour.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).
Minimum installation and handling temperature: -0°C

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Fire resistant (PH120) minimum 120 minutes at 840 °C:
According to IEC 60331-2 / EN 50200 for cable diameter ≤ 20 mm.
According to IEC 60331-1 / EN 50362 for cable diameter > 20 mm.
Fire resistant category C (180 minutes at 950°C), W & Z according to BS 6387.
Fire resistant category Rf 1h30 or Rf 1h (according to cross-section) according to NBN S21-300-1.
Reaction to fire CPR: $B2_{ca}$-s1a,d1,a1 or C_{ca}-s1b,d1,a1 according to EN 50575 (see cross-section).
Low Smoke Halogen Free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 60%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: acceptable.
UV Resistant according to EN 50618.
Water resistance: AD5 Jets.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-1 / UNE 211025

Standards and approvals
AENOR / RoHS / CE

CPR (Construction Products Regulation)
$B2_{ca}$-s1a,d1,a1 (according to cross-section) or
C_{ca}-s1b,d1,a1 (according to cross-section)

TOXFREE® ZH RZ1FZ1-K (AS)

Halogen free (LSHF) armoured cable with steel or aluminium tape armour.

ACCORDING TO: IEC 60502-1 / UNE 21123-4

CPR COMPLIANT
Construction Products Regulation
EN 50575

C_{ca}

APPLICATION

Toxfree® ZH RZ1FZ1-K (AS) is an armoured LSHF safety cable. In case of fire, it does not emit toxic or corrosive gases, thereby protecting public health and avoiding any possible damage to electronic equipment.
Its use is highly recommended for public places, in installations with presence of rodents, and installations where the cable is subject to risk of mechanical aggression.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible), according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-1 and type DIX-3 according to HD 603.
The standard identification of insulated conductors according to HD 308 is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
3 x	Brown + Black + Grey
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Blue + Green/Yellow
6 or more	Black numbered + Green/Yellow

Separation sheath
Low smoke halogen free polyolefin.

Armour
Double steel or aluminium tape armour.
Aluminium armour is used in single-core cables to avoid parasite currents that may overheat the cable.
Steel tape is used in the multicore cables.

Outer sheath
Low smoke halogen free polyolefin type ST8 according to IEC 60502-1 and type DMZ-E according to UNE 21123-4.
Green colour.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: C_{ca}-s1b,d1,a1, according to EN 50575.
Low Smoke Halogen Free according to EN60754-1 / IEC60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 60%.

Mechanical performance
Minimum bending radius: 10x cable diameter.
Impact resistance: AG4 High severity.
Rodent proof.

Environmental performance
Chemical & Oil resistance: acceptable.
UV Resistant according to EN 50618.
Water resistance: AD5 Jets.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-1 / UNE 21123-4

Standards and approvals
RoHS / CE

CPR (Construction Products Regulation)
C_{ca}-s1b, d1, a1

RoHS Compliant

CE

TOXFREE® ZH
RZ1MZ1-K (AS)

Halogen free armoured cable with galvanized steel wire armour (ATEX).

ACCORDING TO: IEC 60502-1

CPR COMPLIANT
Construction Products Regulation
EN 50575

C_{ca}

APPLICATION

Toxfree® RZ1MZ1-K (AS) is a LSHF is a safety cable. In case of fire, it does not emit toxic or corrosive gases, protecting people and avoiding possible damage to electronic equipment. Therefore, its use is recommended for public places, in hazardous areas with explosive gas atmospheres (ATEX), and installations where the cable is subject to risk of mechanical aggression.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible), according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene type DIX-3 according to HD 603 and type XLPE according to IEC 60502-1.
The standard identification of insulated conductors according to HD 308 is:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
3 x	Brown + Black + Grey
3 x + 1 x	Brown + Black + Grey + Blue (reduced cross-section)
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Green/Yellow + Blue
6 or more	Black numbered + Green/Yellow

Armour bedding
Low smoke halogen free polyolefin.

Armour
Galvanized steel wire armour.
Aluminium armour is used in single core cables to avoid parasite currents that may overheat the cable.

Outer sheath
Low smoke halogen free polyolefin, type ST8 according to IEC 60502-1.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -50 °C according to GOST 31996.
Minimum installation and handling temperature: 0 °C

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3-24 / IEC 60332-3-24 and EN 50399.
Reaction to fire CPR: C_{ca}-s1b, d1, a1 according to EN 50575.
Low smoke halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 60%.

Mechanical performance
Minimum bending radius: 10x cable diameter.
Impact resistance: AG4 High severity.
Rodent proof.

Environmental performance
Chemical & Oil resistance: Acceptable.
Hydrocarbon resistant.
UV Resistant according to EN 50618.
Potentially explosion hazard locations (ATEX).
Water resistance: AD5 Jets.

Installation conditions
Open Air.
Buried.
In Conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-1

Standards and approvals
CE / RoHS

CPR (Construction Products Regulation)
C_{ca}-s1b, d1, a1

TOXFREE® ZH RZ1 (AS) Al

Aluminium halogen free (LSHF) cable for power transmission.

ACCORDING TO: IEC 60502–1 / UNE 21123-4

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}$

APPLICATION

Toxfree® ZH RZ1 (AS) Al is an aluminium LSHF cable for fixed installations.
These cables are specially recommended for installation in public places and in installations where safety is a priority.

CONSTRUCTION

Conductor
Aluminium class 2 according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-1 and type DIX-3 according to HD 603.
The standard identification of insulated conductors according to HD 308 is the following:

1 x	Natural
3 x	Brown + Black + Grey
4 x	Brown + Black + Grey + Blue

Outer sheath
Low smoke halogen free polyolefin.
Green colour. Other outer sheath colours available on request.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).
Minimum installation and handling temperature: -0°C.

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: B2ca -s1a, d1, a1 (for single core cables) and B2ca -s1b, d1, a1 (for multicore cables) according to EN 50575.
Low smoke halogen free according to EN 60754-1 / IEC60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 60%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to UNE 211605 and EN 50618.
Water resistance: AD8 Submersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502–1 / UNE 21123-4

Standards and approvals
RoHS / CE

CPR (Construction Products Regulation)
$B2_{ca}$ -s1a, d1, a1 (single core cables)
$B2_{ca}$ -s1b, d1, a1 (multicore cables).

TOXFREE® ZH Z1Z1-U

Halogen free (LSHF) cables for fixed installations

ACCORDING TO: HD 604.5D / VDE 0250-215

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}$

APPLICATION

Toxfree® ZH Z1Z1-U is a LSHF safety cable. In the event of fire, it does not emit toxic gases, nor does it give off corrosive gases, avoiding any possible damage to people or electronic equipment. For these reasons it is highly recommended for use in public places such as: hospitals, schools, museums, airports, bus terminals, shopping malls, offices, laboratories, etc.

- Industrial use.
- Public places.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 1, according to EN 60228 and IEC 60228.

Insulation
Low smoke halogen free (LSHF) polyolefin insulation.
The standard identification of insulated conductors according to HD 308 is the following:

3 G	Brown + Blue + Green/Yellow
5 G	Brown + Black + Grey + Blue + Green/Yellow

Outer sheath
Low smoke halogen free (LSHF) polyolefin under fire conditions. Light grey colour.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: -30°C (fixed installation).

Fire performance
Flame non-propagation according to EN 60332-1 /IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: $B2_{ca}$-s1a,d1,a1, according to EN 50575.
Low Smoke Zero Halogen according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 8x cable diameter.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to EN 50618.
Water resistance: AD5 Jets.

Other
Meter by meter marking.

STANDARDS / COMPLIANCE

According to
HD 604.5D / VDE 0250-215

Standards and approvals
RoHS / CE.

CPR (Construction Products Regulation)
$B2_{ca}$-s1a,d1,a1

Top Cable

TOXFREE® ZH

ES05Z1-K (AS) & H07Z1-K(AS)

Flexible and halogen free power cable for electrical panel wiring.

ACCORDING TO: EN 50525-3-31 / UNE 211002

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}$

APPLICATION

Toxfree® ES05Z1-K (AS)/H05Z1-K & H07Z1-K (AS) Type 2 is a LSHF safety cable. In the event of fire, it does not emit toxic gases, nor does it give off corrosive gases, avoiding any possible damage to people or electronic equipment.
For these reasons it is highly recommended for use in public places such as: hospitals, schools, museums, airports, bus terminals, shopping malls, offices, laboratories, etc.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Polyolefin, halogen free and low smoke under fire conditions, type TIZ1 according to UNE 211002 and type TI7 according to EN 50363-7.
The standard identification of insulated conductors is the following:

Blue	RAL 5015
Brown	RAL 8003
Black	RAL 9005
Red	RAL 3000
Green/Yellow	RAL 6018/1021
Grey	RAL 7000
Dark Blue	RAL 5010
White	RAL 9010

Other colours available on request.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V and 450/750 V.
Rated Voltage: ES05Z1-K/H05Z1-K (up to 1 mm^2): 300/500 V.
H07Z1-K (from 1,5 mm^2 onwards): 450/750 V.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: B2ca-s1a, d1, a1 (cable H07Z1-K from 1,5 mm^2 to 240 mm^2) according to EN 50575.
Low smoke halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 5x cable diameter.

Environmental performance
Chemical & Oil resistance: Acceptable.

STANDARDS / COMPLIANCE

According to
EN 50525-3-31 / UNE 211002

Standards and approvals
HAR / AENOR / BUREAU VERITAS / RoHS / SEC / CE

CPR (Construction Products Regulation)
$B2_{ca}$-s1a, d1, a1 (cable H07Z1-K from 1,5 mm^2 to 240 mm^2)

TOXFREE®XTREM ZH H07ZZ-F (AS)

The extra-flexible LSHF rubber cable for mobile service.

ACCORDING TO: EN 50525-3-21

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}/C_{ca}$

APPLICATION

Toxfree® Xtrem ZH H07ZZ-F (AS) is a flexible cable for mobile service, suitable for installations where low smoke and halogen free fumes under fire conditions are required. The use nominal voltage up to 1000 V is accepted in fixed protected assemblies.
Suitable for installations where the cable must withstand medium mechanical stress, for machines in industrial and agricultural workshops, for motors and transportable machines on construction sites, for windmills and for agricultural applications.

- Industrial use.
- Mobile use.
- Windmills.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Halogen free thermosetting rubber, type EI8 according to EN 50363-5.
The standard identification according to HD 308, is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
4 G	Brown + Black + Grey + Green/Yellow
5 G	Brown + Black + Grey + Blue + Green/Yellow
6 or more	Black numbered + Green/Yellow

Outer sheath
Halogen free thermosetting flexible rubber, type EM8 according to EN 50363-6.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 450/750 V.

Thermal performance
Maximum conductor temperature: 90˚C.
Maximum short-circuit temperature: 250˚C (max. 5 s).
Minimum temperature in mobile service: -40˚C.

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3-24 / IEC 60332-3-24 and EN 50399.
Reaction to fire CPR: $B2_{ca}$-s1b, d1, a1 or Cca-s1b, d2, a1 according to EN 50575 (see cross-section).
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to UNE-EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 60%.

Mechanical performance
Minimum bending radius: 3x cable diameter < 12 mm.
4x cable diameter ≥ 12 mm.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Excellent.
Grease & mineral oils resistance: Excellent.
Water resistance: AD7 immersion.

Installation conditions
Open Air.
In conduit.

Other
Meter by meter marking.

STANDARDS / COMPLIANCE

According to
EN 50525-3-21

Standards and approvals
HAR / AENOR / CE

CPR (Construction Products Regulation)
$B2_{ca}$-s1b, d1, a1. (according to cross-section) or
C_{ca}-s1b, d2, a1. (according to cross-section)

TOXFREE® ZH H05Z1Z1-F

Flexible and halogen free cable for fixed installations.

ACCORDING TO: EN-50525-3-11

CPR COMPLIANT
Construction Products Regulation
EN 50575

$B2_{ca}$

APPLICATION

Toxfree® ZH H05Z1Z1-F is a LSHF safety cable. In the event of fire, it does not emit toxic gases, nor does it give off corrosive gases, avoiding any possible damage to people or electronic equipment. For these reasons it is highly recommended for use in public places such as: hospitals, schools, museums, airports, bus terminals, shopping malls, offices, laboratories, etc.

- Industrial use.
- Public places

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Low smoke zero halogen polyolefin, type TI6 according to EN 50363-7.
The standard identification of insulated conductors according to HD 308 is the following:

2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
3 X	Brown + Black + Grey
4 X	Brown + Black + Grey + Blue
4 G	Brown + Black + Grey + Green/yellow
5 G	Brown + Black + Grey + Blue + Green/yellow

Outer sheath
Low Smoke Halogen Free polyolefin, type TM7 according to EN 50363-8.
White colour, non-toxic and fire retardant.
Other outer sheath colours available on request.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: -30°C (static with protection).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: $B2_{ca}$-s1a,d1,a1 according to EN 50575.
Low Smoke Halogen Free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 8x cable diameter.

Environmental performance
Chemical & Oil resistance: Acceptable.
Water resistance: AD5 Jets.

Installation conditions
Open Air.
In conduit.

STANDARDS / COMPLIANCE

According to
EN 50525-3-11

Standards and approvals
RoHS / CE

CPR (Construction Products Regulation)
$B2_{ca}$-s1a, d1, a1

CONTROL & SCREENED **CABLES**

TOPFLEX® VV-F
H05VV-F

Flexible cable for connecting small electrical appliances.

ACCORDING TO: EN 50525-2-11 / IEC 60227-5

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

Topflex® VV-F H05VV-F cable has been specially designed for connecting small home appliances such as vacuum cleaners, washing machines, refrigerators, etc.
It is recommended for household installations and can also be used for light mobile services.
These cables are also suitable for fixed applications in furniture, wall partitions, and in hollow spaces of prefabricated building parts.

- Mobile use.
- Domestic use.
- Domestic appliances.
- Temporary appliances.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Flexible PVC, type TI2 according to EN 50363-3 and type PVC/D according to IEC 60227-1.
The standard identification of insulated conductors, according to UNE 21089-1 and HD 308 is the following:

2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
4 G	Brown + Black + Grey + Green/Yellow
5 G	Brown + Black + Grey + Blue + Green/Yellow

Outer sheath
Flexible PVC, type TM2 according to EN 50363-4-1 and type PVC/ST5 according to IEC 60227-1.
Grey, white or black are the standard outer sheath colours.
Other colours available on request.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: 5°C

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: E_{ca} according to EN 50575.
Low halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius:
3 x cable diameter < 12 mm.
4 x cable diameter ≥ 12 mm.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Good.
Water resistance: AD5 Jets.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to:
EN 50525-2-11 / IEC 60227-5

Standards and approvals
HAR / AENOR / SEC / RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

FLEXTEL® 110 ES05VV-F

Flexible multi-conductor control cable for mobile use.

ACCORDING TO: UNE 21031

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

Flextel® 110 ES05VV-F is a flexible cable for mobile service.
Suitable for the connection of machinery parts used in manufacturing, including machine tools.
Suitable for indoor use.
Its installation is recommended in fixed ducts.

- Mobile use.
- Domestic use.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Flexible PVC, type TI2 according to EN 50363-3
The standard identification of insulated conductors according to EN 50334 is the following:
6 or more Black numbered + Green/Yellow

Outer sheath
Flexible PVC, type TM2 according to EN 50363-4-1.
Grey or black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V.
Test voltage: 2000 V / 5 min.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: 0°C (mobile service) and -30°C (fixed installation).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: E_{ca} according to EN 50575.
Low halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Good.
UV Resistant according to UNE 211605.
Water resistance: AD5 Jets.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to:
UNE 21031

Standards and approvals
RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

FLEXTEL® 140 H05VV5-F

Flexible oil resistant control cable, for mobile use.

ACCORDING TO: EN 50525-2-51 / IEC 60227

APPLICATION

Flextel® H05VV5-F is a cable for signalling and control systems. It is especially suitable for connecting industrial equipment and machine tools. Due to its properties, it is recommended for robotics and light mobile services. Its special vinylic outer sheath compound is particularly resistant to mineral oils and other chemical agents. It can be installed in either dry or humid environments.

- Industrial use.
- Mobile use.
- Robotics.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Flexible PVC, type TI2 according to EN 50363-3.
The standard identification of insulated conductors, according to EN 50334 and HD 308 is the following:

2 x	Black numbered
3 or more	Black numbered + Green/Yellow

Outer sheath
Flexible and oil resistant PVC, type TM5 according to EN 50363-4-1.
Grey colour.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: 5°C

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: E_{ca} according to EN 50575.

Mechanical performance
Minimum bending radius:
3x cable diameter < 12 mm.
4x cable diameter ≥ 12 mm.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Excellent.
Grease & mineral oils resistance: Excellent.
Water resistance: AD5 Jets.

Installation conditions
Open Air.
In conduit.

STANDARDS / COMPLIANCE

According to
EN 50525-2-51 / IEC 60227

Standards and approvals
HAR / AENOR / RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

FLEXTEL® 200 VV-K

Flexible 0,6/1 kV control cable.

BASED ON: IEC 60502-1

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

Flextel® 200 VV-K cable is suitable for fixed installations with complex layouts where flexible cables are required. It is also ideal for connecting motors or frequency converters.
The characteristics of the outer sheath material make this cable extremely versatile as it provides a high level of protection in all types of environments.

- Industrial use

CONSTRUCTION

Conductor
Electrolytic annealed copper conductor class 5 (flexible) according to EN 60228 and IEC 60228.
Insulation
Flexible PVC type PVC/A according to IEC 60502-1.
The standard identification of insulated conductors, according to HD 308 and HD 186 is the following:

1 x	Natural
2 x	Brown + Blue
3 G	Blue + Brown + Green/Yellow
3 x	Brown + Black +Blue
4 G	Brown + Black + Blue + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Blue + Green/Yellow
6 or more	Black numbered + Green/Yellow

* Other identifications are possible on request.
Outer sheath
Flexible PVC type ST1 according to IEC 60502-1.
Black colour.
Other colours available on request.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installation).

Fire performance
Flame non-propagation based on EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: E_{ca} according to EN 50575.
Low halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Good.
UV Resistant according to UNE 211605, Annex A.2
Water resistance: AD5 Jets.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

Based on:
IEC 60502-1

Standards and approvals
RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

TOXFREE® ZH Z1Z1-K (AS)

Flexible and halogen free (LSHF) power cable for public places.

BASED ON: IEC 60502-1 / UNE 21123-4

CPR COMPLIANT Construction Products Regulation EN 50575

$B2_{ca}$

APPLICATION

Toxfree® ZH Z1Z1-K (AS) is a LSHF safety cable. In the event of fire, it does not emit toxic gases, nor does it give off corrosive gases, avoiding any possible damage to people or electronic equipment. For these reasons it is highly recommended for use in public places such as: hospitals, schools, museums, airports, bus terminals, shopping malls, offices, laboratories, etc.

- Industrial use.
- Public places.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Special low smoke and halogen free polyolefin.
The standard identification of insulated conductors according to HD 308 is the following:
6 G or more Black numbered + Green/Yellow

Outer sheath
Low smoke halogen free polyolefin, not toxic and fire retardant.
Green colour.
Other outer sheath colours available on request.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: -40°C (static, with protection).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: $B2_{ca}$-s1a, d1, a1 according to EN 50575.
Low smoke halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to UNE 211605 and EN 50618.
Water resistance: AD5 Jets.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

Based on:
IEC 60502-1 / UNE 21123-4

Standards and approvals
RoHS / CE

CPR (Construction Products Regulation)
$B2_{ca}$-s1a, d1, a1

Top Cable

SCREENFLEX® 110/200 LiYCY VC4V-K

Flexible screened PVC cable, for safe signal transmission.

BASED ON: EN 50525 (for 300/500 V cables) / IEC 60502-1 (for 0,6/1 kV cables).

CPR COMPLIANT Construction Products Regulation EN 50575

C_{ca}/E_{ca}

APPLICATION

Screenflex® 110/200 LiYCY VC4V-K is a screened control cable. It is used in all types of signal transmission connections where the voltage induced by an exterior electromagnetic field may affect the signal transmitted.
Its most common applications are control circuits, electronic equipment connections, computer systems, etc.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.
Insulation
Flexible PVC type TI2 according to EN 50363-3 and type PVC/A according to IEC 60502-1.
The standard identification of insulated conductors according to HD 308 and EN 50334 is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
3 x	Brown + Black + Grey
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Green/Yellow + Blue
6 or more	Black numbered + Green/Yellow.

Other identifications (JZ, OZ, J, O) are available on request.
Screen
Aluminium-polyester tape screen with overlapping tinned copper braid, ensuring full screening coverage.
Outer sheath
Flexible PVC type TM2 according to EN 50363-4-1 and type ST1 according to IEC 60502-1.
Black or grey colour (grey for fire non-propagation).
The ripcord allows you to gently tear the outer-sheath and remove it without damaging the screen.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V. (up to 1,5 mm^2).
0,6/1 kV (from 2,5mm^2 onwards).

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: -40°C (static, with protection).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 (only grey outer sheath).
Reaction to fire CPR according to EN 50575:
C_{ca} -s2, d1, a3 (grey outer sheath 300/500 V)
C_{ca} -s3, d1, a3 (grey outer sheath 0,6/1 kV).
E_{ca} (black outer sheath).
Low halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Good.
UV Resistant according to UNE 211605.
Water resistance: AD5 Jets.

STANDARDS / COMPLIANCE

Based on
EN 50525 / IEC 60502-1

Standards and approvals
RoHS / CE

CPR (Construction Products Regulation)
C_{ca} -s2, d1, a3 (grey outer sheath 300/500 V)
C_{ca} - s3, d1, a3 (grey outer sheath 0,6/1 kV)
E_{ca} (black outer sheath).

TOXFREE® ZH
Z1C4Z1-K (AS)

Halogen free (LSHF) screened power cable.

BASED ON: IEC 60502-1 / UNE 21123-4

CPR COMPLIANT
Construction Products Regulation
EN 50575

C_{ca}

APPLICATION

Toxfree® Z1C4Z1-K is a screened LSHF safety cable.
In case of fire, it does not emit toxic or corrosive gases, thereby protecting public health and avoiding any possible damage to electronic equipment. For this reason, its use is highly recommended for public places and for all installations where it is necessary avoid to electric interference of nearby circuits.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Special polyolefin with low smoke and halogen free fumes under fire conditions.
The standard identification of insulated conductors according to HD 308 is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue
5 G	Brown + Black + Grey + Green/Yellow + Blue
6 or more	Black numbered + Green/yellow

Screen
Coverage of 100% composed by aluminium-polyester tape and tinned copper braid.

Outer sheath
Low smoke halogen free polyolefin fire retardant.
Green colour.
Other outer sheath colours available on request.
The ripcord allows you to gently tear the outer sheath allowing you to gently peel it away without damaging the screen.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: -40°C (static, with protection).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: C_{ca}-s1a, d1, a1 according to 50575.
Low smoke halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to EN 50618.
Water resistance: AD5 Jets.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

Based on
IEC 60502-1 / UNE 21123-4

Standards and approvals
RoHS / CE

CPR (Construction Products Regulation)
C_{ca}-s1a, d1, a1

RoHS Compliant

TOPDATA®
VHOV-K (PAR-POS) & VOV-K (POS) 300/500V

Flexible instrumentation screened cable.

BASED ON: EN 50288-7

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

TopData® VHOV-K (PAR-POS) & VOV-K (POS) is a flexible screened cable for signalling and control on industrial machinery facilities. The collective screen (VOV-K) and individual and collective screen (VHOV-K) make them especially suitable for areas where electrical noise protection is required.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Flexible PVC.
The standard identification of insulated conductors is the following:
2 x Pairs numbered (black + blue).
Other colours available on request.

Assembly of cores
Stranded conductors in pairs.

Individual screen (VHOV-K (PAR-POS)
Individual polyester (per pair) composed by aluminium / polyester tape with 100% coverage + tinned copper drain wire.

Assembly of pairs
Cabled in concentric layers.

Collective Screen
Aluminium / polyester tape with 100% coverage + tinned copper drain wire.

Outer sheath
Flexible PVC.
Black colour.
The ripcord allows you to gently tear the outer-sheath and remove it without damaging the screen.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: -30°C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: E_{ca} according to EN 50575.
Low halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Good.
UV Resistant according to UNE 211605.
Water resistance: AD5 Jets.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

Based on
EN 50288-7

Standards and approvals
RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

sales@topcable.com | www.topcable.com

TOPDRIVE® VFD (EMC) ROZ1-K (AS) 0,6/1 kV

Flexible LSHF screened cable for Variable Frequency Drive cables (VFD cables).

ACCORDING TO: IEC 60502-1 / IEC 60092-353

CPR COMPLIANT Construction Products Regulation EN 50575

C_{ca}

APPLICATION

TOPDRIVE® VFD (EMC) ROZ1-K (AS) cable has been specially designed for Variable Frequency Drive Motors and installations where it is necessary to limit the effects of electromagnetic interference (EMI). This is a flexible cable for fixed installations, for variable speed motors or pumps.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible), according to EN 60228 and IEC 60228.

Protective Conductor
The ground conductor is divided into three conductors; the equivalent cross-section is approximately 50% of the section of the phase conductor.
For 4G cables, ground conductor has the same cross-section as the phase conductors.

Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-1, type HF XLPE 90°C according to IEC 60092-360.
The standard identification of insulated conductors is the following:
3 x +3 G Grey + Brown + Black + Green/Yellow (3 G) (from 6 mm^2 onwards)
4 G Grey + Brown + Black + Green/Yellow (up to 4 mm^2)

Assembly of cores
For 3x+3G cables, the three phase conductors are cabled helically with the three protective conductors distributed in the interstices.
For 4G cables, the three phase conductors and protection conductor are cabled helically.

Screen
Aluminium-polyester tape screen helically placed over the insulated conductors. Over the tape there is a tinned copper braid screen. The tape and the braid act as a double screen to cut out all of the electromagnetic interference, with a minimum total section of 10% of the phase conductor, ensuring a total shielding coverage.

Outer sheath
Polyolefin type ST8 according to IEC 60502-1 and type SHF1 according to IEC 60092-360.
Black colour.
The ripcord allows you to tear the outer sheath without damaging the screen.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Maximum ambient temperature: 60 °C.
Minimum installation and handling temperature: 0 °C.
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: C_{ca}-s1a, d1, a1 according to EN 50575.
Low Smoke Halogen Free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius during installation: 10x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to EN 50618.
Water resistance: AD5 Jets.

Installation conditions
Being very performant cables there are, however, certain precautions that must be taken into account during installation:
- Always respect the bending radius of the cable. Radius below the minimums indicated can cause damage or breakage in the outer sheath.
- Precautions design of the laying. It is necessary that the laying of the cable is done in a careful way, taking care not to damage the outer sheath in irregular areas, sharp edges, etc.
- Fixings/Fastenings. Adapt fastenings so that the cable adopts a natural position in the laying to avoid stress concentration in the outer sheath. Allow a certain degree of freedom of movement in order to absorb possible movements produced by temperature variations. Open Air. Buried. In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-1 / IEC 60092-353

Standards and approvals
BUREAU VERITAS / DNV-GL / ABS /

CPR (Construction Products Regulation)
C_{ca}-s1a, d1, a1

TOPDRIVE® VFD (EMC) ROZ1-K (AS) 1,8/3 kV

Flexible LSHF screened cable for Variable Frequency Drive cables (VFD cables).

ACCORDING TO: IEC 60502-1 / IEC 60092-353

CPR COMPLIANT Construction Products Regulation EN 50575

C_{ca}

APPLICATION

TOPDRIVE® VFD (EMC) ROZ1-K (AS) cable has been specially designed for Variable Frequency Drive Motors and installations where it is necessary to limit the effects of electromagnetic interference (EMI). This is a flexible cable for fixed installations, for variable speed motors or pumps.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible), according to EN 60228 and IEC 60228.

Protective Conductor
The ground conductor is divided into three conductors; the equivalent cross-section is approximately 50% of the section of the phase conductor.

Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-1 and type HF XLPE 90°C according to IEC 60092-351.
The standard identification of insulated conductors is the following:
3 x +3 G Grey + Brown + Black + Green/Yellow (3 G) (from 6 mm^2 onwards)

Assembly of cores
For 3x+3G cables, the three phase conductors are cabled helically with the three protective conductors distributed in the interstices.

Screen
Aluminium-polyester tape screen helically placed over the insulated conductors. Over the tape there is a tinned copper braid screen. The tape and the braid act as a double screen to cut out all of the electromagnetic interference, with a minimum total section of 10% of the phase conductor, ensuring a total shielding coverage.

Outer sheath
Polyolefin type ST8 according to IEC 60502-1 and type SHF1 according to IEC 60092-360.
Black colour.
The ripcord allows you to tear the outer sheath without damaging the screen.

CHARACTERISTICS

Electrical performance
Low voltage: 1,8/3 kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations)

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Reaction to fire CPR: C_{ca}-s1a, d1, a1 according to EN 50575.
Low Smoke Halogen Free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 10x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to EN 50618.
Water resistance: AD5 Jets.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-1 / IEC 60092-353

Standards and approvals
BUREAU VERITAS / DNV-GL / ABS /

CPR (Construction Products Regulation)
C_{ca}-s1a, d1, a1

SOLAR
CABLES

TOPSOLAR® PV H1Z2Z2-K

TÜV solar PV cable.

ACCORDING TO: EN 50618 / IEC 62930 / UTE C 32-502

CPR COMPLIANT
Construction Products Regulation
EN 50575

C_{ca}

APPLICATION

The TOPSOLAR® PV H1Z2Z2-K cable, which is TÜV certified according to EN 50618 and AENOR certified according to IEC 62930, it is suitable for both fixed and mobile solar installations (solar farms, rooftop solar installations and floating plants).
It is a highly flexible cable compatible with all major connectors and specially designed for the connection of photovoltaic panels.
This versatile single-conductor cable is designed to meet the varying needs of the solar industry.
Suitable for wet, damp and humid locations.

- Solar PV installations string cable.

CONSTRUCTION

Conductor
Electrolytic annealed tinned copper, class 5 (flexible) according to IEC 60228 and EN 60228.

Insulation
Halogen free cross-linked rubber according to table B1 in Annex B of EN 50618 and IEC 62930.

Outer sheath
Halogen free cross-linked flexible rubber according to table B1 in Annex B of EN 50618 and IEC 62930.
Red or black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 1,5 (1,8) kV DC.
1,0/1,0 kV AC.

Thermal performance
Maximum conductor temperature: 90°C (120°C during 20.000 h).
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1-2 / IEC 60332-1-2.
Fire non-propagation according to EN 50399.
Reaction to fire CPR: C_{ca}-s1b, d2, a1 according to EN 50575.
Low smoke halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 60%.

Mechanical performance
Minimum bending radius:
4x cable diameter (cable diameter ≤ 8 mm)
5x cable diameter (8 < cable diameter ≤ 12 mm)
6x cable diameter (cable diameter > 12 mm).
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Excellent.
Grease & mineral oils resistance: Excellent.
Ozone resistant according to EN 50618.
UV Resistant according to EN 50618 and IEC 62930.
Water resistance: AD7+ Immersion.
AD8 Submersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
EN 50618/ IEC 62930 / UTE C 32-502

Standards and approvals
TÜV Rheinland (from 2.5 to 25mm² in Black and Red) / RETIE / AENOR/ RoHS / CE

CPR (Construction Products Regulation)
C_{ca}-s1b, d2, a1

TOPSOLAR® PV Al 1500 V

Aluminium PV cable.

ACCORDING TO: IEC 60502-1

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

TOPSOLAR® PV DC Feeder Aluminium cable is suitable for all types of underground and open air solar installations.
This cable is recommended for connections between string boxes and photovoltaic inverters in large scale rooftops or ground farms.

- Solar PV installations.
- Heavy impact and armoured versions also available.

CONSTRUCTION

Conductor
Aluminium class 2 according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene, type XLPE according to IEC 60502-1.
The standard identification of insulated conductors according to HD 308 is the following:

1 x	Natural
2 x	Blue + Brown
3 x	Brown + Black + Grey
3 x + 1 x	Brown + Black + Grey + Blue (reduced cross-section)
4 x	Brown + Black + Grey + Blue

Outer sheath
Special UV resistant PVC, type ST2 according to IEC 60502-1.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 1,5/1,5 (1,8) kV DC according to EN 50618.
1,8/3 (3,6) kV AC according to IEC 60502-1.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).
Minimum installation and handling temperature: 0°C (on cable surface).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: E_{ca} according to EN 50575.
Reduced halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG3 High severity.

Environmental performance
Chemical resistance: Good.
Grease & mineral oils resistance: Good.
UV Resistant according to EN 50618 and HD 605/A1.
Water resistance: AD8 Submersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-1

Standards and approvals
RETIE / RoHS / CE

CPR (Construction Products Regulation)
E_{ca}

TOPSOLAR®
PV AWA/SWA Al 1500 V

Aluminium or galvanized wire armour cable.

ACCORDING TO: IEC 60502-1

APPLICATION

TOPSOLAR® PV AWA/SWA DC Feeder Aluminium cable is suitable for all types of underground and open air solar installations.
This cable is recommended for connections between string boxes and photovoltaic inverters in large scale rooftops or ground farms. Suitable for transport and distribution of electric power where there is the possibility of mechanical aggressions.

- Solar PV installations.

CONSTRUCTION

Conductor
Aluminium class 2 according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene, type XLPE according to IEC 60502-1.
The standard identification of insulated conductors according to HD 308, is the following:

1 x	Natural
2 x	Blue + Brown
3 x	Grey + Brown + Black
4 G	Brown + Black + Grey + Green/Yellow
4 x	Brown + Black + Grey + Blue

Inner covering
Extruded PVC.

Armour
Aluminium wire armour (AWA) is used in single-core cables to avoid parasite currents that may overheat the cable.
Galvanized steel wire armour (SWA) is used in multicores cables.

Outer sheath
Special UV resistant PVC, type ST2 according to IEC 60502-1.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 1,5/1,5 (1,8) kV DC according to EN 50618.
1,8/3 (3,6) kV AC according to IEC 60502-1.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).
Minimum installation and handling temperature: 0°C (on cable surface).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reduced halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius: 10x cable diameter.
Impact resistance: AG4 High severity.

Environmental performance
Chemical resistance: Good.
Grease & mineral oils resistance: Good.
UV Resistant according to EN 50618 and HD 605/A1.

STANDARDS / COMPLIANCE

According to
IEC 60502-1

Standards and approvals
CE / RoHS

TOPSOLAR® PV LSZH Al 1500 V HEAVY DUTY

Aluminium cable for buried photovoltaic installations.

ACCORDING TO: IEC 60502-1

APPLICATION

The TOPSOLAR® PV LSZH HEAVY DUTY cable can be directly buried in most soils. They can be installed in smaller trenches as no sand or external backfill is required.

The special outer sheath compounds make this cable highly resistant to possible shocks and friction during its installation (impact and tearing). In addition, the cable is AD8 water resistant (submersible).

Finally, this cable resists degradation caused by ultraviolet (UV) rays as it is tested for UV protection according to the solar standard EN 50618.

CONSTRUCTION

Conductor
Aluminium class 2 according to EN 60228 and IEC 60228.

Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-1. Natural colour.

Outer sheath
Polyethylene halogen free and UV resistant, type ST7 according to IEC 60502-1 with extra thickness as protection for direct buried cables.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 1,5/1,5 (1,8) kV DC according to EN 50618.
1,8/3 (3,6) kV AC according to IEC 60502-1.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).
Minimum installation and handling temperature: 0°C (on cable surface).

Fire performance
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.

Mechanical performance
Minimum bending radius: 5x cable diameter.
Impact resistance: AG4 (≤ 40 J) Extra high severity according to NF C 33-226.
Abrasion according to NF C 33-226.

Environmental performance
UV Resistant according to EN 50618.
Water resistance: AD8 Submersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-1

Standards and approvals
CE / RoHS

TOXFREE® ZH OUTDOOR H07Z1-K (AS) type 2 CuSn

grounding cable, with tinned copper conductor.

ACCORDING TO: EN 50525-3-31 / UNE 211002

CPR COMPLIANT Construction Products Regulation EN 50575

$B2_{ca}$

APPLICATION

Toxfree® ZH Outdoor H07Z1-K (AS) CuSn is a cable specially designed for ground connections in outdoor installations.
The tinned copper conductor and special outer sheath compounds make this cable highly resistant to corrosion and ultraviolet (UV) degradation and prevent galvanic pair when connecting metals of different normal potential.
It is a halogen-free cable with the highest CPR classification (B2ca-s1a,d1,a1) and UV protection according to solar standard EN 50618.

CONSTRUCTION

Conductor
Electrolytic annealed tinned copper, class 5 (flexible) according to IEC 60228 and EN 60228.

Insulation
UV resistant polyolefin, type TI7 according to EN 50363-7.
The standard identification of insulated conductors is the following:
Green/Yellow RAL 6018/1021
Other colours available on request.

CHARACTERISTICS

Electrical performance
Low voltage: 450/750 V.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3-24 / IEC 60332-3-24 and EN 50399.
Reaction to fire CPR: $B2_{ca}$-s1a, d1, a1, according to EN 50575.
Low smoke halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 5x cable diameter.

Environmental performance
Chemical & Oil resistance: Excellent.
Grease & mineral oils resistance: Excellent.
UV Resistant according to EN 50618.
Ozone resistant according to EN 50618.

STANDARDS / COMPLIANCE

According to
EN 50525-3-31 / UNE 211002

Standards and approvals
HAR / AENOR / BUREAU VERITAS / RoHS / CE

CPR (Construction Products Regulation)
$B2_{ca}$-s1a, d1, a1

LOW VOLTAGE **SPECIAL CABLES**

TOPFLAT®
H05VVH6-F & H07VVH6-F

Flat cables for lifts, cranes, hoists and conveyor systems.

ACCORDING TO: EN 50214 / IEC 60227-6

APPLICATION

The Topflat® H05VVH6-F & H07VVH6-F is a flat cable specially designed for cranes, lifts, hoists, drum reeling and conveyor systems.
The hanging length of the cable can reach up to 35 m and its pull out speed can reach up to 1,6 m/s (overlaying cables is not recommended when installing).

- Industrial use.
- Mobile services.
- Bridge cranes.
- Lifts, elevators.
- Conveyors.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Flexible PVC, type TI2, according to EN 50363-3.
The standard identification of insulated conductors according to HD 308 and EN 50334, is the following:

4 G	Brown + Black + Grey + Green/yellow
6 or more	Black numbered + Green/yellow

Lay-up
Insulated conductors are placed side by side in parallel arrangement forming a flat cable.

Outer sheath
Flexible PVC, type TM2 according to EN 50363-4-1.
Black colour.
The ripcord allows you to gently tear the outer sheath.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V - 450/750 V
Nominal voltage:
H05VVH6-F (up to 1 mm^2): 300/500 V.
H07VVH6-F (from 1,5 mm^2): 450/750 V.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short circuit temperature: 160°C (maximum 5 s).
Minimum operating temperature: 0°C (mobile service).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Low halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius on pulleys (to 20 ± 10°C):
Festooned as in gantry cranes: 10x smaller dimension
Deflected by pulleys: 10x smaller dimension
Free movement: 5x smaller dimension
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
Water resistance: AD5 Jets.

STANDARDS / COMPLIANCE

According to:
EN 50214 / IEC 60227-6

Standards and approvals
HAR / AENOR / CE/ RoHS

X-PUR® H07BQ-F

Flexible cable for mobile service.

ACCORDING TO: EN 50525-2-21

APPLICATION

The cable X-PUR® H07BQ-F is a flexible cable for mobile service. Suitable for installations where the cable must withstand medium mechanical stress, for machines in industrial and agricultural workshops, for motors and transportable machines on construction sites, for windmills and for agricultural exploitations.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible), according to EN 60228 and IEC 60228.

Insulation
Cross-linked elastomeric, type EI6 according to EN 50363-1.
The standard identification, according to HD 308 is the following:

1 x	Natural
2 x	Blue + Brown
3 G	Blue + Brown + Green/Yellow
4 G	Brown + Black + Grey + Green/Yellow
5 G	Brown + Black + Grey + Blue + Green/Yellow
6 or more	Black numbered + Green/Yellow

Lay - up
The cores are twisted together.

Outer sheath
Thermoplastic polyurethane, type TMPU according to EN 50363-10-2.
Orange color.

CHARACTERISTICS

Electrical performance
Low voltage: 450/750 V.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (static with protection).

Fire performance
Flame non propagation according to EN 60332-1 (not <HAR> requirement).

Mechanical performance
Minimum bending radius:
3x cable diameter (cable <12 mm)
4x cable diameter (cable ≥12 mm)
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Excellent.

Installation conditions
Open air.

STANDARDS / COMPLIANCE

According to
EN 50525-2-21

Standards and approvals
AENOR <HAR> / CE / RoHS

PARALLEL AUDIO CABLE

Cable for connecting music equipment speakers

ACCORDING TO: UNE 211030

APPLICATION

Cable specially indicated in domestic installations for connecting music equipment speakers and for broadcasting music signals throughout the home.

- Speaker connection.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228 (bicolour) or oxygen free electrolytic copper conductor (OFC).

Insulation
PVC type TI2 according to EN 50363-3.
The standard identification of insulated conductors is the following:

- Bicolour audio cable	Red + Black
- OFC audio cable	Transparent + Transparent

CHARACTERISTICS

Electrical performance
These cables have no assigned voltage and can't be used in electric power transport circuits.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: -15°C (static, with protection).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.

Mechanical performance
Minimum bending radius: 5x cable diameter.

STANDARDS / COMPLIANCE

According to:
UNE 211030

Standards and approvals
AENOR / RoHS

Top Cable

COAXIAL SATELLITE 17 VATC

Coaxial cable for television signals.

ACCORDING TO: EN 50117-1

CPR COMPLIANT
Construction Products Regulation
EN 50575

D_{ca}

APPLICATION

Coaxial cable for the reception and distribution of digital terrestrial, analogue and digital satellite television signals. These cables do not have a rated voltage and cannot be used in electric power transmission circuits.

- Digital terrestrial television.
- Analogical satellite.
- Digital.

CHARACTERISTICS

Electrical performance

These cables do not have a rated voltage and cannot be used in electric power transmission circuits.

Thermal performance

Maximum conductor temperature: 70°C.

Minimum service temperature: -15°C (mobile service).

Installation conditions

Open air.

In conduit.

On tray.

CONSTRUCTION

Conductor

Electrolytic annealed copper conductor, class 1, according to EN 60228 and IEC 60228.

Insulation

Polyethylene HDPE according to EN 50290-2-23.

Screen

Copper screen and aluminum-polyester tape with overlapping copper braid, ensuring 100% screening coverage.

Outer sheath

PVC, white colour.

TECHNICAL DATA

Outer sheath colour	Diameter (mm^2)	Weight (kg/km)	Impedance
white	7	27,0	75 +- 3 Ω

STANDARDS / COMPLIANCE

According to:

EN 50117-1.

Standards and approvals

CE / RoHS.

CPR (Construction Products Regulation)

D_{ca} -s1a,d1,a1.

COAXIAL SATELLITE 21 VATC

Coaxial cable for television signals.

ACCORDING TO: EN 50117-1

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

Coaxial cable for the reception and distribution of digital terrestrial, analogue and digital satellite television signals with enhanced screen.

- Digital terrestrial television.
- Analogical satellite.
- Digital.

CHARACTERISTICS

Electrical performance
These cables do not have a rated voltage and cannot be used in electric power transmission circuits.

Thermal performance
Maximum conductor temperature: 70°C.
Minimum service temperature: -15°C (mobile service).

Installation conditions
Open air.
In conduit.
On tray.

CONSTRUCTION

Conductor
Electrolytic annealed copper conductor, class 1, according to EN 60228 and IEC 60228.

Insulation
Polyethylene HDPE according to EN 50290-2-23.

Screen
Copper or aluminum screen and aluminum-polyester tape with overlapping copper braid, ensuring 100% screening coverage.

Outer sheath
PVC, white colour.

TECHNICAL DATA

Outer sheath colour	Diameter (mm^2)	Weight (kg/km)	Impedance
white	7	27,0	75 +- 3 Ω

STANDARDS / COMPLIANCE

According to:
EN 50117-1

Standards and approvals
CE / RoHS

CPR (Construction Products Regulation)
E_{ca}.

TOXFREE® ZH
ALARMS Z1OZ1-K (AS)

Cable for alarm systems

BASED TO: EN 50525

CPR COMPLIANT
Construction Products Regulation
EN 50575

C_{ca}

APPLICATION

The TOXFREE® ZH ALARMS Z1OZ1-K (AS) cable is designed to comply with the regulations of Fire Detection and Alarm systems. It is recommended to be used in public places. It should not be used for direct connection to the power supply network or other low impedance sources.

- Fire detection.
- Fire alarms.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Special polyolefin, type TI7 according to EN 50363-7, with low smoke emission and halogen-free.
Conductor identification: Red - Black

Screen
Overlapping aluminium-polyester tape screen with 100% coverage + tinned copper drain wire.

Outer sheath
Fire-retardant polyolefin, type DMZ-E according to UNE 21123-4, with low smoke emission and halogen-free fumes in case of fire.
Red colour.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: -40°C (static, with protection).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 50399.
Reaction to fire CPR: C_{ca}-s1a, d1, a1 according to EN 50575.
Low smoke halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Smoke density according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 10x cable diameter.

Environmental performance
Chemical & Oil: Acceptable.
Water resistance: AD3 Sprays.

Installation conditions
Open air.
In conduit.
On tray.

STANDARDS / COMPLIANCE

Based to:
EN 50525

Standards and approvals
AENOR / RoHS

CPR (Construction Products Regulation)
C_{ca}-s1a, d1, a1

RoHS Compliant

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TOXFREE® ZH
ALARMS Z1OZ1-K (AS+)

Fire resistant cable for alarm systems

ACCORDING TO: UNE 211025

APPLICATION

The TOXFREE® ZH ALARMS Z1OZ1-K (AS +) fire resistant cable is designed to comply with the regulations of Fire Detection and Alarm systems.
It is recommended to be used in public places. It should not be used for direct connection to the power supply network or other low impedance sources.

- Fire detection.
- Fire alarms.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to EN 60228 and IEC 60228.

Insulation
Mica tape + Special polyolefin, type TI7 according to EN 50363-7, with low smoke emission and halogen-free.
Core identification: Red - Black.

Assembly of cores
The cores are twisted together.

Screen
Overlapping aluminium-polyester tape screen with 100% coverage + tinned copper drain wire.

Outer sheath
Fire-retardant polyolefin, type DMZ-E according to UNE 21123-4, with low smoke emission and halogen-free fumes in case of fire.
Red colour.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V.

Thermal performance
Maximum conductor temperature: 70°C.
Maximum short circuit temperature: 160°C (maximum 5 s).
Minimum operating temperature: -40°C (static, with protection).

Fire performance
Flame non-propagation according to EN 60332-1/ IEC 60332-1.
Fire non-propagation according to EN 50399.
Reaction to fire CPR: C_{ca}-s1a, d1, a1 according to EN 50575.
Fire resistant (PH120) minimum 120 minutes at 840 °C according to IEC 60331-2 / EN 50200.
Low smoke halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Smoke density according to EN 61034 / IEC 61034:
Light transmittance > 80%.

Mechanical performance
Minimum bending radius: 10x cable diameter.

Environmental performance
Chemical & Oil: Acceptable.
Water resistance: AD3 Sprays.

Installation conditions
Open air.
In conduit.
On tray.

STANDARDS / COMPLIANCE

According to:
UNE 211025

Standards and approvals
CE / RoHS

CPR (Construction Products Regulation)
C_{ca}-s1a, d1, a1

FLEXTEL® H05RNH2-F

Flexible cable for temporary installations

ACCORDING TO: EN 50525-2-82 / IEC 60245

APPLICATION

Flextel® H05RNH2-F is a flexible cable for mobile service. Suitable for temporary installations, both indoor and outdoor. The rectangular outer sheath with calibrated dimension makes it especially suitable for special lamp holders adapted to this type of cable.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible), according to EN 60228 and IEC 60228.

Insulation
Thermosetting rubber insulation, type EI4 according to EN 50363-1.
The standard identification of insulated conductors is the following:

2 x Blue + Brown

Outer sheath
Thermosetting rubber, type EM2 according to EN 50363-2-1.
White colour.
Other colours available under request.

CHARACTERISTICS

Electrical performance
Low voltage: 300/500 V.

Thermal performance
Maximum conductor temperature: 60°C.
Maximum short-circuit temperature: 200°C (max. 5 s).
Minimum service temperature: -40 °C (static with protection).

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Low halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius: 10 x cable diameter.
Impact resistance: AG2 Medium severity.

Environmental performance
Chemical & Oil resistance: Good.

TECHNICAL DATA

Cross-section (mm^2)	Dimension (mm)	Weight (kg/km)
2 x 1,5	13,5 x 5,5	125

STANDARDS / COMPLIANCE

According to:
EN 50525-2-82 / IEC 60245.

Standards and approvals
CE / RoHS

sales@topcable.com | www.topcable.com

MARINE **CABLES**

TOXFREE® MARINE XZ1-K (AS)

The marine power cable.

ACCORDING TO: IEC 60092-353

APPLICATION

The Toxfree® Marine XZ1-K (AS) cable with halogen free is a safety cable. In case of fire, it does not emit toxic or corrosive gases, thereby protecting public health and avoiding any possible damage to electronic equipment. For this reason, its use is recommended in marine applications.

- Marine use.
- Public use.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible), according to IEC 60228.

Insulation
Cross-linked polyethylene type HF XLPE-90 °C according to IEC 60092-360.
The standard identification of insulated conductors is the following:

1 x	Natural
2 x	Blue + Brown
3 x	Brown + Black + Grey
3 G	Blue + Brown + Green/Yellow
4 x	Brown + Black + Grey + Blue
4 G	Brown + Black + Grey + Green/Yellow
5 or more conductors	Black numbered

Other colours available on request.

Outer sheath
Low smoke halogen free polyolefin, type SHF1 according to IEC 60092-360.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Lowest installation temperature: -15°C
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to IEC 60332-1.
Fire non-propagation according to IEC 60332-3-22.
Low smoke halogen free according to IEC 60754-1.
Low corrosive gases emission according to IEC 60754-2.
Low smoke emission according to IEC 61034:
light transmittance > 60%.

Mechanical performance
Minimum bending radius:
Ø ≤ 25mm 4x cable diameter.
Ø > 25mm 6x cable diameter.
Impact resistance: AG2 medium severity.

Environmental performance
Chemical & Oil resistance: Good.
UV Resistant according to EN 50618.
Water resistance: AD6 waves.

Installation conditions
Open Air.
In conduit on a bulkhead.
On a bulkhead.

STANDARDS / COMPLIANCE

According to
IEC 60092-353

Standards and approvals
ABS / DNV-GL / BUREAU VERITAS / LLOYD'S REGISTER / CE / RoHS

TOXFREE® MARINE PLUS XZ1-K (AS+)

The marine fire resistant power cable.

ACCORDING TO: IEC 60092-353

APPLICATION

The Toxfree® Marine Plus XZ1-K (AS+) is specially designed to transmit electric power in the presence of fire, assuring electric supply to emergency circuits, like signalling lights, smoke extractors, acoustic alarms, water pumps, etc. In case of fire, it does not emit toxic or corrosive gases, thereby protecting public health and avoiding any possible damage to electronic equipment. For this reason, its use is recommended in public places and marine applications.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to IEC 60228.

Insulation
Mica Tape + Cross linked polyethylene type HF XLPE 90°C according to IEC 60092-360.
The standard identification is the following:

1 x	Natural
2 x	Blue + Brown
3 x	Brown + Black + Grey
4 x	Brown + Black + Grey + Blue
5 or more conductors	Black numbered

Other colours available on request.

Outer sheath
Low smoke halogen free thermoplastic polyolefin, type SHF1 according to IEC 60092-360.
Orange colour.
Non-toxic, fire retardant and fire resistant.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Minimum service temperature: -40°C (fixed and protected installations).
Lowest installation temperature: -15°C

Fire performance
Flame non-propagation according to IEC 60332-1.
Fire non-propagation according to IEC 60332-3-22.
Fire resistant according to IEC 60331-2 (overall diameter ≤ 20 mm) and IEC 60331-1 (overall diameter > 20 mm).
Low smoke halogen free according to IEC 60754-1.
Low corrosive gases emission according to IEC 60754-2.
Low smoke emission according to IEC 61034:
light transmittance > 60%.

Mechanical performance
Minimum bending radius:
≤ 25mm 4x cable diameter.
> 25mm 6x cable diameter.
Impact resistance: AG2 medium severity.

Environmental performance
Chemical & Oil resistance: Good.
UV Resistant according to EN 50618.
Water resistance: AD6 waves.

Installation conditions
Open Air.
In conduit on a bulkhead.
On a bulkhead.

STANDARDS / COMPLIANCE

According to
IEC 60092-353

Standards and approvals
ABS / DNV-GL / BUREAU VERITAS / LLOYD'S REGISTER / CE / RoHS

TOXFREE® MARINE XTCuZ1-K (AS)

The marine power cable.

ACCORDING TO: IEC 60092-353

APPLICATION

The Toxfree® Marine XTCuZ1-K (AS) cable with halogen free is a safety cable. In case of fire, it does not emit toxic or corrosive gases, thereby protecting public health and avoiding any possible damage to electronic equipment. For this reason, its use is recommended in marine applications.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible), according to IEC 60228.

Insulation
Cross-linked polyethylene type HF XLPE-90 °C according to IEC 60092-360.
The standard identification of insulated conductors is the following:

1 x	Natural
2 x	Blue + Brown
3 x	Brown + Black + Grey
4 x	Brown + Black + Grey + Blue
5 or more conductors	Black numbered

Other colours available on request.

Bedding
Thermoplastic polyolefin, natural colour, with low smoke and halogen free under fire conditions (single-cores and multi-cores from 25 mm^2).

Screen
Aluminium polyester tape screen with overlapping tinned copper braid armour, ensuring 100% screening coverage.

Outer sheath
Low smoke halogen free thermoplastic polyolefin, type SHF1 according to IEC 60092-360.
Black colour.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Lowest installation temperature: -15°C
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance
Flame non-propagation according to IEC 60332-1.
Fire non-propagation according to IEC 60332-3-22.
Low smoke halogen free according to IEC 60754-1.
Low corrosive gases emission according to IEC 60754-2.
Low smoke emission according to IEC 61034:
light transmittance > 60%.

Mechanical performance
Minimum bending radius: 6x cable diameter.
Impact resistance: AG3 High severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to EN 50618.
Water resistance: AD6 waves.

Installation conditions
Open Air.
In conduit on a bulkhead.
On a bulkhead.

STANDARDS / COMPLIANCE

According to
IEC 60092-353

Standards and approvals
ABS / DNV-GL / BUREAU VERITAS / LLOYD'S REGISTER / CE / RoHS

TOXFREE® MARINE PLUS XTCuZ1-K (AS+)

Marine armoured fire resistant power cable.

ACCORDING TO: IEC 60092-353

APPLICATION

The Toxfree® Marine Plus XTCuZ1-K (AS+) is specially designed to transmit electric power in the presence of fire, assuring electric supply to emergency circuits, like signalling lights, smoke extractors, acoustic alarms, water pumps, etc. In case of fire, it does not emit toxic or corrosive gases, thereby protecting public health and avoiding any possible damage to electronic equipment. For this reason, its use is recommended in public places and marine applications.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to IEC 60228.

Insulation
Mica Tape + Cross linked polyethylene type HF XLPE 90°C according to IEC 60092-360.
The standard identification is the following:

1 x	Natural
2 x	Blue + Brown
3 x	Brown + Black + Grey
4 x	Brown + Black + Grey + Blue
5 or more conductors	Black numbered

Other colours available on request.

Bedding
Thermoplastic polyolefin, natural colour, with low smoke and halogen free under fire conditions (single-cores and multi-cores from 25 mm^2).

Screen
Aluminium polyester tape screen with overlapping tinned copper braid armour, ensuring 100% screening coverage.

Outer sheath
Low smoke halogen free thermoplastic polyolefin, type SHF1 according to IEC 60092-360.
Orange colour.
Non-toxic, fire retardant and fire resistant.

CHARACTERISTICS

Electrical performance
Low voltage: 0,6/1 kV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Minimum service temperature: -40°C (fixed installations).
Lowest installation temperature: -15°C

Fire performance
Flame non-propagation according to IEC 60332-1.
Fire non-propagation according to IEC 60332-3-22.
Fire resistant according to IEC 60331-21 (90 minutes at 750°C).
Low smoke halogen free according to IEC 60754-1.
Low corrosive gases emission according to IEC 60754-2.
Low smoke emission according to IEC 61034:
light transmittance > 60%.

Mechanical performance
Minimum bending radius: 6x cable diameter.
Impact resistance: AG3 High severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to EN 50618.
Water resistance: AD6 waves.

Installation conditions
Open Air.
In conduit on a bulkhead.
On a bulkhead.

STANDARDS / COMPLIANCE

According to
IEC 60092-353

Standards and approvals
ABS / DNV-GL / BUREAU VERITAS / LLOYD'S REGISTER / CE / RoHS

TOXFREE® MARINE XOxZ1-K (AS) XOxTCuZ1-K (AS)

The marine armoured instrumentation cable.

ACCORDING TO: IEC 60092-376

APPLICATION

The Toxfree Marine XOxZ1-K (AS) and XOxTCuZ1-K (AS) cable with halogen frees is a safety instrumentation and telecommunication cable. In case of fire, it does not emit toxic or corrosive gases, thereby protecting public health and avoiding any possible damage to electronic equipment. For this reason, its use is recommended in marine applications.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to IEC 60228 (conductor resistance according to IEC 60092-376, Table 1).

Insulation
Cross-linked polyethylene type HF XLPE 90°C according to IEC 60092-360.
The standard identification of insulated conductors is the following:
Pair White + Blue (each core numbered with the pair number)
Other colours available on request.

Assembly of cores
Stranded conductors in pairs.

Individual screen (XO3Z1-K and XO3TCuZ1-K)
Aluminium + polyester tape with 100% coverage + tinned copper drain wire applied over the assembled cores.

Assembly of pairs
Cabled in concentric layers.

Collective screen
Aluminium + polyester tape with 100% coverage + tinned copper drain wire applied over the assembled pairs
Only for XO2TCuZ1-K (AS) cables, the tinned copper drain wire will be removed, and the aluminium side of the tape will put in contact with the braid armour.

Braid armour (XO2TCuZ1-K and XO3TCuZ1-K)
Tinned copper wire braid armour over the collective screen.

Outer sheath
Low smoke halogen free thermoplastic polyolefin, type SHF1 according to IEC 60092-360.
Grey colour.

CHARACTERISTICS

Electrical performance
Instrumentation: 150/250 V.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Minimum service temperature: -40°C (fixed installations).
Lowest installation temperature: -15°C

Fire performance
Flame non-propagation according to IEC 60332-1.
Fire non-propagation according to IEC 60332-3-22.
Low smoke halogen free according to IEC 60754-1.
Low corrosive gases emission according to IEC 60754-2.
Low smoke emission according to IEC 61034:
light transmittance > 60%.

Mechanical performance
Minimum bending radius:
Ø ≤ 25mm 4x cable diameter.
Ø > 25mm 6x cable diameter.
Impact resistance: AG3 high severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to EN 50618.
Water resistance: AD6 waves.

Installation conditions
Open Air.
In conduit on a bulkhead.
On a bulkhead.

STANDARDS / COMPLIANCE

According to
IEC 60092-376

Standards and approvals
ABS / DNV-GL / BUREAU VERITAS / CE / RoHS

TOXFREE® MARINE PLUS XOxZ1-K (AS+) XOxTCuZ1-K (AS+)

The marine armoured instrumentation cable.

ACCORDING TO: IEC 60092-376

APPLICATION

The Toxfree Marine Plus XOxZ1-K (AS+) and XOxTCuZ1-K (AS+) cable with halogen frees is a safety instrumentation and telecommunication cable.
It is fire resistant and specially designed to continue transmitting information/data in case of fire. For this reason, it is recommended for use in public places and marine applications.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 5 (flexible) according to IEC 60228 (conductor resistance according to IEC 60092-376, Table 1).

Insulation
Mica Tape + Cross-linked polyethylene type HF XLPE 90°C according to IEC 60092-360.
The standard identification of insulated conductors is the following:
Pair White + Blue (each core numbered with the pair number)
Other colours available on request.

Assembly of cores
Stranded conductors in pairs.

Individual screen (XO3Z1-K and XO3TCuZ1-K)
Aluminium + polyester tape with 100% coverage + tinned copper drain wire applied over the assembled cores.

Assembly of pairs
Cabled in concentric layers.

Collective screen
Aluminium + polyester tape with 100% coverage + tinned copper drain wire applied over the assembled pairs.
Only for XO2TCuZ1-K (AS+) cables, the tinned copper drain wire will be removed, and the aluminium side of the tape will put in contact with the braid armour.

Braid armour (XO2TCuZ1-K and XO3TCuZ1-K)
Tinned copper wire braid armour over the collective screen.

Outer sheath
Low smoke halogen free thermoplastic polyolefin, type SHF1 according to IEC 60092-360.
Orange colour, non-toxic, fire retardant and fire resistant.

CHARACTERISTICS

Electrical performance
Instrumentation: 150/250 V.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Minimum service temperature: -40°C (fixed installations).
Lowest installation temperature: -15°C

Fire performance
Flame non-propagation according to IEC 60332-1.
Fire non-propagation according to IEC 60332-3-22.
Fire resistant according to IEC 60331-21 (90 minutes at 750°C).
Low smoke halogen free according to IEC 60754-1.
Low corrosive gases emission according to IEC 60754-2.
Low smoke emission according to IEC 61034:
light transmittance > 60%.

Mechanical performance
Minimum bending radius:
Ø ≤ 25mm 4x cable diameter.
Ø > 25mm 6x cable diameter.
Impact resistance: AG3 high severity.

Environmental performance
Chemical & Oil resistance: Acceptable.
UV Resistant according to EN 50618.
Water resistance: AD6 waves.

Installation conditions
Open Air.
In conduit on a bulkhead.
On a bulkhead.

STANDARDS / COMPLIANCE

According to
IEC 60092-376

Standards and approvals
ABS / DNV-GL / BUREAU VERITAS / CE / RoHS

MEDIUM VOLTAGE **CABLES**

X-VOLT® AL (-OL/-2OL) RHZ1

Medium Voltage aluminium cable, XLPE insulation.

ACCORDING TO: IEC 60502-2

CPR COMPLIANT
Construction Products Regulation
EN 50575

F_{ca}

APPLICATION

X-VOLT® RHZ1 is a Medium Voltage aluminium cable halogen-free for fixed installations.
Suitable for transport and distribution of electric power in medium voltage networks.

CONSTRUCTION

Conductor
Aluminium class 2 according to EN 60228 and IEC 60228.
Optionally, with longitudinal water tightness (cable type -2OL).
Conductor screen
Screen over the conductor, made of thermosetting semiconductor material.
Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-2, natural colour.
Cross linked in catenary line with nitrogen atmosphere through a triple layer extrusion process.
Insulation screen
Screen over the insulation, made of thermosetting and strippable semiconductor material.
Metallic screen
Copper wires and copper tape screen, with a minimum cross-section of 16mm^2.
Longitudinal water tightness
Hygroscopic tape completely covering the screen (cable type –OL and -2OL).
Outer sheath
Polyethylene type ST7 according to IEC 60502-2.
Red colour.

CHARACTERISTICS

Electrical performance
Medium Voltage: 3,6/6 (7,2) kV
6/10 (12) kV
8,7/15 (17,5) kV
12/20 (24) kV
18/30 (36) kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Minimum service temperature: -15°C.

Fire performance
Reaction to fire CPR: F_{ca} according to EN 50575.
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.

Mechanical performance
Minimum bending radius: 15x cable diameter.
Abrasion resistant.
Tear resistant.

Environmental performance
UV Resistant according to UNE 211605.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-2

Standards and approvals
AENOR (except 3,6/6 (7,2) kV) / RETIE (18/30 (36) kV)

CPR (Construction Products Regulation)
F_{ca}

X-VOLT® AL (-OL/-2OL) RHZ1 (S)

Medium Voltage aluminium cable, XLPE insulation.

ACCORDING TO: IEC 60502-2 / UNE-HD 620-10E (type 10E-4)

APPLICATION

X-VOLT® RHZ1 (S) is a Medium Voltage aluminium cable halogen-free and no flame propagation for fixed installations.
Suitable for transport and distribution of electric power in medium voltage networks.

CONSTRUCTION

Conductor
Aluminium class 2 according to EN 60228 and IEC 60228.
Optionally, with longitudinal water tightness (cable type -2OL).

Conductor screen
Screen over the conductor, made of thermosetting semiconductor material.

Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-2 and type DIX3 according to HD 620-1, natural colour.
Cross linked in catenary line with nitrogen atmosphere through a triple layer extrusion process.

Insulation screen
Screen over the insulation, made of thermosetting and strippable semiconductor material.

Metallic screen
Copper wires and copper tape screen, with a minimum cross-section of 16mm^2.

Longitudinal water tightness
Hygroscopic tape completely covering the screen (cable type –OL and -2OL).

Outer sheath
Polyolefin type ST7 according to IEC 60502-2 and type DMZ2 according to HD 620-1.
Red colour with two grey stripes.
Other colours under request.

CHARACTERISTICS

Electrical performance
Medium Voltage: 6/10 (12) kV
8,7/15 (17,5) kV
12/20 (24) kV
18/30 (36) kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Minimum service temperature: -15°C.

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: Eca according to EN 50575.
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.

Mechanical performance
Minimum bending radius: 15x cable diameter.
Abrasion resistant.
Tear resistant.

Environmental performance
UV Resistant according to UNE 211605.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-2 / UNE-HD 620-10E (type 10E-4)

X-VOLT® AL (-OL/-2OL) RHZ1 (AS)

Medium Voltage aluminium cable, XLPE insulation.

ACCORDING TO: IEC 60502-2 / UNE-HD 620-10E (type 10E-5)

APPLICATION

X-VOLT® RHZ1 (AS) is a Medium Voltage aluminium cable halogen-free with low smoke emission and no fire propagation properties for fixed installations.
Suitable for transport and distribution of electric power in medium voltage networks.

CONSTRUCTION

Conductor
Aluminium class 2 according to EN 60228 and IEC 60228.
Optionally, with longitudinal water tightness (cable type -2OL).

Conductor screen
Screen over the conductor, made of thermosetting semiconductor material.

Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-2 and type DIX3 according to HD 620-1, natural colour.
Cross linked in catenary line with nitrogen atmosphere through a triple layer extrusion process.

Insulation screen
Screen over the insulation, made of thermosetting and strippable semiconductor material.

Metallic screen
Copper wires and copper tape screen, with a minimum cross-section of 16mm^2.

Longitudinal water tightness
Hygroscopic tape completely covering the screen (cable type –OL and -2OL).

Filler
Additional fireproof polyolefin layer, halogen free.

Outer sheath
Polyolefin type ST7 according to IEC 60502-2 and type DMZ2 according to HD 620-1.
Red colour with two green stripes.
Other colours under request.

CHARACTERISTICS

Electrical performance
Medium Voltage: 6/10 (12) kV
12/20 (24) kV
18/30 (36) kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s)
Minimum service temperature: -15°C.

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 50399.
Reaction to fire CPR: C_{ca}-s1b,d2,a1 according to EN 50575
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 60%.

Mechanical performance
Minimum bending radius: 15x cable diameter.
Abrasion resistant.
Tear resistant.

Environmental performance
UV Resistant according to UNE 211605.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-2 / UNE-HD 620-10E (type 10E-5)

Standards and approvals
AENOR

CPR (Construction Products Regulation)
C_{ca}-s1b,d2,a1

X-VOLT® CU (-OL/-2OL) RHZ1

Medium Voltage copper cable, XLPE insulation.

ACCORDING TO: IEC 60502-2

CPR COMPLIANT
Construction Products Regulation
EN 50575

F_{ca}

APPLICATION

X-VOLT® RHZ1 is a Medium Voltage copper cable halogen-free for fixed installations.
Suitable for transport and distribution of electric power in medium voltage networks.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 2 according to EN 60228 and IEC 60228.
Optionally, with longitudinal water tightness (cable type -2OL).
Conductor screen
Screen over the conductor, made of thermosetting semiconductor material.
Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-2, natural colour.
Cross linked in catenary line with nitrogen atmosphere through a triple layer extrusion process.
Insulation screen
Screen over the insulation, made of thermosetting and strippable semiconductor material.
Metallic screen
Copper wires and copper tape screen, with a minimum cross-section of 16mm^2.
Longitudinal water tightness
Hygroscopic tape completely covering the screen (cable type –OL and -2OL).
Outer sheath
Polyethylene type ST7 according to IEC 60502-2.
Red colour.

CHARACTERISTICS

Electrical performance
Medium Voltage: 6/10 (12) kV
8,7/15 (17,5) kV
12/20 (24) kV
18/30 (36) kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s)
Minimum service temperature: -15°C.

Fire performance
Reaction to fire CPR: F_{ca} according to EN 50575.
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.

Mechanical performance
Minimum bending radius: 15x cable diameter.
Abrasion resistant.
Tear resistant.

Environmental performance
UV Resistant according to UNE 211605.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-2

Standards and approvals
AENOR

CPR (Construction Products Regulation)
F_{ca}

X-VOLT® CU (-OL/-2OL) RHZ1 (S)

Medium Voltage copper cable, XLPE insulation.

ACCORDING TO: IEC 60502-2 / UNE-HD 620-10E (type 10E-4)

APPLICATION

X-VOLT® RHZ1 (S) is a Medium Voltage copper cable halogen-free and no flame propagation properties for fixed installations.
Suitable for transport and distribution of electric power in medium voltage networks.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 2 according to EN 60228 and IEC 60228.
Optionally, with longitudinal water tightness (cable type -2OL).

Conductor screen
Screen over the conductor, made of thermosetting semiconductor material.

Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-2 and type DIX3 according to HD 620-1, natural colour.
Cross linked in catenary line with nitrogen atmosphere through a triple layer extrusion process.

Insulation screen
Screen over the insulation, made of thermosetting and strippable semiconductor material.

Metallic screen
Copper wires and copper tape screen, with a minimum cross-section of 16mm^2.

Longitudinal water tightness
Hygroscopic tape completely covering the screen (cable type –OL and -2OL).

Filling
Additional fireproof polyolefin layer, halogen free.

Outer sheath
Polyolefin type ST7 according to IEC 60502-2 and type DMZ2 according to HD 620-1.
Red colour with two grey stripes.
Other colours under request.

CHARACTERISTICS

Electrical performance
Medium Voltage: 6/10 (12) kV
8,7/15 (17,5) kV
12/20 (24) kV
18/30 (36) kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s)
Minimum service temperature: -15°C.

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Reaction to fire CPR: E_{ca} according to EN 50575
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.

Mechanical performance
Minimum bending radius: 15x cable diameter.
Abrasion resistant.
Tear resistant.

Environmental performance
UV Resistant according to UNE 211605.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-2 / UNE-HD 620-10E (type 10E-4)

Standards and approvals
AENOR

CPR (Construction Products Regulation)
E_{ca}

X-VOLT® CU (-OL/-2OL) RHZ1 (AS)

Medium Voltage copper cable, XLPE insulation.

ACCORDING TO: IEC 60502-2

APPLICATION

X-VOLT® RHZ1 (AS) is a Medium Voltage copper cable halogen-free with low smoke emission and no fire propagation properties for fixed installations.
Suitable for transport and distribution of electric power in medium voltage networks.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 2 according to EN 60228 and IEC 60228.
Optionally, with longitudinal water tightness (cable type -2OL).

Conductor screen
Screen over the conductor, made of thermosetting semiconductor material.

Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-2, natural colour.
Cross linked in catenary line with nitrogen atmosphere through a triple layer extrusion process.

Insulation screen
Screen over the insulation, made of thermosetting and strippable semiconductor material.

Metallic screen
Copper wires and copper tape screen, with a minimum cross-section of 16mm^2.

Longitudinal water tightness
Hygroscopic tape completely covering the screen (cable type –OL and -2OL).

Filling
Additional fireproof polyolefin layer, halogen free.

Outer sheath
Polyolefin type ST7 according to IEC 60502-2.
Red colour with two green stripes.
Other colours under request.

CHARACTERISTICS

Electrical performance
Medium Voltage: 6/10 (12) kV
8,7/15 (17,5) kV
12/20 (24) kV
18/30 (36) kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Minimum service temperature: -15°C.

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 50399.
Reaction to fire CPR: C_{ca}-s1b, d2, a1 according to EN 50575.
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 60%.

Mechanical performance
Minimum bending radius: 15x cable diameter.
Abrasion resistant.
Tear resistant.

Environmental performance
UV Resistant according to UNE 211605.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-2

Standards and approvals
AENOR

CPR (Construction Products Regulation)
C_{ca}-s1b, d2, a1

X-VOLT® AL RHZ1-OL

Medium Voltage aluminium cable, XLPE insulation, halogen free, in triplex formation.

ACCORDING TO: BS 7870-4.10 / IEC 60502-2

APPLICATION

X-VOLT® RHZ1-OL is a Medium Voltage aluminium cables for transmission and distribution of electricity. Halogen free.

- Distribution networks.

CONSTRUCTION

Conductor
Aluminium class 2 according to EN 60228 and IEC 60228.

Conductor screen
Screen over the conductor, made of thermosetting semiconductor material.

Insulation
Cross-linked polyethylene type DIX3 according to BS 7870-4.10 and type XLPE according to IEC 60502-2, natural colour.
Cross linked in catenary line with nitrogen atmosphere through a triple layer extrusion process.

Insulation screen
Screen over the insulation, made of thermosetting non-strippable semiconductor material.

Metallic screen
Screen of copper wires and copper tape, applied over the outer semiconducting layer, with a minimum cross-section of 16 mm^2.

Water blocking
Hygroscopic tape applied over the metallic screen.

Outer sheath
Polyolefin type DMP5 according to BS 74870-4.10 and type ST7 according to IEC 60502-2.
Red colour.

Assembly of single-core cables
Three stranded single-core cables in triplex formation.

CHARACTERISTICS

Electrical performance
Medium voltage: 6,35/11 (12) kV.
19,33 (36) kV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Minimum service temperature: -15°C.

Fire performance
Halogen free: according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.

Mechanical performance
Minimum bending radius: 15x cable diameter.
Abrasion resistant.
Tear resistant.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
BS 7870-4.10 / IEC 60502-2

X-VOLT® AL
RH5Z1-OL/-2OL

Medium voltage aluminium cable, XLPE insulation, halogen free with longitudinal aluminium strip screen.

ACCORDING TO: UNE 211620 / ENEL Global Standard GSC 001

APPLICATION

Aluminium cable for fixed installations. Halogen free.
Suitable for transport and distribution of electric power in medium voltage networks.
This cable is suitable for indoor, outdoor and buried installations.

CONSTRUCTION

Conductor
Aluminium class 2 according to EN 60228 and IEC 60228.
Optionally, with longitudinal water tightness (cable type -2OL).

Conductor screen
Screen over the conductor, made of thermosetting semiconductor material.

Insulation
Cross-linked polyethylene, type DIX-3 according to HD 620-1, natural colour.
Cross-linked in catenary line with nitrogen atmosphere.

Insulation screen
Screen over the insulation, made of thermosetting semiconductor material. Strippable.

Water blocking
Semi-conducting swellable tape under metallic screen.

Metallic screen
Aluminium tape of thickness 0,3 mm longitudinally applied on the water-blocking. The tape is overlapped and bonded 5 mm minimum. The screen is longitudinally and continually fixed in the outer sheath.

Outer sheath
Polyethylene halogen free, type DMZ1 according to HD 620-1. Red colour.

CHARACTERISTICS

Electrical performance
Medium voltage: 12/20 (24) kV
18/30 (36) kV

Thermal performance
Maximum conductor temperature: 90°C.
Minimum service temperature: -15°C.
Minimum installation temperature: 0 °C.
Maximum short-circuit temperature: 250°C (max 5 s).

Fire performance
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.

Mechanical performance
Minimum bending radius permanently installed: 15x cable diameter.
Minimum bending radius while installation: 20x cable diameter.
Abrasion resistant.

Environmental performance
UV Resistant according to UNE 211605.
Water resistance: AD8 Submersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
UNE 211620 / ENEL Global Standard GSC001

Standards and approvals
AENOR / RETIE (18/30 (36) kV)

X-VOLT® AL (-OL)

HEPRZ1

Medium Voltage aluminium cable, HEPR insulation.

ACCORDING TO: UNE-HD 620-9E (type 9E-1) / NI 56.43.01

CPR COMPLIANT
Construction Products Regulation
EN 50575

F_{ca}

APPLICATION

X-VOLT® HEPRZ1 Al is a Medium Voltage aluminium cable for the transmission and distribution of electricity.

CONSTRUCTION

Conductor
Aluminium class 2 according to EN 60228 and IEC 60228.

Conductor screen
Screen over the conductor, made of thermosetting semiconductor material.

Insulation
High module ethylene propylene rubber (HEPR) type DIH-2 according to HD 620-1, in dry atmosphere catenary tube, through a triple layer extrusion process.

Insulation screen
Screen over the insulation, made of thermosetting and strippable semiconductor material.

Metallic screen
Screen of copper wires and copper tape, with a minimum cross-section of 16mm^2.

Separator
Polyester tape completely covering the screen to facilitate the stripping of the outer sheath.
Optionally, substituted by hygroscopic tape (cables with longitudinal water tightness, type -OL).

Outer sheath
Polyolefin, type DMZ1 according to HD 620-1.
Red colour.

CHARACTERISTICS

Electrical performance
Medium Voltage: 12/20 (24) kV
18/30 (36) kV

Thermal performance
Maximum conductor temperature: 105°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Minimum service temperature: -15°C.

Fire performance
Reaction to fire CPR: F_{ca} according to EN 50575.
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.

Mechanical performance
Minimum bending radius: 15x cable diameter.
Abrasion resistant.
Tear resistant.

Environmental performance
UV Resistant according to UNE 211605.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
UNE-HD 620-9E (type 9E-1) / NI 56.43.01

Standards and approvals
AENOR

CPR (Construction Products Regulation)
F_{ca}

X-VOLT® Al

HEPRZ1 (S)

Medium Voltage aluminium cable, HEPR insulation.

ACCORDING TO: UNE-HD 620-9E (type 9E-1)/ IEC 60502-2.

APPLICATION

X-VOLT® HEPRZ1 Cu/Al is a Medium Voltage aluminium cable for the transmission and distribution of electricity.

X-VOLT HEPRZ1 Cu/Al (S) configuration is halogen free with low smoke emission and no flame propagation properties. X-VOLT HEPRZ1 Al (AS) configuration is halogen-free with low smoke emission and no fire propagation properties.

CONSTRUCTION

Conductor

Aluminium electrolytic annealed conductor, class 2, according to EN 60228 and IEC 60228.

Internal semiconductor

Screen over the conductor, made of thermosetting semiconductor material.

Insulation

High module ethylene propylene rubber (HEPR) type DIH-2 according to HD 620-1, in dry atmosphere catenary tube, through a triple layer extrusion process. Lead-Free version available on request.

External semiconductor

Screen over the insulation, made of thermosetting and strippable semiconductor material.

Metallic screen

Screen of copper wires and copper tape, with a minimum cross-section of 16mm2.

Separator

Polyester tape completely covering the screen to facilitate the stripping of the outer sheath. Optionally, substituted by hygroscopic tape (cables with longitudinal sealing, type -OL and -2OL).

Outer sheath

Fire-retardant and halogen-free polyolefin outer sheath, red colour with two grey bands, type DMZ2 according to HD 620-1.

CHARACTERISTICS

Electrical performance

Medium Voltage 12/20 kV and 18/30 kV.

Thermal performance

Maximum service temperature: 105°C.

Maximum short-circuit temperature: 250°C (max 5 s).

Minimum service temperature: -30°C.

Fire performance

Flame non-propagation according to EN 60332-1.

Halogen free: according to EN 50267, EN 60754 and IEC 60754.

Low smoke emission according to EN 61034, EN 60754-2 and IEC 60754-2.

Reaction to fire CPR: E_{ca} , according to EN 50575.

Mechanical performance

Minimum bending radius: 15 x cable diameter.

Abrasion resistant.

Tear resistant.

Environmental performance

UV Resistant according to UNE 211605.

STANDARDS / COMPLIANCE

Based on

UNE-HD 620-9E (type 9E-1)/ IEC 60502-2.

Standards and approvals

AENOR

CPR (Construction Products Regulation)

E_{ca}

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X-VOLT® AL (-OL)
HEPRZ1 (AS)

Medium Voltage aluminium cable, HEPR insulation.

ACCORDING TO: UNE-HD 620-9E (type 9E-5) / NI 56.43.01

CPR COMPLIANT
Construction Products Regulation
EN 50575

C_{ca}

APPLICATION

X-VOLT® HEPRZ1 (AS) Al is a Medium Voltage aluminium cable halogen-free with low smoke emission and no fire propagation properties for the transmission and distribution of electricity.

CONSTRUCTION

Conductor
Aluminium class 2 according to EN 60228 and IEC 60228.
Conductor screen
Screen over the conductor, made of thermosetting semiconductor material.
Insulation
High module ethylene propylene rubber (HEPR) type DIH-2 according to HD 620-1, in dry atmosphere catenary tube, through a triple layer extrusion process.
Insulation screen
Screen over the insulation, made of thermosetting and strippable semiconductor material.
Metallic screen
Screen of copper wires and copper tape, with a minimum cross-section of 16mm^2.
Separator
Polyester tape completely covering the screen to facilitate the stripping of the outer sheath.
Optionally, substituted by hygroscopic tape (cables with longitudinal sealing, type -OL).
Filling
Additional fireproof polyolefin layer, halogen free.
Outer sheath
Polyolefin, halogen free type DMZ2 according to HD 620-1.
Red colour with two green stripes.

CHARACTERISTICS

Electrical performance
Medium Voltage: 12/20 (24) kV
18/30 (36) kV

Thermal performance
Maximum conductor temperature: 105°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Minimum service temperature: -15°C.

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non propagation: according to EN 50399.
Reaction to fire CPR: C_{ca}-s1b, d2, a1 according to EN 50575.
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 60%.

Mechanical performance
Minimum bending radius: 15x cable diameter.
Abrasion resistant.
Tear resistant.

Environmental performance
UV Resistant according to UNE 211605.

STANDARDS / COMPLIANCE

According to
UNE-HD 620-9E (type 9E-5) / NI 56.43.01

Standards and approvals
AENOR

CPR (Construction Products Regulation)
C_{ca}-s1b, d2, a1

X-VOLT®
RHVhMVh 3x Cu +H1

Medium Voltage copper cable, XLPE insulation and hydrocarbon resistant.

ACCORDING TO: IEC 60502-2. / Repsol ED-P-10.01-01

APPLICATION

Medium Voltage copper cable for the transmission and distribution of electricity. This cable is recommended for installations where there may be a risk of oils and/or hydrocarbon type chemical agents coming into contact with the cable.

- Distribution networks.

CONSTRUCTION

Conductor
Electrolytic annealed copper, class 2 according to EN 60228 and IEC 60228.

Conductor screen
Screen over the conductor, made of thermosetting semiconductor material.

Insulation
Cross-linked polyethylene type XLPE according to IEC 60502-2, in dry atmosphere catenary tube, through a triple layer extrusion process.

Insulation screen
Screen over the insulation, made of thermosetting and strippable semiconductor material.

Cores identification
The cores are identified with a tape placed along the cable between the external semiconductor and the metallic screen.
Colours are brown, green and yellow.

Metallic screen
Metallic screen made of copper tape. It consists in two copper tapes of 0,1 mm of thickness placed helicoidally and overlapped (H1 screen) over the outer semi-conducting screen.

Assembly of cores
The three cores are assembled helicoidally with the metallic screens in touch.

Separation sheath
PVC type ST2 according to IEC 60502-2.
The special compound gives a high level of resistance to hydrocarbons and mineral oils.

Armour
Galvanized steel wire wrapped helicoidally around the cable and fixed with a counter-wound metal tape.

Outer sheath
PVC type ST2 according to IEC 60502-2.
The special compound gives a high level of resistance to hydrocarbons and mineral oils.
Red colour.

CHARACTERISTICS

Electrical performance
Medium voltage: 3,6/6 (7,2) kV
6/10 (12) kV
8,7/15 (17,5) kV
12/20 (24) kV
18/30 (36) kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Minimum service temperature: -15°C.

Fire performance
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3.
Reduced halogen emission. Chlorine < 15%.

Mechanical performance
Minimum bending radius: 15x cable diameter.
Abrasion resistant.
Tear resistant.

Environmental performance
Chemical resistance: Excellent.
Oil resistant: according to UIC 895 OR.
Hydrocarbon resistant: according to UIC 895 OR.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
IEC 60502-2 / Repsol ED-P-10.01-01

X-VOLT® FR-N20XA8E-AR

Medium Voltage aluminium cable, XLPE insulation, halogen free.

ACCORDING TO: NF C 33-226

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

X-VOLT® FR-N20XA8E-AR Medium Voltage aluminium cables for the electricity transmission and distribution. Halogen free.
· Distribution networks.

CONSTRUCTION

Conductor
Aluminium, class 2, according to NF-EN 60228 and IEC 60228.

Conductor screen
Screen over the conductor, made of thermosetting semiconductor material.

Insulation
Cross-linked polyethylene (XLPE).

Insulation screen
Screen over the insulation, made of thermosetting and strippable semiconductor material.

Longitudinal sealing
Swelling powder.

Metallic screen
Longitudinal aluminium foil with polymer laminate bonded to the outer sheath.

Outer sheath
Polyolefin.
Black colour.

CHARACTERISTICS

Electrical performance
Medium Voltage: 12/20 (24) kV
18/30 (36) kV

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max 5 s)
Minimum service temperature: -15°C.

Fire performance
Flame non-propagation according to NF C 32-070 C2.
Reaction to fire CPR: E_{ca} according to EN 50575.

Mechanical performance
Minimum bending radius: 13x cable diameter.
Impact resistance: AG4 Extra High Severity (≤ 20J).

Environmental performance
UV Resistant according to NF EN 50483.
Water resistance: AD8 Submersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

According to
NF C 33-226

Standards and approvals
CE / RoHS / EDF

CPR (Construction Products Regulation)
E_{ca}

X-VOLT® Al TSLF

Cable for fixed installations.

BASED ON: HD 620-10K

CPR COMPLIANT
Construction Products Regulation
EN 50575

E_{ca}

APPLICATION

X-VOLT® TSLF is a halogen free cable for fixed installations.
Suitable for transport and distribution of electric power in medium voltage networks.
This cable is suitable for indoor, outdoor and buried installations.

CONSTRUCTION

Conductor
Aluminium, class 2 according to EN 60228 and IEC 60228.
Hygroscopic tapes applied to achieve longitudinal watertightness on the conductor.
Conductor screen
Cross-linked semiconductor screen applied over conductor in a triple-extrusion process.
Insulation
Cross-linked polyethylene insulation type DIX8 according to HD 620-1; natural colour.
Cross-linked in catenary line with nitrogen atmosphere.
Insulation screen
Cross-linked semiconductor screen applied over insulation in a triple-extrusion process. Bonded to the insulation layer.
Longitudinal water-blocking
Hygroscopic tape completely covering the screen.
Metallic screen
Metallic screen with copper wires, applied over the semi-conducting swellable tape.
Radial water-blocking barrier
Made up of an aluminium foil/polymer laminate bonded to the outer sheath.
Outer sheath
Polyethylene type DMP 17 according to HD 620-1 (with conductive covering).
Black colour.

CHARACTERISTICS

Electrical performance
Maximum voltage: 12kV, 24kV and 36kV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -15°C.

Fire performance
Reaction to fire CPR: E_{ca} according to EN 50575.
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.

Mechanical performance
Minimum bending radius: 15x cable diameter.
Abrasion resistant.
Tear resistant.

Environmental performance
Water resistance: AD8 Submersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

Based on
HD 620-10K

CPR (Construction Products Regulation)
E_{ca}


78%
EV

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Leonardo Da Vinci, nr 1
08191 Rubí (Barcelona) Spain

Tel. +34 93 586 21 68
Tel. +34 93 586 21 69
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