MARINE & OFFSHORE

Specialized Marine and Offshore cable solutions

General Index

A flexible cable solutions provider

A flexible cable solutions provider

Top Cable is committed to providing electric cables of the highest standards to our clients worldwide. The company was founded in 1987 and has grown from a local Spanish cable manufacturer to an international leader in cable technology, with offices and warehouses located around the globe.

Our company strongly believes in selecting the best raw materials, adopting rigorous control systems and employing the latest technology in all our production.

We manufacture a wide range of cables: from control cables for specialized applications to larger power cables for medium and high voltage applications in various industries. We supply cables for marine, offshore, construction projects, railway, mining, aeronautical, military, OEM's and renewable energy plants. Conductors can be manufactured in both copper and aluminium with insulation materials varying depending on the application.

Quality cables manufacturer

Top Cable

Quality cables manufacturer

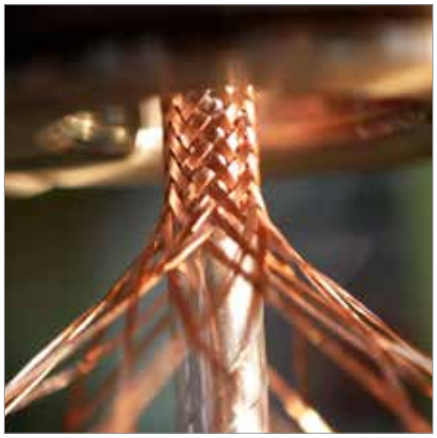
All Top Cable technology is focused on the development and production of the highest quality electric cables. Our cables are certified by internationally recognized organizations around the world.

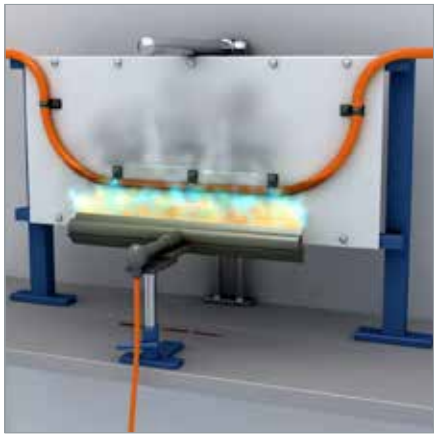
In order to maintain this standard we only work with the best certified suppliers of raw materials.

Our technical personnel are professionally trained and assure the highest level of quality in the cable production process.

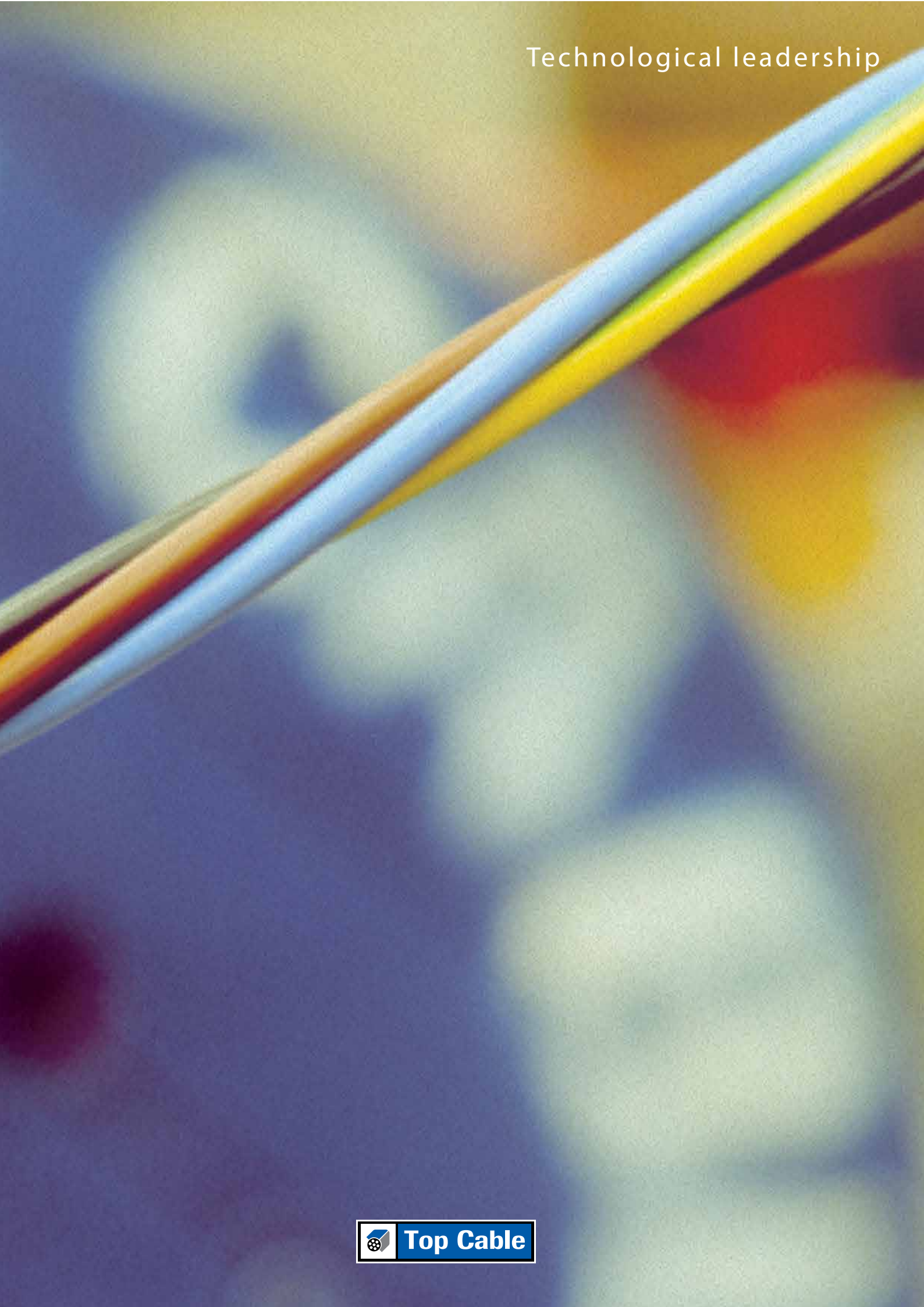
The quality guarantee systems, approved according to the ISO 9001 standard are applied during all the manufacturing stages and guarantee that the cables will work perfectly.

Recycling is an important part of our operation both in the processes and the materials that we use. We are commited to our social goals and a sustainable economic development.





Technological leadership



Top Cable

Technological leadership

We have four modern factories located around Barcelona, Spain. The Top Cable range of products is manufactured using the most advanced processing technology and an expert human team. A modern centre of investigation, development and innovation allow us to design and produce the highest quality cables.

Constant innovation of materials and processes for the manufacture of cables has allowed Top Cable to maintain the technological leadership that sets us apart.

Service & added value oriented

Top Cable

Service & added value oriented

Top Cable values all our clients and therefore we adhere to the philosophy of prompt customer service. To further instill this philosophy of value added service, we have invested in a state of the art logistics centre with the latest warehouse management system. This sophisticated infrastructure enables our clients to save on storage, distribution and administration costs as we provide onsite deliveries to third parties.

Selecting the best transport companies for each destination as well as the type of shipment guarantees an extension of our service to destination and further a field. A worldwide computing platform coordinates all the logistics activities in real time, allowing us to meet the tightest deadlines.

Our staff are dedicated to providing a professional worldwide supply of cables with efficiency and a friendly service. This is the philosophy on which the company is based: quality and service.


Top Cable

Top Cable Toxfree
Marine range

General standards for marine cables

Top Cable

General standards for marine cables

Cables on board ships are often exposed to extreme conditions. The construction and materials used in Top Cable Toxfree Marine cables are specifically designed to meet these demanding environments.

CONDUCTOR

Electrolytic annealed copper. Our conductors are flexible class 5 according to IEC 60228 saving time, resources and costs in the installation process.

INSULATION

Cross-linked polyethylene insulation, type LSZH XLPE-90°C according to IEC 60092-360 that has excellent mechanical and electrical properties and can withstand 250°C temperature in short circuit circumstances.

SHEATHING MATERIAL

Thermoplastic polyolefin type SHF1 according to IEC 60092-360. This material is halogen free, low smoke, non-corrosive and low opacity smoke emission and no fire and flame propagation. This makes these cables specially suitable for installation in ships for power, lighting and control and data circuits.

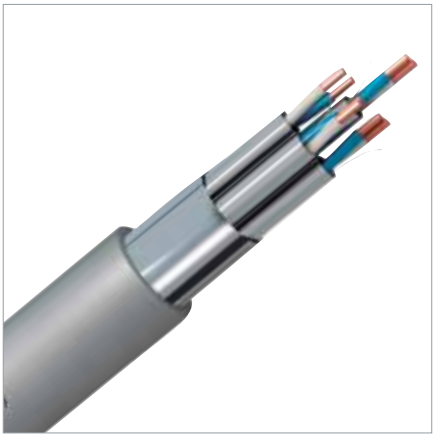
METRE BY METRE MARKING

Ensures the ease of tracking and replacement of cables.

STANDARDS

The standards applicable for marine installations are based on:

- Marine Power and control cables 0,6/1kV: IEC 60092-353
- Marine Instrumentation cables 250V: IEC 60092-376
- Marine Medium Voltage cables: IEC 60092-354



Top Cable Toxfree Marine range

Top Cable

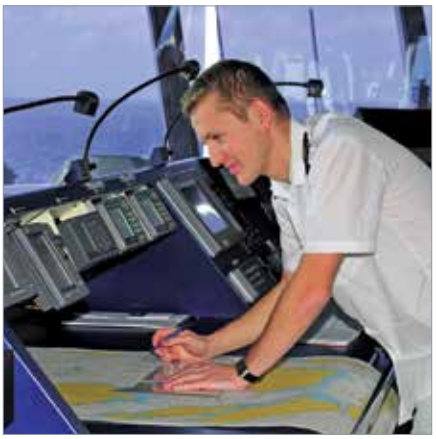
Top Cable Toxfree Marine range

Our portfolio for marine applications includes a full range of power, control and instrumentation cables. All of them available in armoured and unarmoured versions and also according to the fire performances: flame and fire retardant, and fire resistant. In this way, we cover almost all cable needs in marine installations.

All Toxfree Marine cables are designed and produced according to international standards. Our choice of materials and constructions ensure that the cables are resistant to vibration and to most chemicals and hydrocarbons, which are commonly used on board ships. Top Cable's range fully complies with the requirements specified in the IEC 60092 series of standards.

Marine cables designation

X	Cross-linked polyethylene insulation, type HF XLPE-90°C
TCu	Copper braid armour
Z1	Themoplastic Polyolefin. Low smoke, halogen free and flame retardant compound
K	Flexible class 5 conductors
(AS)	Flame retardant IEC 60332-3-22 (Category A)
(AS+)	Flame retardant IEC 60332-3-22 (Category A). Fire resistant IEC 60331-21
01	Individual (per pairs) Aluminium / Polyester screen
02	Overall (global) Aluminium / Polyester screen
03	Individual (per pairs) and overall (global) Aluminium / Polyester screen
WB	With bedding



General summary chart

TOP CABLE TOXFREE MARINE CABLES

	APPLICATION		FIRE PERFORMANCE		SCREEN			SCREEN/ ARMOUR
	Power	Instrumen-tation	Fire	Fire Resistant	Individual	Overall	Individual and Overall	Copper Braid
	0,6/1kV	250V	(AS)	(AS+)	01 (Al/polyester)	02 (Al/polyester)	03 (Al/polyester)	TCu
TOXFREE MARINE XZ1-K (AS)	✓		✓					
TOXFREE MARINE XTCuZ1-K (AS)	✓		✓			✓		✓
TOXFREE MARINE PLUS XTCuZ1-K (AS) WB	✓		✓			✓		✓
TOXFREE MARINE PLUS XZ1-K (AS+)	✓			✓				
TOXFREE MARINE PLUS XTCuZ1-K (AS+)	✓			✓		✓		✓
TOXFREE MARINE PLUS XTCuZ1-K (AS+) WB	✓			✓		✓		✓
TOXFREE MARINE XO1Z1-K (AS)		✓	✓		✓			
TOXFREE MARINE XO2Z1-K (AS)		✓	✓			✓		
TOXFREE MARINE XO3Z1-K (AS)		✓	✓				✓	
TOXFREE MARINE XO1TCuZ1-K (AS)		✓	✓		✓			✓
TOXFREE MARINE XO2TCuZ1-K (AS)		✓	✓			✓		✓
TOXFREE MARINE XO3TCuZ1-K (AS)		✓	✓				✓	✓
TOXFREE MARINE PLUS XO1Z1-K (AS+)		✓		✓	✓			
TOXFREE MARINE PLUS XO2Z1-K (AS+)		✓		✓		✓		
TOXFREE MARINE PLUS XO3Z1-K (AS+)		✓		✓			✓	
TOXFREE MARINE PLUS XO1TCuZ1-K (AS+)		✓		✓	✓			✓
TOXFREE MARINE PLUS XO2TCuZ1-K (AS+)		✓		✓		✓		✓
TOXFREE MARINE PLUS XO3TCuZ1-K (AS+)		✓		✓			✓	✓
TOXFREE MARINE ZH ROZ1-K (AS) VFD EMC	✓		✓			✓		✓
TOXFREE H07Z1-K (AS)	✓ (*)		✓					

Top Cable

TOXFREE MARINE XZ1-K (AS)

The marine power cable.

IEC 60502-1 / IEC 60092-353

DESIGN

1. Conductor

Electrolytic copper, class 5 (flexible), based on EN 60228 and IEC 60228.

2. Insulation

LSZH XLPE 90°C.

The standard identification is the following:

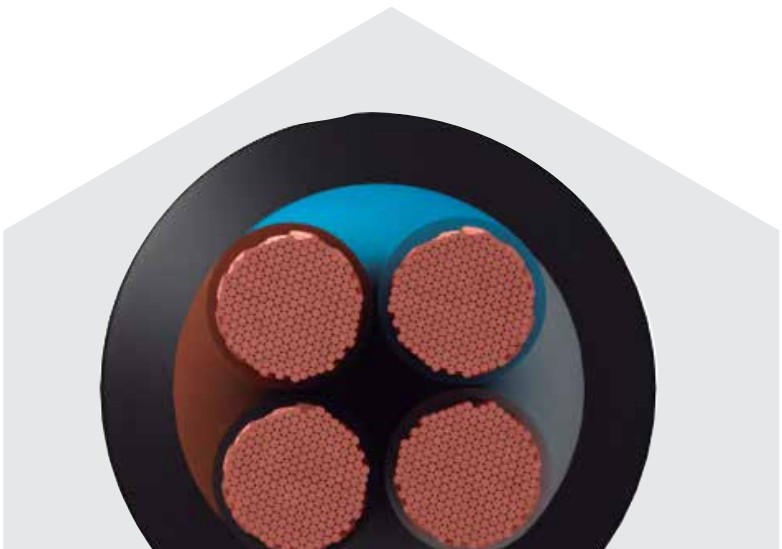
1 x..... Black
2 x ..... Blue + Brown
3 x..... Brown + Black + Grey
4 x ..... Blue + Brown + Black + Grey
5 or more conductors ..... White with black numbers

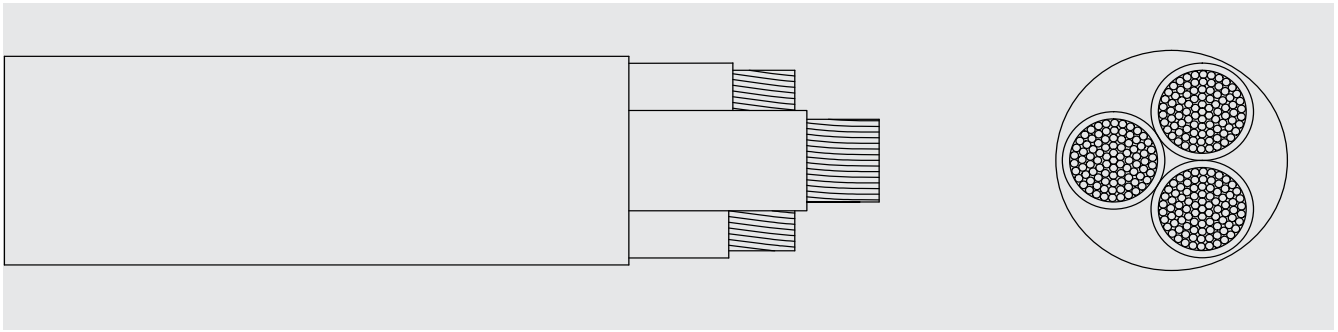
3. Outer sheath

LSZH polyolefin outer sheath SHF1 type. Black colour, fire retardant.

APPLICATIONS

The Toxfree Marine XZ1-K (AS) cable with zero halogen 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.





CHARACTERISTICS

Electrical performance

LOW VOLTAGE 0.6/1 KV

Standards

IEC 60502-1 / IEC 60092-353

Approvals

DNV-GL
ABS
Bureau Veritas
Lloyd's Register
CE
RoHS

Thermal performance

Maximum service 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 based on UNE-EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on UNE-EN 60754-1 and IEC 60754-1.
Low smoke emission based on UNE-EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on UNE-EN 60754-2 and IEC 60754-2.

Mechanical performance

Minimum bending radius: x5 cable diameter.
Impact resistance: AG2 Medium severity.

Chemical performance

Chemical & Oil resistance: Good.

Water performance

Water resistance: AD6 waves.

Other

Metre by metre marking.
Ripcord.
Electric fields resistant.

Installation conditions

Open Air.
Buried.
In conduit.

Applications

Industrial use.
Public places.

Top Cable




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Weight (Kg/km)	Open Air 45°C (A)	Voltage drop (V/A·km)	Conductor resistance at 20°C (Ohm/Km)
1 x 2,5	5,4	45	25	17,7	7,98
1 x 4	5,9	61	35	11	4,95
1 x 6	6,5	81	46	7,32	3,3
1 x 10	7,4	122	64	4,23	1,91
1 x 16	8,6	181	88	2,68	1,21
1 x 25	10,4	271	117	1,73	0,78
1 x 35	11,7	370	147	1,23	0,55
1 x 50	13,4	510	180	0,86	0,39
1 x 70	15,3	704	233	0,6	0,27
1 x 95	17,4	923	285	0,46	0,21
1 x 120	19	1.157	333	0,36	0,16
1 x 150	21,3	1.438	386	0,29	0,13
1 x 185	23,9	1.750	444	0,24	0,11
1 x 240	26,9	2.283	528	0,18	0,08
1 x 300	29,6	2.864	612	0,14	0,06
2 x 1,5	8	97	23	34	13,3
2 x 2,5	9,1	131	31	20,4	7,98
2 x 4	10,2	176	43	12,7	4,95
2 x 6	11,4	234	55	8,45	3,3
2 x 10	13,3	348	75	4,89	1,91
2 x 16	15,1	493	100	3,1	1,21
3 x 1,5	8,9	118	23	34	13,3
3 x 2,5	9,8	156	31	20,4	7,98
3 x 4	10,9	211	43	12,7	4,95
3 x 6	12,2	285	55	8,45	3,3
3 x 10	14,6	442	75	4,89	1,91
3 x 16	16,8	642	87	2,68	1,21
3 x 25	21	1.008	110	1,73	0,78
3 x 35	24	1.363	137	1,23	0,55
3 x 50	27,9	1.894	167	0,86	0,39
3 x 70	30,5	2.532	214	0,6	0,27
3 x 95	36,6	3.397	259	0,46	0,21
3 x 120	40,2	4.252	301	0,36	0,16
3 x 150	45,1	5.299	347	0,29	0,13

Cross section (mm2)	Diameter (mm)	Weight (Kg/km)	Open Air 45°C (A)	Voltage drop (V/A·km)	Conductor resistance at 20°C (Ohm/Km)
3 x 185	50,7	6.495	397	0,24	0,11
3 x 240	57,3	8.461	468	0,18	0,08
4 x 1,5	9,7	140	20	29,5	13,3
4 x 2,5	10,6	185	28	17,7	7,98
4 x 4	12,1	262	37	11	4,95
4 x 6	13,5	351	47	7,32	3,3
4 x 10	16	544	65	4,23	1,91
4 x 16	18,7	802	87	2,68	1,21
4 x 25	23,7	1.271	110	1,73	0,78
4 x 35	25,9	1.690	137	1,23	0,55
4 x 50	31,3	2.396	167	0,86	0,39
4 x 70	35,8	3.284	214	0,6	0,27
4 x 95	40,6	4.282	259	0,46	0,21
4 x 120	44,8	5.391	301	0,36	0,16
4 x 150	50,2	6.748	347	0,29	0,13
4 x 185	56,5	8.262	397	0,24	0,11
4 x 240	63,7	10.763	468	0,18	0,08
5 x 1,5	10,4	165	20	29,5	13,3
5 x 2,5	11,8	229	28	17,7	7,98
5 x 4	13,3	315	37	11	4,95
5 x 6	15	431	47	7,32	3,3
5 x 10	17,7	670	65	4,23	1,91
5 x 16	20,8	991	87	2,68	1,21
7 x 1,5	11,4	204	11	29,5	13,3
7 x 2,5	13	284	15	17,7	7,98
10 x 1,5	13,4	277	10	29,5	13,3
12 x 1,5	14,3	326	9	29,5	13,3
12 x 2,5	17,2	477	12	17,7	7,98
14 x 1,5	15,4	333	9	29,5	13,3
16 x 1,5	16,6	384	8	29,5	13,3
19 x 1,5	17,3	435	8	29,5	13,3
19 x 2,5	20,3	632	11	17,7	7,98
24 x 1,5	19,5	542	7	29,5	13,3
27 x 1,5	20,7	601	7	29,5	13,3
27 x 2,5	24,3	876	9	17,7	7,98

For further technical data please request this cable's technical datasheet.
Top Cable reserves the right to carry out any modification whatsoever without giving previous notice.
For more information: sales@topcable.com

Top Cable

Top Cable

TOXFREE MARINE XTCuZ1-K (AS)

The Marine armoured power cable.

IEC 60092-353

DESIGN

1. Conductor

Electrolytic copper, class 5 (flexible), based on EN 60228.

2. Insulation

LSZH XLPE 90°C.

The standard identification is the following:

1 x	Black
2 x	Blue + Brown
3 x	Brown + Black + Grey
4 x	Blue + Brown + Black + Grey
5 or more conductors	White with black numbers.

3. Armour

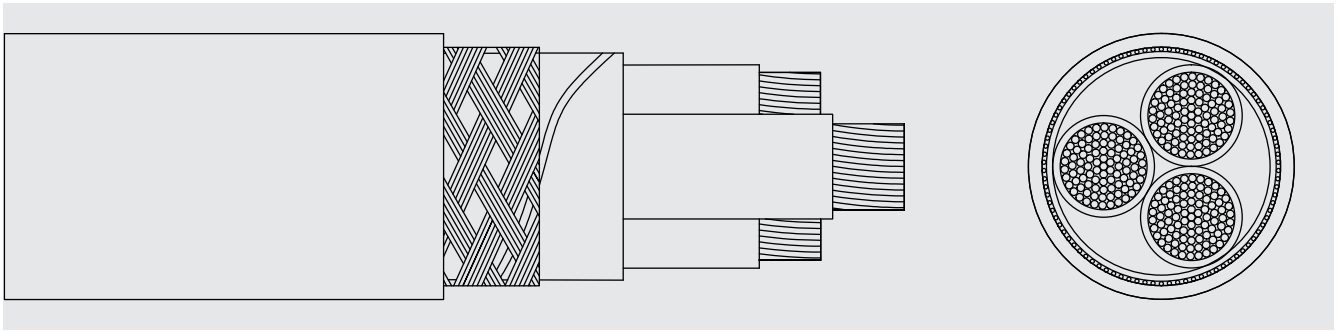
Coverage of 100% composed by an aluminium-polyester tape and a tinned copper braid.

4. Outer sheath

LSZH polyolefin outer sheath SHF1 type. Black colour, non-toxic and fire retardant.

APPLICATIONS

The Toxfree Marine XTCuZ1-K (AS) cable with zero halogen 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.



CHARACTERISTICS

Electrical performance
LOW VOLTAGE 0.6/1 KV

Standards
IEC 60092-353 / IEC60502-1

Approvals
DNV-GL
ABS
Bureau Veritas
Lloyd's Register
CE
RoHS

Thermal performance
Maximum service 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 based on UNE-EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on UNE-EN 60754-1 and IEC 60754-1.
Low smoke emission based on UNE-EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on UNE-EN 60754-2 and IEC 60754-2.

Mechanical performance
Minimum bending radius: x5 cable diameter.
Impact resistance: AG3 High severity.

Chemical performance
Chemical & Oil resistance: Acceptable.

Water performance
Water resistance: AD6 waves.

Other
Metre by metre marking.

Installation conditions
Open Air.
Wall Attached.
On Tray.
In Conduit.

Applications
Marine use.
Public Places.

Top Cable




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Weight (Kg/km)	Open Air 45°C (A)	Voltage drop (V/A·km)	Conductor resistance at 20°C (Ohm/Km)
1 x 2,5	8,20	108	25	17,70	7,98
1 x 4	8,90	133	35	11,00	4,95
1 x 6	9,50	158	46	7,32	3,30
1 x 10	10,40	209	64	4,23	1,91
1 x 16	11,60	280	88	2,68	1,21
1 x 25	14,00	424	117	1,73	0,78
1 x 35	15,10	532	147	1,23	0,55
1 x 50	17,00	702	180	0,86	0,39
1 x 70	18,70	912	233	0,60	0,27
1 x 95	20,80	1.156	285	0,46	0,21
1 x 120	22,60	1.422	333	0,36	0,16
1 x 150	24,90	1.733	386	0,29	0,13
1 x 185	27,50	2.079	444	0,24	0,11
1 x 240	30,50	2.650	528	0,18	0,08
1 x 300	33,60	3.300	612	0,14	0,06
2 x 1,5	8,70	102	23	34,00	13,30
2 x 2,5	9,50	128	31	20,40	7,98
2 x 4	10,70	166	43	12,70	4,95
2 x 6	11,90	216	55	8,45	3,30
2 x 10	14,40	347	75	4,89	1,91
2 x 16	16,00	470	100	3,10	1,21
3 x 1,5	9,40	125	23	34,00	13,30
3 x 2,5	10,20	160	31	20,40	7,98
3 x 4	11,50	216	43	12,70	4,95
3 x 6	12,70	279	55	8,45	3,30
3 x 10	15,50	455	75	4,89	1,91
3 x 16	17,70	642	87	2,68	1,21
3 x 25	21,40	948	110	1,73	0,78
3 x 35	24,40	1.265	137	1,23	0,55
3 x 50	28,20	1.739	167	0,86	0,39
3 x 70	30,90	2.330	214	0,60	0,27
3 x 95	37,30	3.145	259	0,46	0,21
3 x 120	41,20	3.931	301	0,36	0,16
3 x 150	45,90	4.826	347	0,29	0,13

Cross section (mm2)	Diameter (mm)	Weight (Kg/km)	Open Air 45°C (A)	Voltage drop (V/A·km)	Conductor resistance at 20°C (Ohm/Km)
3 x 185	51,70	5.870	397	0,24	0,11
3 x 240	58,10	7.573	468	0,18	0,08
4 x 1,5	10,20	150	20	29,50	13,30
4 x 2,5	11,20	198	28	17,70	7,98
4 x 4	12,60	266	37	11,00	4,95
4 x 6	14,60	386	47	7,32	3,30
4 x 10	17,10	575	65	4,23	1,91
4 x 16	19,80	822	87	2,68	1,21
4 x 25	24,00	1.219	110	1,73	0,78
4 x 35	26,30	1.616	137	1,23	0,55
4 x 50	31,70	2.252	167	0,86	0,39
4 x 70	36,60	3.152	214	0,60	0,27
4 x 95	41,50	4.086	259	0,46	0,21
4 x 120	45,60	5.093	301	0,36	0,16
4 x 150	51,00	6.326	347	0,29	0,13
4 x 185	57,40	7.696	397	0,24	0,11
4 x 240	64,50	9.945	468	0,18	0,08
5 x 1,5	10,90	177	20	29,50	13,30
5 x 2,5	12,30	239	28	17,70	7,98
5 x 4	14,40	358	37	11,00	4,95
5 x 6	15,90	467	47	7,32	3,30
5 x 10	18,60	700	65	4,23	1,91
5 x 16	21,70	1.010	87	2,68	1,21
7 x 1,5	11,90	219	11	29,50	13,30
7 x 2,5	14,00	332	15	17,70	7,98
10 x 1,5	14,50	326	10	29,50	13,30
12 x 1,5	15,20	369	9	29,50	13,30
12 x 2,5	18,10	518	12	17,70	7,98
14 x 1,5	16,20	416	9	29,50	13,30
16 x 1,5	17,50	474	8	29,50	13,30
19 x 1,5	18,20	529	8	29,50	13,30
19 x 2,5	21,10	743	11	17,70	7,98
24 x 1,5	20,40	648	7	29,50	13,30
27 x 1,5	21,60	716	7	29,50	13,30
27 x 2,5	25,40	1.023	9	17,70	7,98

For further technical data please request this cable's technical datasheet.
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For more information: sales@topcable.com

Top Cable

Top Cable

TOXFREE MARINE
XTCuZ1-K (AS) with bedding

The Marine armoured power cable with bedding.

IEC 60092-353

DESIGN

1. Conductor

Electrolytic copper, class 5 (flexible), based on EN 60228.

2. Insulation

LSZH XLPE 90°C.

The standard identification is the following:

1x Black

2 x Blue + Brown

3 x Brown+ Black+ Grey

4 x Blue + Brown + Black + Grey

5 or more conductors White with black numbers

3. Bedding

Halogen free compound.

4. Armour

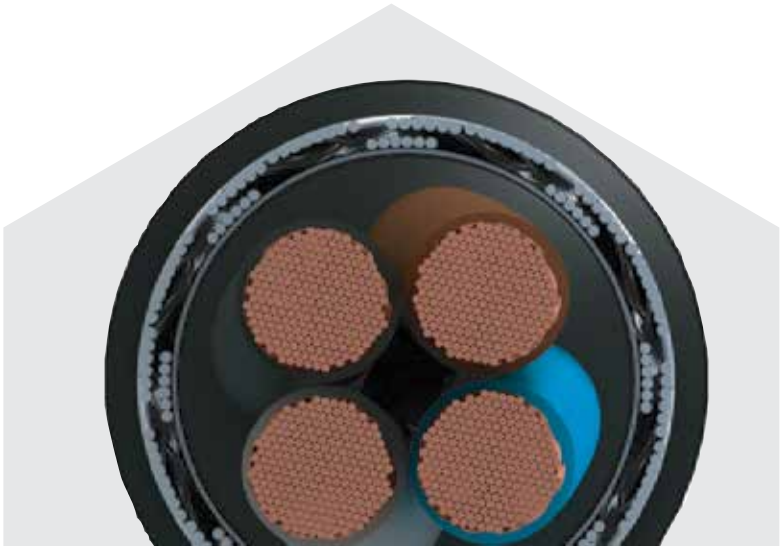
Coverage of 100% composed by an aluminium-polyester tape and a tinned copper braid.

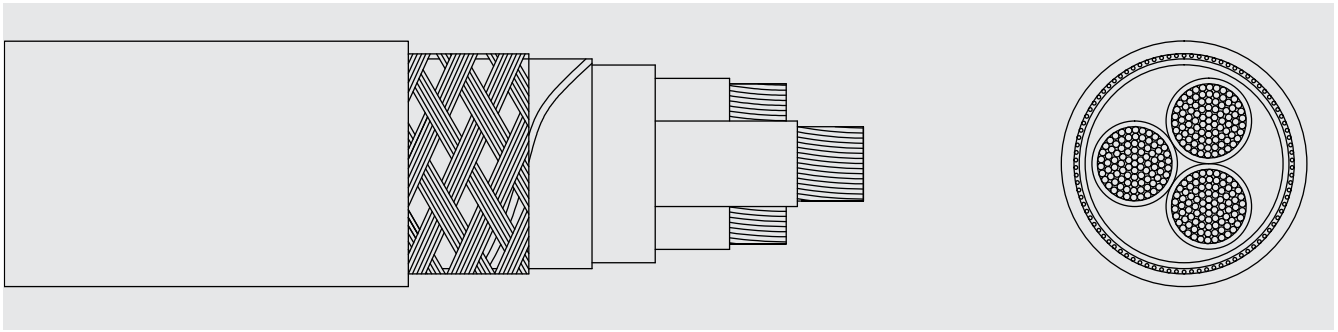
5. Outer sheath

LSZH polyolefin outer sheath SHF1 type. Black colour, fire retardant.

APPLICATIONS

The Toxfree Marine XTCuZ1-K (AS) WB cable with zero halogen 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.





CHARACTERISTICS

Electrical performance
LOW VOLTAGE 0.6/1 KV

Standards
IEC 60092-353

Approvals
DNV-GL
ABS
Bureau Veritas
Lloyd's Register
CE
RoHS

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

Fire performance
Flame non-propagation based on EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on EN 60754-1 and IEC 60754-1.
Low smoke emission based on EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on EN 60754-2 and IEC 60754-2.

Mechanical performance
Minimum bending radius: x5 cable diameter.
Impact resistance: AG3 High severity.

Chemical performance
Chemical & Oil resistance: Acceptable.

Water performance
Water resistance: AD6 waves.

Other
Metre by metre marking.

Installation conditions
Open Air.
Wall Attached.
In conduit.
On Tray

Applications
Marine use.
Public places.

Top Cable




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Aprox Weight (Kg/km)	Open Air 30°C (A)	Voltage Drop (V/A · km)	Conductor resistance (Ohm/Km)
1 x 2,5	8,20	108	25	17,70	7,98
1 x 4	8,90	133	35	11,00	4,95
1 x 6	9,50	158	46	7,32	3,30
1 x 10	10,40	209	64	4,23	1,91
1 x 16	11,60	280	88	2,68	1,21
1 x 25	14,00	424	117	1,73	0,78
1 x 35	15,10	532	147	1,23	0,55
1 x 50	17,00	702	180	0,86	0,39
1 x 70	18,70	912	233	0,60	0,27
1 x 95	20,80	1.156	285	0,46	0,21
1 x 120	22,60	1.422	333	0,36	0,16
1 x 150	24,90	1.733	386	0,29	0,13
1 x 185	27,50	2.079	444	0,24	0,11
1 x 240	30,50	2.650	528	0,18	0,08
1 x 300	33,60	3.300	612	0,14	0,06
2 x 1,5	10,50	181	23	34,00	13,30
2 x 2,5	11,60	227	31	20,40	7,98
2 x 4	12,70	281	43	12,70	4,95
2 x 6	14,30	394	55	8,45	3,30
2 x 10	16,20	523	75	4,89	1,91
2 x 16	18,00	562	100	3,10	1,21
3 x 1,5	11,40	200	23	34,00	13,30
3 x 2,5	12,30	244	31	20,40	7,98
3 x 4	14,00	344	43	12,70	4,95
3 x 6	15,10	424	55	8,45	3,30
3 x 10	17,50	604	75	4,89	1,91
3 x 16	19,70	824	87	2,68	1,21
3 x 25	23,40	1.193	110	1,73	0,78
3 x 35	26,40	1.569	137	1,23	0,55
3 x 50	30,30	2.125	167	0,86	0,39
3 x 70	33,30	2.813	214	0,60	0,27
3 x 95	39,80	3.807	259	0,46	0,21
3 x 120	43,60	4.711	301	0,36	0,16
3 x 150	48,90	5.847	347	0,29	0,13
3 x 185	54,50	7.088	397	0,24	0,11

Cross section (mm2)	Diameter (mm)	Aprox Weight (Kg/km)	Open Air 30°C (A)	Voltage Drop (V/A · km)	Conductor resistance (Ohm/Km)
3 x 240	61,30	9.136	468	0,18	0,08
4 x 1,5	12,20	229	20	29,50	13,30
4 x 2,5	13,10	281	28	17,70	7,98
4 x 4	15,00	401	37	11,00	4,95
4 x 6	16,60	512	47	7,32	3,30
4 x 10	18,90	722	65	4,23	1,91
4 x 16	21,60	1.005	87	2,68	1,21
4 x 25	26,10	1.481	110	1,73	0,78
4 x 35	28,30	1.917	137	1,23	0,55
4 x 50	34,10	2.694	167	0,86	0,39
4 x 70	39,00	3.704	214	0,60	0,27
4 x 95	44,40	4.811	259	0,46	0,21
4 x 120	48,40	5.940	301	0,36	0,16
4 x 150	53,80	7.346	347	0,29	0,13
4 x 185	60,70	9.003	397	0,24	0,11
4 x 240	67,90	11.570	468	0,18	0,08
5 x 1,5	12,90	260	20	29,50	13,30
5 x 2,5	14,70	366	28	17,70	7,98
5 x 4	16,20	468	37	11,00	4,95
5 x 6	17,90	601	47	7,32	3,30
5 x 10	20,60	866	65	4,23	1,91
5 x 16	23,70	1.217	87	2,68	1,21
7 x 1,5	14,30	338	11	29,50	13,30
7 x 2,5	15,90	434	15	17,70	7,98
10 x 1,5	16,30	432	10	29,50	13,30
12 x 1,5	17,20	461	9	29,50	13,30
12 x 2,5	20,10	626	12	17,70	7,98
14 x 1,5	18,30	514	9	29,50	13,30
16 x 1,5	19,50	579	8	29,50	13,30
19 x 1,5	20,20	637	8	29,50	13,30
19 x 2,5	23,20	867	11	17,70	7,98
24 x 1,5	22,40	768	7	29,50	13,30
27 x 1,5	23,60	842	7	29,50	13,30
27 x 2,5	27,40	1.169	9	17,70	7,98

For further technical data please request this cable's technical datasheet.
Top Cable reserves the right to carry out any modification whatsoever without giving previous notice.
For more information: sales@topcable.com

Top Cable

Top Cable

TOXFREE MARINE PLUS XZ1-K (AS+)

The Marine fire resistant power cable.

IEC 60092-353

DESIGN

1. Conductor

Electrolytic copper, class 5 (flexible), based on EN 60228.

2/3 Insulation

Mica Tape + LSZH XLPE 90°C.

The standard identification is the following:

1 x Black

2 x Blue + Brown

3 x Brown+ Black+ Grey

4 x Blue + Brown + Black + Grey

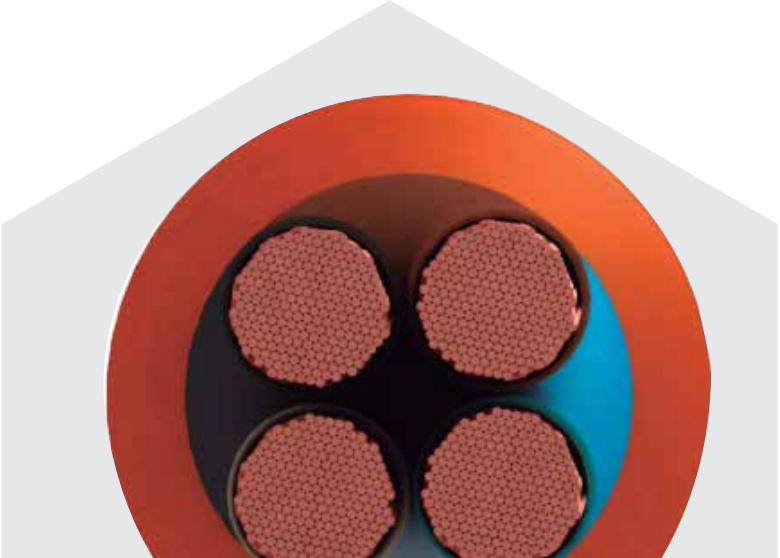
5 x or more conductors White with black numbers

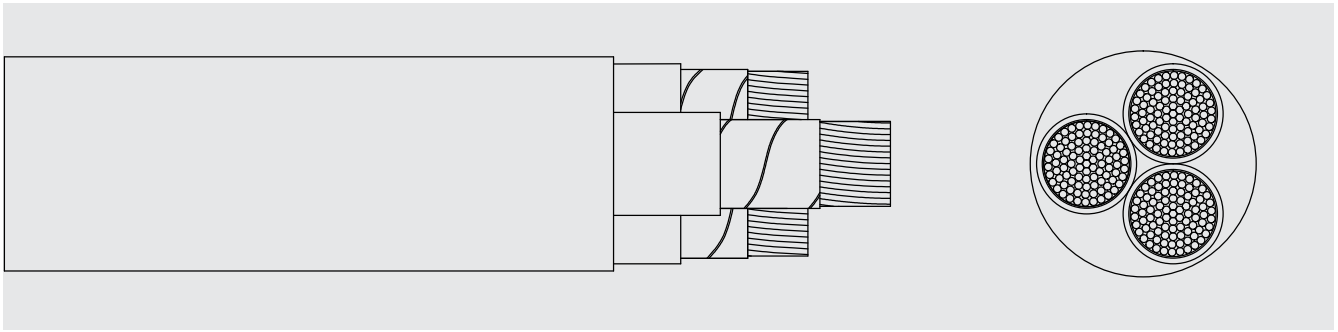
3. Outer sheath

LSZH polyolefin outer sheath SHF1 type. Orange colour, non-toxic, fire retardant and fire resistant.

APPLICATIONS

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.





CHARACTERISTICS

Electrical performance
LOW VOLTAGE 0.6/1 KV

Standards
IEC 60092-353

Approvals
DNV-GL
ABS
Bureau Veritas
Lloyd's Register
CE
RoHS

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

Fire performance
Flame non-propagation based on EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
Fire resistant based on EN 60331-21 and IEC 60331-21.
LSZH (Low Smoke Zero Halogen) based on EN 60754-1 and IEC 60754-1.
Low smoke emission based on EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on EN 60754-2 and IEC 60754-2.

Mechanical performance
Minimum bending radius: x5 cable diameter.
Impact resistance: AG3 High severity.

Chemical performance
Chemical & Oil resistance: Acceptable.

Water performance
Water resistance: AD6 waves.

Other
Metre by metre marking.

Installation conditions
Open Air.
In conduit.
Wall attached.
On tray.

Applications
Marine use.
Public places.

Top Cable




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Aprox Weight (Kg/km)	Open Air 30°C (A)	Voltage Drop (V/A · km)	Conductor resistance (Ohm/Km)
1 x 2,5	5,90	51	25	17,70	7,98
1 x 4	6,40	68	35	11,00	4,95
1 x 6	7,00	89	46	7,32	3,30
1 x 10	7,90	133	64	4,23	1,91
1 x 16	9,10	195	88	2,68	1,21
1 x 25	10,90	290	117	1,73	0,78
1 x 35	12,20	393	147	1,23	0,55
1 x 50	13,90	540	180	0,86	0,39
1 x 70	15,80	741	233	0,60	0,27
1 x 95	17,90	969	285	0,46	0,21
1 x 120	19,50	1.212	333	0,36	0,16
1 x 150	21,80	1.504	386	0,29	0,13
1 x 185	24,40	1.828	444	0,24	0,11
1 x 240	27,40	2.379	528	0,18	0,08
1 x 300	30,10	2.981	612	0,14	0,06
2 x 1,5	9,20	121	23	34,00	13,30
2 x 2,5	10,10	154	31	20,40	7,98
2 x 4	11,40	209	43	12,70	4,95
2 x 6	12,40	266	55	8,45	3,30
2 x 10	14,50	395	75	4,89	1,91
2 x 16	16,10	542	100	3,10	1,21
3 x 1,5	10,00	140	23	34,00	13,30
3 x 2,5	11,00	186	31	20,40	7,98
3 x 4	12,20	247	43	12,70	4,95
3 x 6	13,30	321	55	8,45	3,30
3 x 10	15,70	489	75	4,89	1,91
3 x 16	17,90	701	87	2,68	1,21
3 x 25	22,30	1.097	110	1,73	0,78
3 x 35	25,30	1.470	137	1,23	0,55
3 x 50	28,90	2.013	167	0,86	0,39
3 x 70	31,60	2.677	214	0,60	0,27
3 x 95	37,70	3.575	259	0,46	0,21
3 x 120	41,50	4.480	301	0,36	0,16
3 x 150	46,40	5.566	347	0,29	0,13
3 x 185	52,00	6.806	397	0,24	0,11

Cross section (mm2)	Diameter (mm)	Aprox Weight (Kg/km)	Open Air 30°C (A)	Voltage Drop (V/A · km)	Conductor resistance (Ohm/Km)
3 x 240	58,40	8.813	468	0,18	0,08
4 x 1,5	11,10	170	20	29,50	13,30
4 x 2,5	12,00	221	28	17,70	7,98
4 x 4	13,30	298	37	11,00	4,95
4 x 6	14,90	400	47	7,32	3,30
4 x 10	17,40	609	65	4,23	1,91
4 x 16	20,10	883	87	2,68	1,21
4 x 25	25,10	1.379	110	1,73	0,78
4 x 35	27,30	1.820	137	1,23	0,55
4 x 50	32,70	2.558	167	0,86	0,39
4 x 70	37,00	3.467	214	0,60	0,27
4 x 95	42,00	4.524	259	0,46	0,21
4 x 120	46,20	5.675	301	0,36	0,16
4 x 150	51,60	7.083	347	0,29	0,13
4 x 185	57,90	8.654	397	0,24	0,11
4 x 240	65,10	11.243	468	0,18	0,08
5 x 1,5	12,00	199	20	29,50	13,30
5 x 2,5	13,20	264	28	17,70	7,98
5 x 4	14,90	364	37	11,00	4,95
5 x 6	16,60	490	47	7,32	3,30
5 x 10	19,30	747	65	4,23	1,91
5 x 16	22,40	1.088	87	2,68	1,21
7 x 1,5	12,90	240	11	29,50	13,30
7 x 2,5	14,70	334	15	17,70	7,98
10 x 1,5	15,60	337	10	29,50	13,30
12 x 1,5	16,60	395	9	29,50	13,30
12 x 2,5	19,50	561	12	17,70	7,98
14 x 1,5	17,80	394	9	29,50	13,30
16 x 1,5	19,20	454	8	29,50	13,30
19 x 1,5	20,00	514	8	29,50	13,30
19 x 2,5	23,00	730	11	17,70	7,98
24 x 1,5	22,70	640	7	29,50	13,30
27 x 1,5	24,00	709	7	29,50	13,30
27 x 2,5	27,80	1.023	9	17,70	7,98

Maximum admissible intensities according to IEC 60364-5-52.
For other installation conditions, please refer to correction factors in the appendix to this catalogue.
See more technical data on the particular cable specification.
Top Cable reserves the right to carry out any modification to the data sheets whatsoever without giving previous notice
For more information: sales@topcable.com

Top Cable

Top Cable

TOXFREE MARINE PLUS XTCuZ1-K (AS+)

The Marine armoured and fire resistant power cable.

IEC 60092-353

DESIGN

1. Conductor

Electrolytic copper, class 5 (flexible), based on EN 60228.

2/3. Insulation

Mica Tape + LSZH XLPE 90°C

The standard identification is the following:

1x Black

2 x Blue + Brown

3 x Brown+ Black+ Grey

4 x Blue + Brown + Black + Grey

5 or more conductors White with black numbers

4. Armour

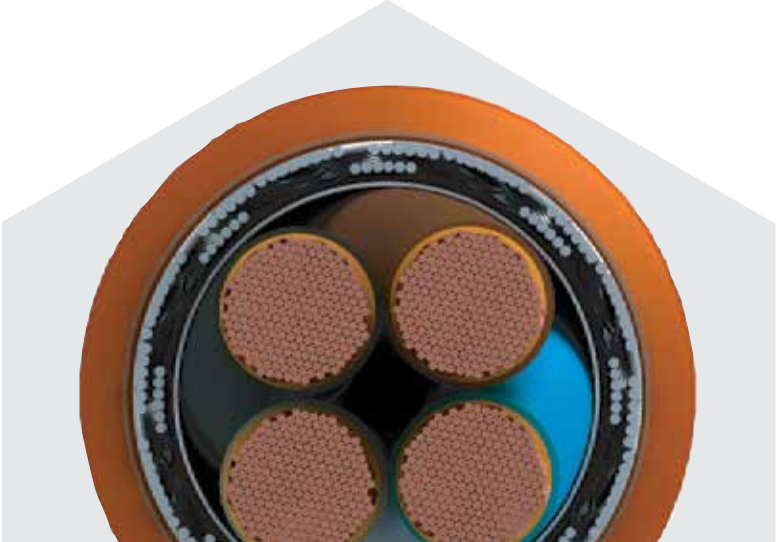
Coverage of 100% composed by an aluminium-polyester tape and a tinned copper braid.

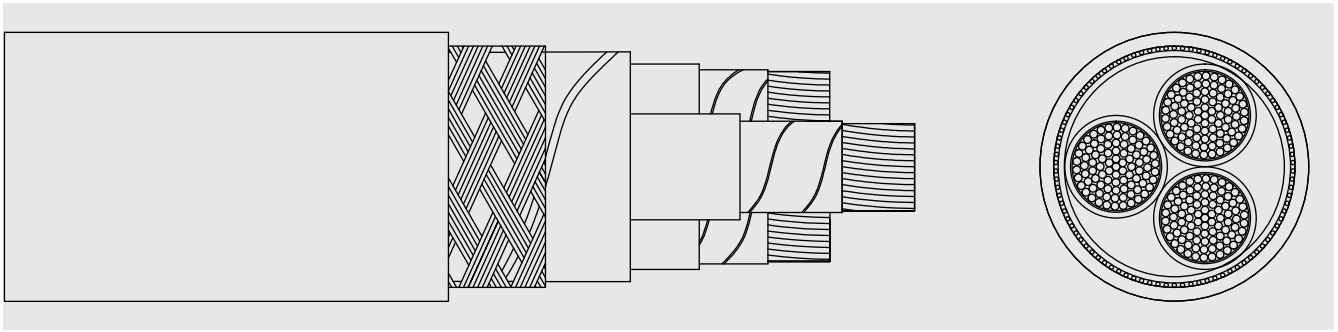
5. Outer sheath

LSZH polyolefin outer sheath SHF1 type. Orange colour, non-toxic, fire retardant and fire resistant.

APPLICATIONS

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.





CHARACTERISTICS

Electrical performance

LOW VOLTAGE 0.6/1 KV

Standards

IEC 60092-353

Approvals

DNV-GL
ABS
Bureau Veritas
Lloyd's Register
CE
RoHS

Thermal performance

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

Fire performance

Flame non-propagation based on EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
Fire resistant based on EN 60331-21 and IEC 60331-21.
LSZH (Low Smoke Zero Halogen) based on EN 60754-1 and IEC 60754-1.
Low smoke emission based on EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on EN 60754-2 and IEC 60754-2.

Mechanical performance

Minimum bending radius: x5 cable diameter.
Impact resistance: AG3 High severity.

Chemical performance

Chemical & Oil resistance: Acceptable.

Water performance

Water resistance: AD6 waves.

Other

Metre by metre marking.

Installation conditions

Open Air.
In conduit.
Wall attached.
On tray.

Applications

Marine use.
Public places.

Top Cable




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Aprox Weight (Kg/km)	Open Air 30°C (A)	Voltage Drop (V/A · km)	Conductor resistance (Ohm/Km)
1 x 2,5	8,90	123	25	17,70	7,98
1 x 4	9,40	145	35	11,00	4,95
1 x 6	10,00	171	46	7,32	3,30
1 x 10	11,10	231	64	4,23	1,91
1 x 16	12,10	299	88	2,68	1,21
1 x 25	14,50	450	117	1,73	0,78
1 x 35	15,60	562	147	1,23	0,55
1 x 50	17,50	739	180	0,86	0,39
1 x 70	19,40	965	233	0,60	0,27
1 x 95	21,30	1.209	285	0,46	0,21
1 x 120	23,10	1.484	333	0,36	0,16
1 x 150	25,40	1.805	386	0,29	0,13
1 x 185	28,00	2.163	444	0,24	0,11
1 x 240	31,00	2.753	528	0,18	0,08
1 x 300	34,10	3.424	612	0,14	0,06
2 x 1,5	9,70	117	23	34,00	13,30
2 x 2,5	10,50	145	31	20,40	7,98
2 x 4	11,90	191	43	12,70	4,95
2 x 6	12,90	239	55	8,45	3,30
2 x 10	15,40	379	75	4,89	1,91
2 x 16	17,20	515	100	3,10	1,21
3 x 1,5	10,40	144	23	34,00	13,30
3 x 2,5	11,50	187	31	20,40	7,98
3 x 4	12,60	242	43	12,70	4,95
3 x 6	14,30	345	55	8,45	3,30
3 x 10	16,70	504	75	4,89	1,91
3 x 16	18,70	693	87	2,68	1,21
3 x 25	22,70	1.023	110	1,73	0,78
3 x 35	25,60	1.355	137	1,23	0,55
3 x 50	29,30	1.837	167	0,86	0,39
3 x 70	31,90	2.451	214	0,60	0,27
3 x 95	38,60	3.315	259	0,46	0,21
3 x 120	42,30	4.111	301	0,36	0,16
3 x 150	47,20	5.059	347	0,29	0,13
3 x 185	52,70	6.116	397	0,24	0,11
3 x 240	59,10	7.878	468	0,18	0,08
4 x 1,5	11,60	178	20	29,50	13,30
4 x 2,5	12,40	225	28	17,70	7,98
4 x 4	14,40	334	37	11,00	4,95
4 x 6	15,80	426	47	7,32	3,30
4 x 10	18,30	627	65	4,23	1,91
4 x 16	21,00	887	87	2,68	1,21
4 x 25	25,40	1.315	110	1,73	0,78
4 x 35	27,70	1.730	137	1,23	0,55
4 x 50	33,10	2.395	167	0,86	0,39
4 x 70	37,80	3.314	214	0,60	0,27
4 x 95	42,70	4.284	259	0,46	0,21
4 x 120	47,00	5.349	301	0,36	0,16
4 x 150	52,40	6.629	347	0,29	0,13
4 x 185	58,60	8.023	397	0,24	0,11
4 x 240	65,90	10.380	468	0,18	0,08
5 x 1,5	12,40	210	20	29,50	13,30
5 x 2,5	14,20	308	28	17,70	7,98
5 x 4	15,70	400	37	11,00	4,95
5 x 6	17,40	523	47	7,32	3,30
5 x 10	20,10	773	65	4,23	1,91
5 x 16	23,20	1.100	87	2,68	1,21
7 x 1,5	14,00	289	11	29,50	13,30
7 x 2,5	15,50	377	15	17,70	7,98
10 x 1,5	16,70	387	10	29,50	13,30
12 x 1,5	17,50	436	9	29,50	13,30
12 x 2,5	20,30	598	12	17,70	7,98
14 x 1,5	18,60	491	9	29,50	13,30
16 x 1,5	20,00	558	8	29,50	13,30
19 x 1,5	20,90	623	8	29,50	13,30
19 x 2,5	23,80	857	11	17,70	7,98
24 x 1,5	23,60	765	7	29,50	13,30
27 x 1,5	25,10	854	7	29,50	13,30
27 x 2,5	28,40	1.164	9	17,70	7,98

Maximum admissible intensities according to IEC 60364-5-52.
For other installation conditions, please refer to correction factors in the appendix to this catalogue.
See more technical data on the particular cable specification.
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For more information: sales@topcable.com

Top Cable

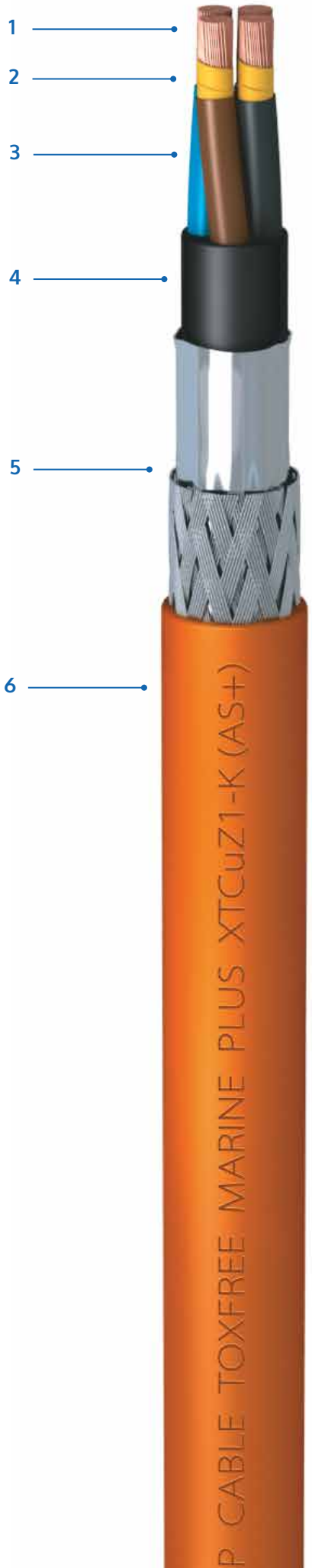
Top Cable

TOXFREE MARINE PLUS

XTCuZ1-K (AS+) with bedding

The Marine armoured and fire resistant power cable with bedding.

IEC 60092-353



DESIGN

1. Conductor

Electrolytic copper, class 5 (flexible), based on EN 60228 and IEC 60228.

2/3. Insulation

Mica Tape + LSZH XLPE 90°C.

The standard identification is the following:

1x Black

2 x Blue + Brown

3 x Brown+ Black+ Grey

4 x Blue + Brown + Black + Grey

5 or more conductors White with black numbers

4. Armour bedding

LSZH polyolefin inner sheath.

5. Armour

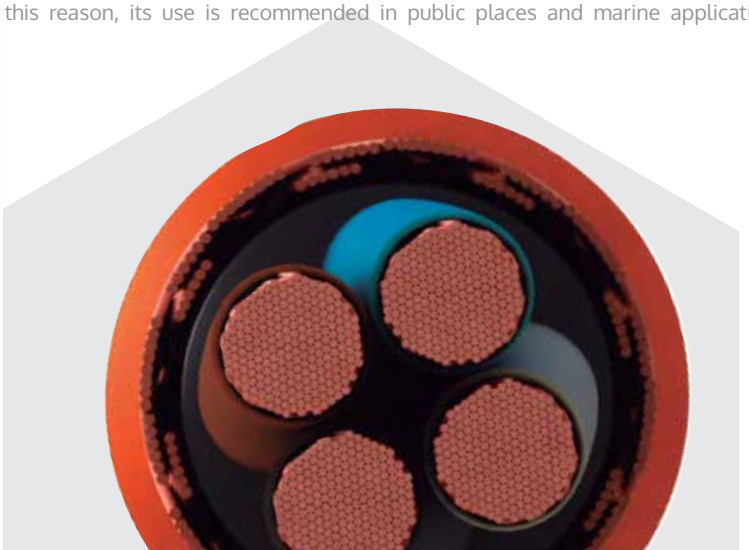
Coverage of 100% composed by an aluminium-polyester tape and a tinned copper braid.

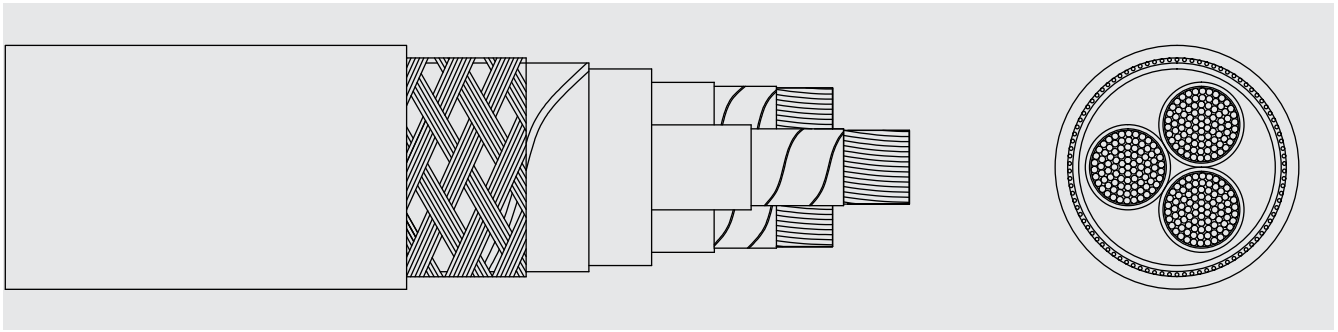
6. Outer sheath

LSZH polyolefin outer sheath SHF1 type. Orange colour, non-toxic, fire retardant and fire resistant.

APPLICATIONS

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 signaling lights, smoke extractors, acustic 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.





CHARACTERISTICS

Electrical performance

LOW VOLTAGE 0.6/1 KV

Standards and approvals

IEC 60092-353

Standards and approvals

DNV-GL
ABS
Bureau Veritas
Lloyd's Register
CE
RoHS

Thermal performance

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

Fire performance

Flame non-propagation based on EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
Fire resistant based on EN 60331-21 and IEC 60331-21.
LSZH (Low Smoke Zero Halogen) based on EN 60754-1 and IEC 60754-1.
Low smoke emission based on EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on EN 60754-2 and IEC 60754-2.

Mechanical performance

Minimum bending radius: x5 cable diameter.
Impact resistance: AG3 High severity.

Chemical performance

Chemical & Oil resistance: Acceptable.

Water performance

Water resistance: AD6 waves.

Other

Metre by metre marking.

Installation conditions

Open Air.
In conduit.
Wall attached.
On tray.

Applications

Marine use.
Public places.

Top Cable




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Aprox Weight (Kg/km)	Open Air 30°C (A)	Voltage Drop (V/A · km)	Conductor resistance (Ohm/Km)
1 x 2,5	8,90	123	25	17,70	7,98
1 x 4	9,40	145	35	11,00	4,95
1 x 6	10,00	171	46	7,32	3,30
1 x 10	11,10	231	64	4,23	1,91
1 x 16	12,10	299	88	2,68	1,21
1 x 25	14,50	450	117	1,73	0,78
1 x 35	15,60	562	147	1,23	0,55
1 x 50	17,50	739	180	0,86	0,39
1 x 70	19,40	965	233	0,60	0,27
1 x 95	21,30	1.209	285	0,46	0,21
1 x 120	23,10	1.484	333	0,36	0,16
1 x 150	25,40	1.805	386	0,29	0,13
1 x 185	28,00	2.163	444	0,24	0,11
1 x 240	31,00	2.753	528	0,18	0,08
1 x 300	34,10	3.424	612	0,14	0,06
2 x 1,5	11,70	215	23	34,00	13,30
2 x 2,5	12,60	260	31	20,40	7,98
2 x 4	14,30	353	43	12,70	4,95
2 x 6	15,30	437	55	8,45	3,30
2 x 10	17,40	582	75	4,89	1,91
2 x 16	19,20	623	100	3,10	1,21
3 x 1,5	12,50	231	23	34,00	13,30
3 x 2,5	13,90	313	31	20,40	7,98
3 x 4	15,10	386	43	12,70	4,95
3 x 6	16,20	470	55	8,45	3,30
3 x 10	18,60	661	75	4,89	1,91
3 x 16	20,80	892	87	2,68	1,21
3 x 25	24,70	1.291	110	1,73	0,78
3 x 35	27,70	1.684	137	1,23	0,55
3 x 50	31,30	2.250	167	0,86	0,39
3 x 70	34,40	2.964	214	0,60	0,27
3 x 95	41,10	4.013	259	0,46	0,21
3 x 120	45,10	4.975	301	0,36	0,16
3 x 150	50,00	6.101	347	0,29	0,13
3 x 185	56,00	7.439	397	0,24	0,11

Cross section (mm2)	Diameter (mm)	Aprox Weight (Kg/km)	Open Air 30°C (A)	Voltage Drop (V/A · km)	Conductor resistance (Ohm/Km)
3 x 240	62,60	9.525	468	0,18	0,08
4 x 1,5	14,00	299	20	29,50	13,30
4 x 2,5	14,90	358	28	17,70	7,98
4 x 4	16,20	450	37	11,00	4,95
4 x 6	17,80	567	47	7,32	3,30
4 x 10	20,30	800	65	4,23	1,91
4 x 16	23,00	1.099	87	2,68	1,21
4 x 25	27,50	1.599	110	1,73	0,78
4 x 35	29,50	2.042	137	1,23	0,55
4 x 50	35,90	2.948	167	0,86	0,39
4 x 70	40,20	3.898	214	0,60	0,27
4 x 95	45,60	5.046	259	0,46	0,21
4 x 120	49,80	6.238	301	0,36	0,16
4 x 150	55,60	7.750	347	0,29	0,13
4 x 185	61,90	9.379	397	0,24	0,11
4 x 240	69,10	12.030	468	0,18	0,08
5 x 1,5	14,90	338	20	29,50	13,30
5 x 2,5	16,10	415	28	17,70	7,98
5 x 4	17,80	532	37	11,00	4,95
5 x 6	19,50	674	47	7,32	3,30
5 x 10	22,20	958	65	4,23	1,91
5 x 16	25,30	1.328	87	2,68	1,21
7 x 1,5	15,80	390	11	29,50	13,30
7 x 2,5	17,60	501	15	17,70	7,98
10 x 1,5	18,50	514	10	29,50	13,30
12 x 1,5	19,50	541	9	29,50	13,30
12 x 2,5	22,40	718	12	17,70	7,98
14 x 1,5	20,70	602	9	29,50	13,30
16 x 1,5	22,10	676	8	29,50	13,30
19 x 1,5	22,90	746	8	29,50	13,30
19 x 2,5	25,90	995	11	17,70	7,98
24 x 1,5	25,60	902	7	29,50	13,30
27 x 1,5	26,90	986	7	29,50	13,30
27 x 2,5	30,70	1.341	9	17,70	7,98

Maximum admissible intensities according to IEC 60364-5-52.
For other installation conditions, please refer to correction factors in the appendix to this catalogue.
See more technical data on the particular cable specification.
Top Cable reserves the right to carry out any modification to the data sheets whatsoever without giving previous notice.
For more information: sales@topcable.com

Top Cable

Top Cable

MEDIUM VOLTAGE MARINE
DHZ1TCuZ1

The Medium Voltage marine cable

IEC 60092-354

DESIGN

1. Conductor

Electrolytic copper, class 2, based on EN 60228.

2. Insulation

High module Ethylene Propylene Rubber (HEPR), in dry atmosphere catenary tube, through a triple layer extrusion process.

3. Metallic Screen

Helicoidal copper tape screen.

4. Armour bedding

Halogen free compound.

5. Armour

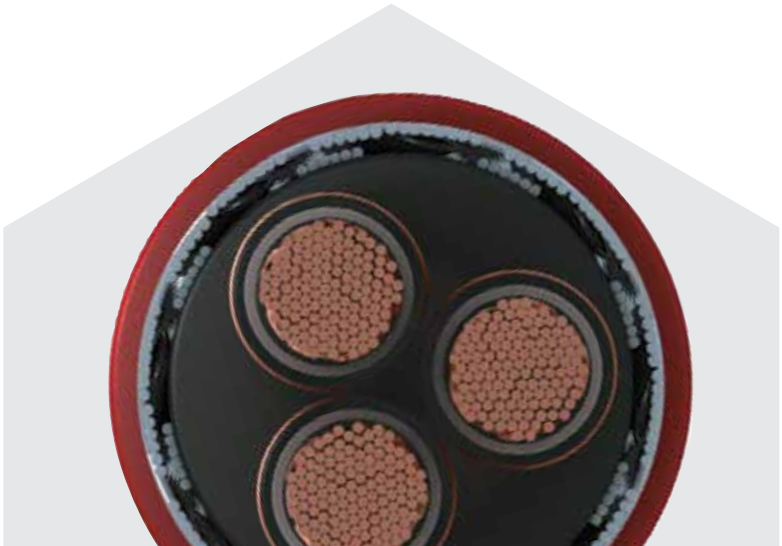
Coverage of 90% composed by a tinned copper braid.

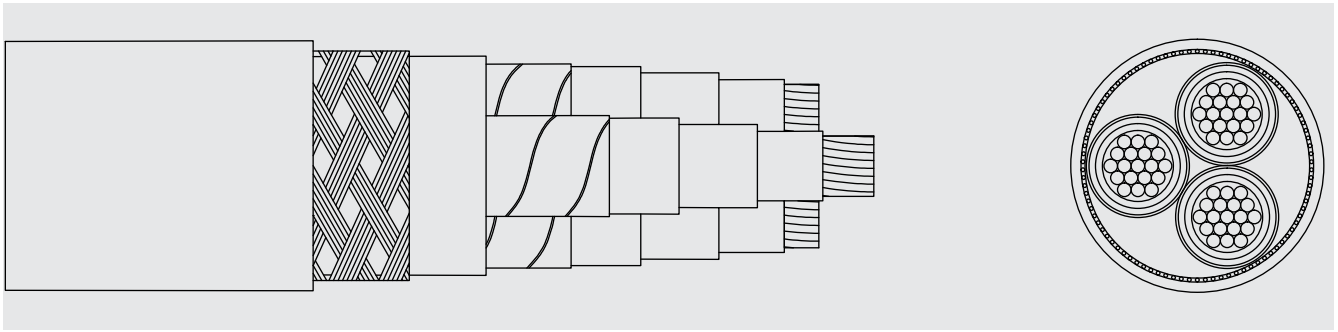
6. Outer sheath

LSZH polyolefin outer sheath SHF1 type. Red colour, fire retardant.

APPLICATIONS

Marine power Medium Voltage cables. Specially designed for the transmission and distribution of electricity in marine applications.





CHARACTERISTICS

Electrical performance

MEDIUM VOLTAGE

Standards and approvals

IEC 60092-354
CE

Thermal performance

Maximum service temperature: 105 °C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum service temperature: -40°C (fixed installations).

Fire performance

Flame non-propagation based on EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on EN 60754-1 and IEC 60754-1.
Low smoke emission based on EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on EN 60754-2 and IEC 60754-2.

Mechanical performance

Minimum bending radius: x15 cable diameter.

Chemical performance

Chemical & Oil resistance: Acceptable.

Water performance

Water resistance: AD6 waves.

Other

Metre by metre marking.

Installation conditions

Open Air.
In conduit.

Applications

Marine use.
Distribution Networks.

Top Cable

DIMENSIONS DHZ1TCuZ1 3,6/6kV

Cross section (mm2)	Diameter (mm)	Aprox Weight (Kg/km)	Open Air 30°C (A)	Conductor resistance (Ohm/Km)
1 x 50	24,5	1160	175	0,387
1 x 70	27	1480	222	0,268
1 x 95	29	1790	275	0,193
1 x 120	30,5	2090	315	0,153
1 x 150	32	2390	367	0,124
1 x 185	34,5	2885	422	0,0991
1 x 240	37,5	3645	502	0,0754
3 x 50	48	3510	160	0,387
3 x 70	52	4345	203	0,268
3 x 95	56	5280	246	0,193
3 x 120	59	6186	287	0,153

DIMENSIONS DHZ1TCuZ1 6/10kV

Cross section (mm2)	Diameter (mm)	Aprox Weight (Kg/km)	Open Air 30°C (A)	Conductor resistance (Ohm/Km)
1 x 50	27,5	1330	175	0,387
1 x 70	29	1610	222	0,268
1 x 95	31	1925	275	0,193
1 x 120	32,5	2230	315	0,153
1 x 150	34	2580	367	0,124
1 x 185	37	3135	422	0,0991
1 x 240	40	3850	502	0,0754
3 x 50	52	3885	160	0,387
3 x 70	56	4745	203	0,268
3 x 95	60	5705	246	0,193
3 x 120	63	6630	287	0,153

DIMENSIONS DHZ1TCuZ1 8,7/15kV

Cross section (mm2)	Diameter (mm)	Aprox Weight (Kg/km)	Open Air 30°C (A)	Conductor resistance (Ohm/Km)
1 x 50	29,5	1490	175	0,387
1 x 70	31,5	1780	222	0,268
1 x 95	33,5	2145	275	0,193
1 x 120	35	2455	315	0,153
1 x 150	37	2860	367	0,124
1 x 185	39,5	3395	422	0,0991
1 x 240	42	4075	502	0,0754
3 x 50	57	4380	160	0,387
3 x 70	61	5270	203	0,268
3 x 95	65	6260	246	0,193
3 x 120	69	7415	287	0,153

DIMENSIONS DHZ1TCuZ1 12/20kV

Cross section (mm2)	Diameter (mm)	Aprox Weight (Kg/km)	Open Air 30°C (A)	Conductor resistance (Ohm/Km)
1 x 50	32	1645	175	0,387
1 x 70	34	1985	222	0,268
1 x 95	36	2320	275	0,193
1 x 120	38	2725	315	0,153
1 x 150	39,5	3105	367	0,124
1 x 185	42	3595	422	0,0991
1 x 240	44	4290	502	0,0754
3 x 50	61,5	4865	160	0,387
3 x 70	65,5	5780	203	0,268
3 x 95	70,5	7015	246	0,193
3 x 120	73,5	7988	287	0,153

DIMENSIONS DHZ1TCuZ1 18/30kV

Cross section (mm2)	Diameter (mm)	Aprox Weight (Kg/km)	Open Air 30°C (A)	Conductor resistance (Ohm/Km)
1 x 50	38	2210	175	0,387
1 x 70	40,5	2585	222	0,268
1 x 95	42	2950	275	0,193
1 x 120	43,5	3285	315	0,153
1 x 150	45	3630	367	0,124
1 x 185	48	4235	422	0,0991
1 x 240	50,5	4960	502	0,0754
3 x 50	74,5	6436	160	0,387
3 x 70	78,5	7432	203	0,268
3 x 95	82,5	8526	246	0,193
3 x 120	85,5	9551	287	0,153

Maximum admissible intensities according to IEC 60364-5-52.
For other installation conditions, please refer to correction factors in the appendix to this catalogue.
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Top Cable

Top Cable

TOXFREE MARINE XOxZ1-K (AS) (x:1...3)

The Marine instrumentation cable

IEC 60092-376, IEC 60092-350

DESIGN

1. Conductor

Electrolytic copper, class 5 (flexible), based on EN 60228.

2. Insulation

LSZH XLPE 90°C.

The standard identification is the following per pair:

1x Blue

1x White

Each pair is numbered

3. Screen

Individual and/or collective aluminium / polyester tape with tinned copper drain wire

O1.....Individual screen (per pair)

O2.....Overall screen (per cable)

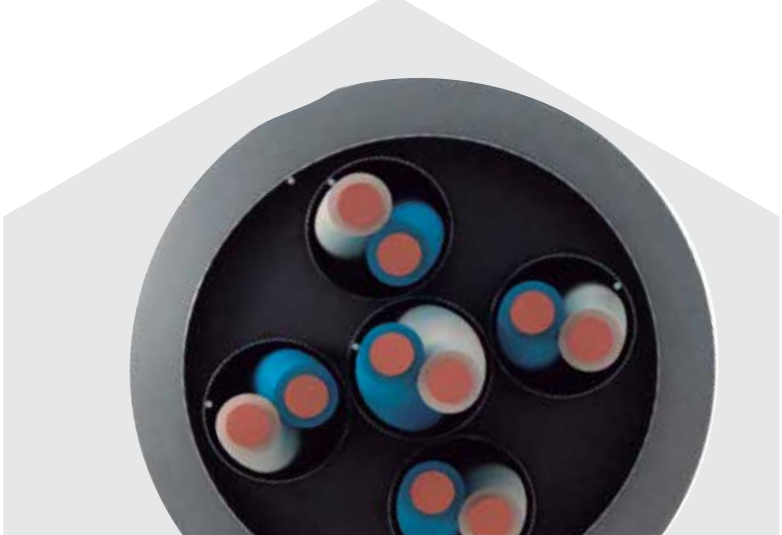
O3.....Individual and overall screen

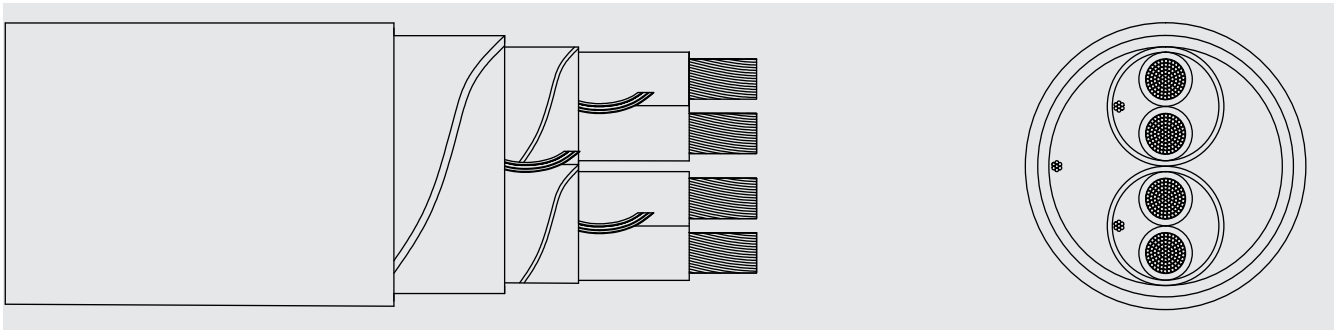
4. Outer sheath

LSZH polyolefin outer sheath SHF1 type. Grey colour, fire retardant.

APPLICATIONS

The Toxfree Marine XOxZ1-K (AS) cable with zero halogen is a safety instrumentation 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.





CHARACTERISTICS

Electrical performance

INSTRUMENTATION 250V

Standards

IEC 60092-376, IEC 60092-350

Approvals

DNV-GL
ABS (in progress)
Bureau Veritas (in progress)
CE
RoHS

Thermal performance

Maximum service 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 based on EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on EN 60754-1 and IEC 60754-1.
Low smoke emission based on EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on EN 60754-2 and IEC 60754-2.

Mechanical performance

Minimum bending radius: x5 cable diameter.
Impact resistance: AG3 High severity.

Chemical performance

Chemical & Oil resistance: Acceptable.

Water performance

Water resistance: AD6 waves.

Other

Meter by meter marking.

Installation conditions

Open Air.
In conduit.
Wall attached.
On tray.

Applications

Marine use.
Public places.

Top Cable




DIMENSIONS XO2Z1-K

Cross section (mm2)	Diameter (mm)	Weight (Kg/Km)	Open Air 45°C (A)	Max. Conductor Resistance at 20°C (Ohm/Km)
1 x 2 x 0,75	6,2	50	17,1	27,6
2 x 2 x 0,75	10,3	90	13,7	27,6
4 x 2 x 0,75	12,1	140	11,2	27,6
7 x 2 x 0,75	14,5	210	9,2	27,6
10 x 2 x 0,75	18,7	290	8,6	27,6
14 x 2 x 0,75	20,4	370	7,4	27,6
19 x 2 x 0,75	22,9	460	6,5	27,6
24 x 2 x 0,75	27,3	555	6,5	27,6

DIMENSIONS XO3Z1-K

Cross section (mm2)	Diameter (mm)	Weight (Kg/Km)	Open Air 45°C (A)	Max. Conductor Resistance at 20°C (Ohm/Km)
1 x 2 x 0,75	6,2	90	17,1	27,6
2 x 2 x 0,75	10,6	125	13,7	27,6
4 x 2 x 0,75	12,3	190	11,2	27,6
7 x 2 x 0,75	14,7	260	9,2	27,6
10 x 2 x 0,75	19,0	330	8,6	27,6
14 x 2 x 0,75	20,8	420	7,4	27,6
19 x 2 x 0,75	23,3	530	6,5	27,6
24 x 2 x 0,75	27,8	640	6,5	27,6

Maximum admissible intensities according to IEC 60364-5-52.
For other installation conditions, please refer to correction factors in the appendix to this catalogue.
See more technical data on the particular cable specification.
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For more information: sales@topcable.com

Top Cable

Top Cable

TOXFREE MARINE XOxTCuZ1-K (AS) (x:1...3)

The Marine armoured instrumentation cable

IEC 60092-376, IEC 60092-350

DESIGN

1. Conductor

Electrolytic copper, class 5 (flexible), based on EN 60228.

2. Insulation

LSZH XLPE 90°C.

The standard identification is the following per pair:

1x Blue

1xWhite

Each pair is numbered

3. Screen

Individual and/or collective aluminium / polyester tape with tinned copper drain wire

O1.....Individual screen (per pair)

O2.....Overall screen (per cable)

O3.....Individual and overall screen

4. Armour Bedding

Polyester tape.

5. Armour

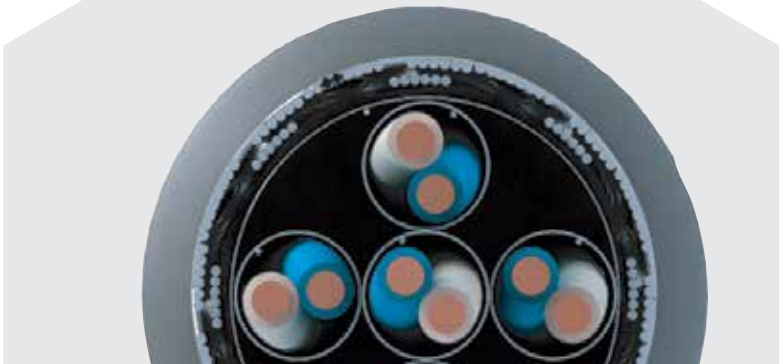
Tinned copper braid screen.

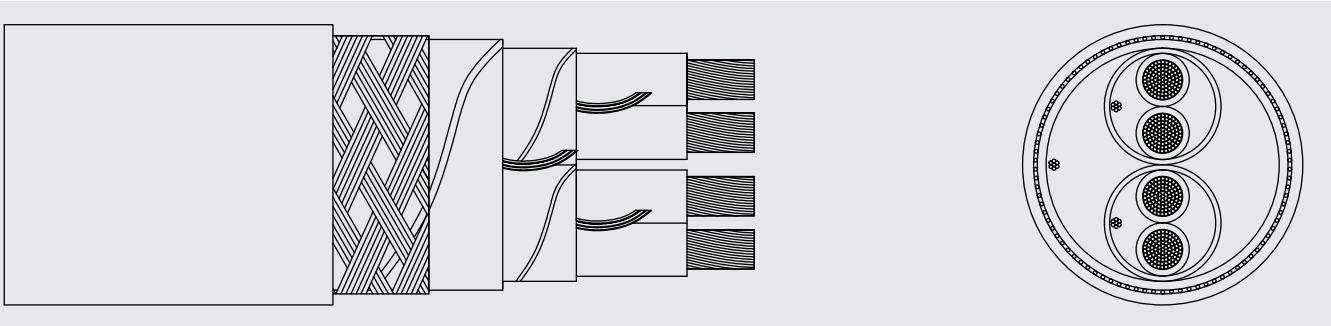
6. Outer sheath

LSZH polyolefin outer sheath SHF1 type. Grey colour, fire retardant.

APPLICATIONS

The Toxfree Marine XOxTCuZ1-K (AS) cable with zero halogens is a safety armoured instrumentation 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.





CHARACTERISTICS

Electrical performance

INSTRUMENTATION 250V

Standards

IEC 60092-376, IEC 60092-350

Approvals

DNV-GL
ABS (in progress)
Bureau Veritas (in progress)
CE
RoHS

Thermal performance

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

Fire performance

Flame non-propagation based on EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on EN 60754-1 and IEC 60754-1.
Low smoke emission based on EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on EN 60754-2 and IEC 60754-2.

Mechanical performance

Minimum bending radius: x5 cable diameter.
Impact resistance: AG3 High severity.

Chemical performance

Chemical & Oil resistance: Acceptable.

Water performance

Water resistance: AD6 waves.

Other

Metre by metre marking.

Installation conditions

Open Air.
In conduit.
Wall attached.
On tray.

Applications

Marine use.
Public places.

Top Cable




DIMENSIONS XO2TCuZ1-K

Cross section (mm2)	Diameter (mm)	Weight (Kg/Km)	Open Air 45°C (A)	Max. Conductor Resistance at 20°C (Ohm/Km)
1 x 2 x 0,75	7,2	90	17,1	27,6
2 x 2 x 0,75	11,3	150	13,7	27,6
4 x 2 x 0,75	13,1	215	11,2	27,6
7 x 2 x 0,75	15,9	340	9,2	27,6
10 x 2 x 0,75	20,2	470	8,6	27,6
14 x 2 x 0,75	21,9	605	7,4	27,6
19 x 2 x 0,75	24,4	795	6,5	27,6
24 x 2 x 0,75	28,8	960	6,5	27,6

DIMENSIONS XO3TCuZ1-K

Cross section (mm2)	Diameter (mm)	Weight (Kg/Km)	Open Air 45°C (A)	Max. Conductor Resistance at 20°C (Ohm/Km)
1 x 2 x 0,75	7,1	135	17,1	27,6
2 x 2 x 0,75	11,4	185	13,7	27,6
4 x 2 x 0,75	13,2	265	11,2	27,6
7 x 2 x 0,75	16,0	390	9,2	27,6
10 x 2 x 0,75	20,3	510	8,6	27,6
14 x 2 x 0,75	22,1	655	7,4	27,6
19 x 2 x 0,75	24,6	865	6,5	27,6
24 x 2 x 0,75	29,1	1.045	6,5	27,6

Maximum admissible intensities according to IEC 60364-5-52.
For other installation conditions, please refer to correction factors in the appendix to this catalogue.
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For more information: sales@topcable.com

Top Cable

Top Cable

TOXFREE MARINE PLUS XOxZ1-K (AS+) (x:1...3)

The Marine fire resistant instrumentation cable

IEC 60092-376, IEC 60092-350

DESIGN

1. Conductor

Electrolytic copper, class 5 (flexible), based on EN 60228 and IEC 60228.

2. Insulation

Mica Tape + LSZH XLPE 90°C.

The standard identification is the following per pair:

1x Blue

1xWhite

Each pair is numbered

3. Screen

Individual and/or collective aluminium / polyester tape with tinned copper drain wire

O1.....Individual screen (per pair)

O2.....Overall screen (per cable)

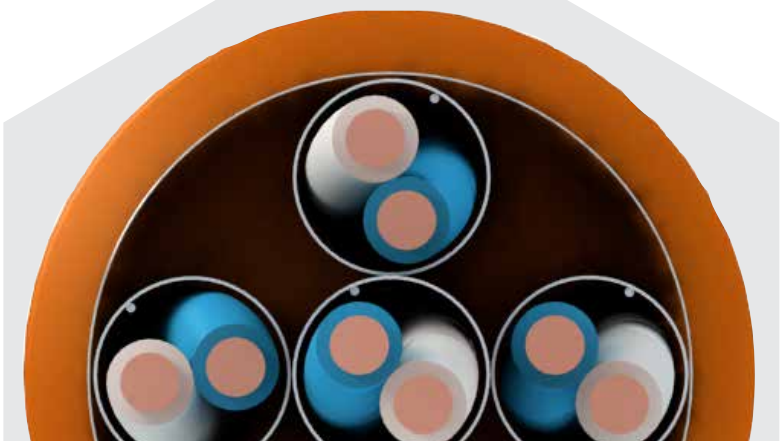
O3.....Individual and overall screen

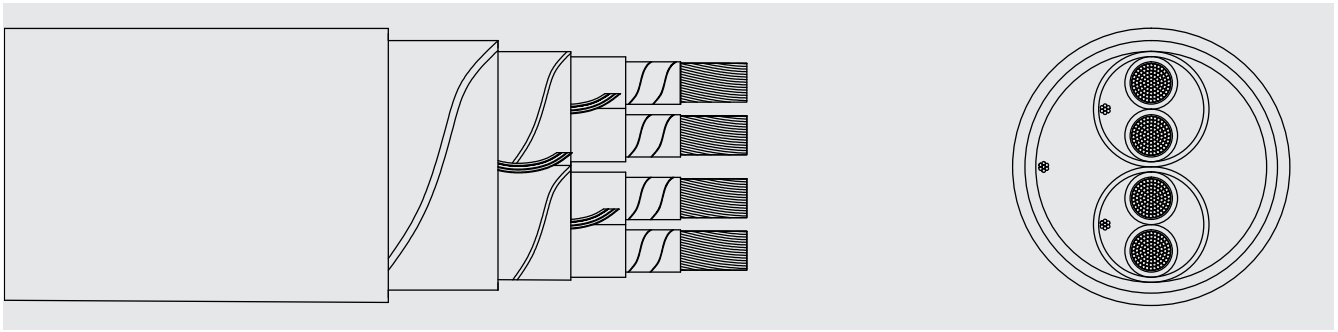
4. Outer sheath

LSZH polyolefin outer sheath SHF1 type. Orange colour, non-toxic, fire retardant and fire resistant.

APPLICATIONS

Marine power Medium Voltage cables. Specially designed for the transmission and distribution of electricity in marine applications.





CHARACTERISTICS

Electrical performance

INSTRUMENTATION 250V

Standards

IEC 60092-376, IEC 60092-350

Approvals

DNV-GL
ABS (in progress)
Bureau Veritas (in progress)
CE
RoHS

Thermal performance

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

Fire performance

Flame non-propagation based on EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
Fire resistant based on EN 60331-21 and IEC 60331-21.
LSZH (Low Smoke Zero Halogen) based on EN 60754-1 and IEC 60754-1.
Low smoke emission based on EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on EN 60754-2 and IEC 60754-2.

Mechanical performance

Minimum bending radius: x5 cable diameter.
Impact resistance: AG3 High severity.

Chemical performance

Chemical & Oil resistance: Acceptable.

Water performance

Water resistance: AD6 waves.

Other

Metre by metre marking.

Installation conditions

Open Air.
In conduit.
Wall attached.
On tray.

Applications

Marine use.
Public places.

Top Cable




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Weight (Kg/Km)	Open Air 45°C (A)	Max. Conductor Resistance at 20°C (Ohm/Km)
1 x 2 x 0,75	7,5	60	17,1	27,6
2 x 2 x 0,75	12,0	110	13,7	27,6
4 x 2 x 0,75	14,0	190	11,2	27,6
7 x 2 x 0,75	17,5	280	9,2	27,6
10 x 2 x 0,75	21,1	365	8,6	27,6
14 x 2 x 0,75	23,4	450	7,4	27,6
19 x 2 x 0,75	25,6	560	6,5	27,6
24 x 2 x 0,75	30,0	660	6,5	27,6

Cross section (mm2)	Diameter (mm)	Weight (Kg/Km)	Open Air 45°C (A)	Max. Conductor Resistance at 20°C (Ohm/Km)
1 x 2 x 0,75	7,5	60	17,1	27,6
2 x 2 x 0,75	12,4	145	13,7	27,6
4 x 2 x 0,75	14,4	220	11,2	27,6
7 x 2 x 0,75	18,0	330	9,2	27,6
10 x 2 x 0,75	22,1	440	8,6	27,6
14 x 2 x 0,75	24,5	550	7,4	27,6
19 x 2 x 0,75	26,5	665	6,5	27,6
24 x 2 x 0,75	31,9	760	6,5	27,6

Maximum admissible intensities according to IEC 60364-5-52.
For other installation conditions, please refer to correction factors in the appendix to this catalogue.
See more technical data on the particular cable specification.
Top Cable reserves the right to carry out any modification to the data sheets whatsoever without giving previous notice.
For more information: sales@topcable.com

Top Cable

Top Cable

TOXFREE MARINE PLUS XOxTCuZ1-K (AS+) (x:1...3)

The Marine armoured and fire resistant instrumentation cable

IEC 60092-376, IEC 60092-350

DESIGN

1. Conductor

Electrolytic copper, class 5 (flexible), based on EN 60228 and IEC 60228.

2. Insulation

Mica Tape + LSZH XLPE 90°C.

The standard identification is the following per pair:

1x Blue

1xWhite

Each pair is numbered

3. Screen

Individual and/or collective aluminium / polyester tape with tinned copper drain wire

O1.....Individual screen (per pair)

O2.....Overall screen (per cable)

O3.....Individual and overall screen

4. Armour bedding

Polyester tape.

5. Armour

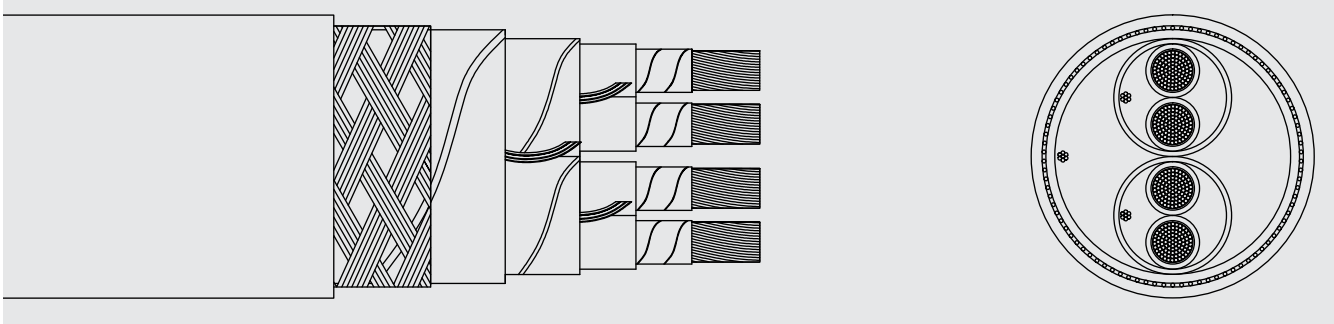
Tinned copper braid screen.

6. Outer sheath

LSZH polyolefin outer sheath SHF1 type. Orange colour, non-toxic, fire retardant and fire resistant.

APPLICATIONS

The Toxfree Marine Plus XOxTCuZ1-K (AS+) cable with zero halogens is a sfety armoured instrumentation cable. It is specially designed to transmit electric supply to emergency circuits, like signalling lights, smoke extractors, acoustic alarms, water pumps, etc. For this reason, its use is recommended in public places and marine applications.



CHARACTERISTICS

Electrical performance

INSTRUMENTATION 250v

Standards

IEC 60092-376, IEC 60092-350

Approvals

DNV-GL
ABS (in progress)
Bureau Veritas (in progress)
CE
RoHS

Thermal performance

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

Fire performance

Flame non-propagation based on EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
Fire resistant based on EN 60331-21 and IEC 60331-21
LSZH (Low Smoke Zero Halogen) based on EN 60754-1 and IEC 60754-1.
Low smoke emission based on EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on EN 60754-2 and IEC 60754-2.

Mechanical performance

Minimum bending radius: x5 cable diameter.
Impact resistance: AG3 High severity.

Chemical performance

Chemical & Oil resistance: Acceptable.

Water performance

Water resistance: AD6 waves.

Other

Metre by metre marking.

Installation conditions

Open Air.
In conduit.
Wall attached.
On tray.

Applications

Marine use.
Public places.

Top Cable




DIMENSIONS XO2Z1-K (AS+)

Cross section (mm2)	Diameter (mm)	Weight (Kg/Km)	Open Air 45°C (A)	Max. Conductor Resistance at 20°C (Ohm/Km)
1 x 2 x 0,75	10,5	145	17,1	27,6
2 x 2 x 0,75	14,3	230	13,7	27,6
4 x 2 x 0,75	18,1	375	11,2	27,6
7 x 2 x 0,75	21,0	605	9,2	27,6
10 x 2 x 0,75	29,3	745	8,6	27,6
14 x 2 x 0,75	31,5	905	7,4	27,6
19 x 2 x 0,75	34,5	1.195	6,5	27,6
24 x 2 x 0,75	38,8	1.350	6,5	27,6

DIMENSIONS XO3Z1-K (AS+)

Cross section (mm2)	Diameter (mm)	Weight (Kg/Km)	Open Air 45°C (A)	Max. Conductor Resistance at 20°C (Ohm/Km)
1 x 2 x 0,75	10,5	145	17,1	27,6
2 x 2 x 0,75	14,8	250	13,7	27,6
4 x 2 x 0,75	20,0	565	11,2	27,6
7 x 2 x 0,75	22,0	815	9,2	27,6
10 x 2 x 0,75	30,3	980	8,6	27,6
14 x 2 x 0,75	32,1	1.255	7,4	27,6
19 x 2 x 0,75	35,6	1.465	6,5	27,6
24 x 2 x 0,75	40,5	1.645	6,5	27,6

Maximum admissible intensities according to IEC 60364-5-52.
For other installation conditions, please refer to correction factors in the appendix to this catalogue.
See more technical data on the particular cable specification.
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Top Cable

Top Cable

TOXFREE ZH ROZ1-K (AS) VFD EMC 0,6/1 kV

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

IEC 60502-1 / IEC 60092-353

DESIGN

1. Conductor

Electrolytic copper, class 5 (flexible), based on EN 60228 and IEC 60228.

2. Grounding Conductor

The grounding conductor is divided into three conductors; the equivalent cross section is approximately 50% of the section of the phase conductor.

3. Insulation

Cross-linked polyethylene (XLPE)

The standard identification of insulated conductors is the following:

4G	grey + brown + black + yellow/green (up to 4 mm2)
3x + 3G	grey + brown + black + yellow/green (3 x) (from 6 mm2 onwards)

4. 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 the electromagnetic interference.

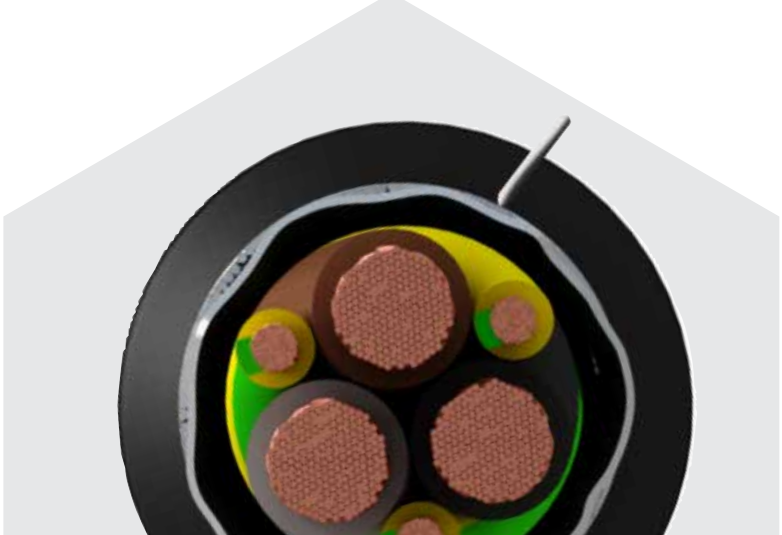
The screen has a cover of 100% and its total section is approximately 10% of one of the conductors.

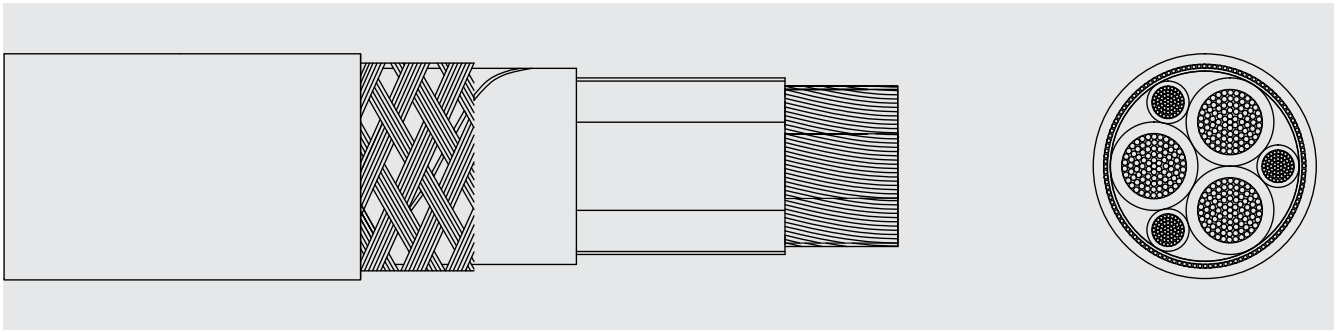
5. Outer sheath

Polyolefin LSZH outer sheath, black colour. The ripcord allows you to gently tear the outer-sheath allowing you to gently peel it away without damaging the screen.

APPLICATIONS

ROZ1-K EMC VFD cable has been specially designed for Variable Frequency Drive Motors and installations where it is necessary to limit the effects of electromagnetic interference (EMI).





CHARACTERISTICS

Electrical performance

LOW VOLTAGE 0.6/1 KV

Standards

IEC 60502-1 / IEC 60092-353

Approvals

DNV-GL
ABS (in progress)
Bureau Veritas (in progress)
CE
RoHS

Thermal performance

Maximum service 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 based on UNE-EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on UNE-EN 60754-1 and IEC 60754-1.
Low smoke emission based on UNE-EN 61034 and IEC 61034.: Light transmittance > 60%.
Low corrosive gases emission based on UNE-EN 60754-2 and IEC 60754-2.

Mechanical performance

Minimum bending radius: x10 cable diameter.
Impact resistance: AG2 Medium severity.

Chemical performance

Chemical & Oil resistance: Good.

Water performance

Water resistance: AD6 Waves.

Other

Meter by meter marking.
Ripcord.
Electric fields resistant.

Installation conditions

Open Air.
In conduit.

Applications

Marine use.
Industrial use.
Variable Frequency Drive (VFD)

Top Cable




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Outer diameter (mm)	Aprox weight (Kg/km)	Open air 30°C (A)	Buried 20°C (A)	Conductor resistance (Ohm/Km)	Voltage drop (V/A · km)
4G1,5	7,0	10,4	155	23	22	13,3	29,4
4G2,5	7,9	11,3	195	32	29	7,98	17,6
4G4	9,2	12,4	260	42	37	4,95	10,9
4G6	10,6	14	345	54	46	3,3	7,29
4G10	12,9	17,2	595	75	61	1,91	4,22
3 x 6 + 3 G 1,5	10,6	13,9	335	54	46	3,30	7,29
3 x 10 + 3 G 1,5	11,7	15,0	450	75	61	1,91	4,22
3 x 16 + 3 G 2,5	13,5	17,2	670	100	79	1,21	2,67
3 x 25 + 3 G 4	16,8	21,4	1.085	127	101	0,78	1,72
3 x 35 + 3 G 6	19,4	24,1	1.455	158	122	0,554	1,22
3 x 50 + 3 G 10	22,8	28,0	2.025	192	144	0,386	0,852
3 x 70 + 3 G 10	27,1	32,5	2.650	246	178	0,272	0,601
3 x 95 + 3 G 16	30,5	36,1	3.455	298	211	0,206	0,455
3 x 120 + 3 G 16	34,6	41,0	4.345	346	240	0,161	0,356
3 x 150 + 3 G 25	38,9	45,5	5.450	399	271	0,129	0,285
3 x 185 + 3 G 35	43,4	50,4	6.755	456	304	0,106	0,234
3 x 240 + 3 G 50	49,2	56,6	8.860	538	351	0,0801	0,177
3 x 300 + 3 G 50	55,3	63,0	10.695	621	396	0,0641	0,142

Maximum admissible intensities according to IEC 60364-5-52.
For other installation conditions, please refer to correction factors in the appendix to this catalogue.
See more technical data on the particular cable specification.
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Top Cable

Top Cable

TOXFREE ZH ROZ1-K (AS) VFD EMC 1,8/3 kV

3kV flexible EMC LSZH screened cable for Variable Frequency Drive cables (VFD cables).

IEC 60502-1 / IEC 60092-353

DESIGN

1. Conductor

Electrolytic copper, class 5 (flexible), based on EN 60228 and IEC 60228.

2. Grounding Conductor

The grounding conductor is divided into three conductors; the equivalent cross section is approximately 50% of the section of the phase conductor.

3. Insulation

Cross-linked polyethylene (XLPE)

The standard identification of insulated conductors is the following:

4G ..... grey + brown + black + yellow/green (up to 4 mm2)

3x + 3G ..... grey + brown + black + yellow/green (3 x) (from 6 mm2 onwards)

4. 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 the electromagnetic interference.

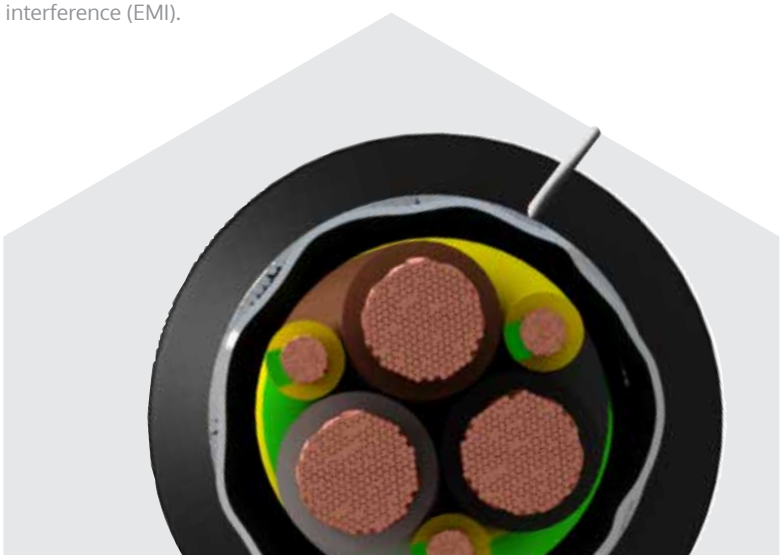
The screen has a cover of 100% and its total section is approximately 10% of one of the conductors.

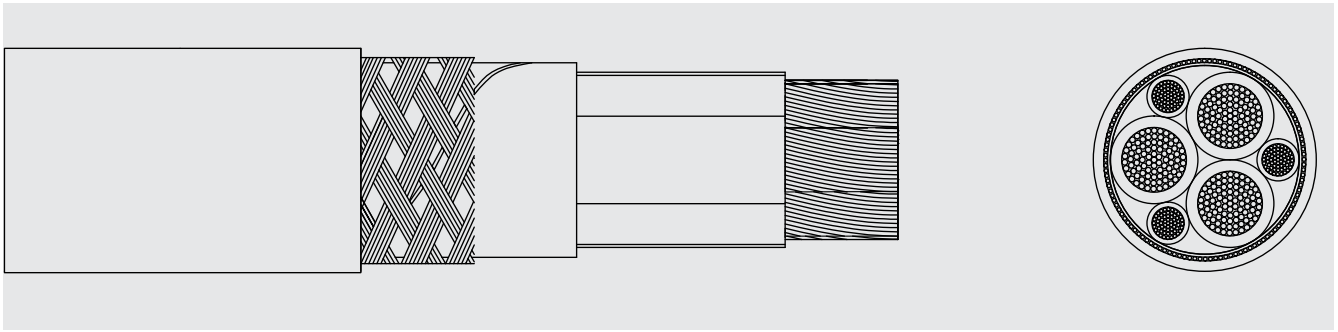
5. Outer sheath

Polyolefin LSZH outer sheath, black colour.

APPLICATIONS

ROZ1-K EMC VFD 1,8/3kV cable has been specially designed for Variable Frequency Drive Motors and installations where it is necessary to limit the effects of electromagnetic interference (EMI).





CHARACTERISTICS

Electrical performance

LOW VOLTAGE 1,8/3 KV

Standards

IEC 60502-1 / IEC 60092-353

Approvals

DNV-GL
ABS (in progress)
Bureau Veritas (in progress)
CE
RoHS

Thermal performance

Maximum service 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 based on EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on EN 60754-1 and IEC 60754-1.
Low smoke emission based on EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on EN 60754-2 and IEC 60754-2.

Mechanical performance

Minimum bending radius: x10 cable diameter.
Impact resistance: AG2 Medium severity.

Chemical performance

Chemical & Oil resistance: Good.

Water performance

Water resistance: AD6 Waves.

Other

Metre by metre marking.
Electric fields resistant.

Installation conditions

Open Air.
In conduit.

Applications

Marine use.
Industrial use.
Variable Frequency Drive (VFD)

Top Cable




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Outer diameter (mm)	Aprox weight (Kg/km)	Open air 30°C (A)	Buried 20°C (A)	Conductor resistance (Ohm/Km)	Voltage drop (V/A · km)
3 x 50 + 3 G 10	27,3	32,4	2.185	192	144	0,386	0,852
3 x 70 + 3 G 10	31,1	36,5	2.805	246	178	0,272	0,601
3 x 95 + 3 G 16	34	40,2	3.720	298	211	0,206	0,455
3 x 120 + 3 G 16	36,7	43,1	4.485	346	240	0,161	0,356
3 x 150 + 3 G 25	41,6	48,2	5.615	399	271	0,129	0,285
3 x 185 + 3 G 35	45,3	52,2	6.825	456	304	0,106	0,234
3 x 240 + 3 G 50	50,7	58	8.890	538	351	0,0801	0,177
3 x 300 + 3 G 50	56,3	64	10.690	621	396	0,0641	0,142

Maximum admissible intensities according to IEC 60364-5-52.
For other installation conditions, please refer to correction factors in the appendix to this catalogue.
See more technical data on the particular cable specification.
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For more information: sales@topcable.com

Top Cable

Top Cable

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

The Marine wiring cable

EN 50525-3-31 / UNE 211002 / UL 1581

DESIGN

1. Conductor

Electrolytic copper, class 5 (flexible), based on EN 60228 and IEC 60228.

2. Insulation

Extra sliding low smoke zero halogen (LSZH) polyolefin insulation.

The standard identification of insulated conductors is the following:

Blue RAL 5015

Brown RAL 8003

Black RAL 9005

Red RAL 3000

Yellow/green RAL 1021 / RAL 6018

Grey RAL 7000

Dark Blue RAL 5003

White RAL 9010

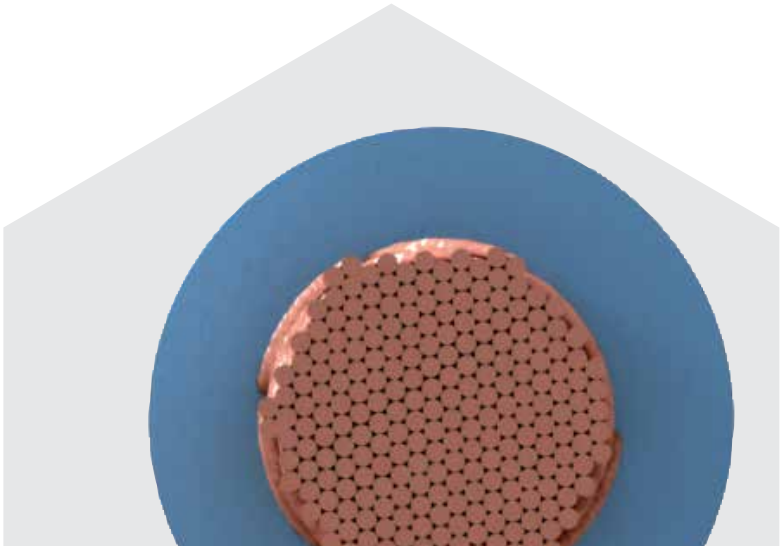
Orange RAL 2003

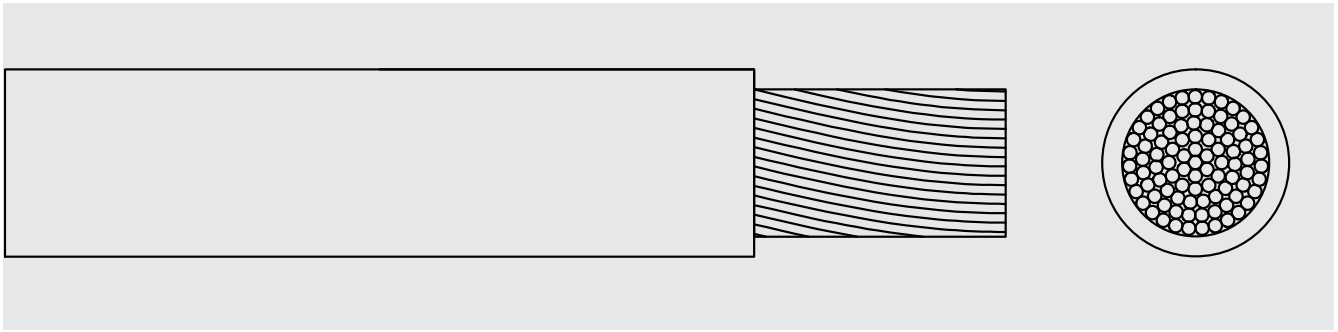
Violet RAL 4005

Other colours available on request

APPLICATIONS

Toxfree ES05Z1- K & H07Z1-K is a LSZH 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 this reason it is highly recommended for switchboard wiring in marine applications.





CHARACTERISTICS

Electrical performance

LOW VOLTAGE 300/500 V · 450/750 V · UL 600 V

Standards

EN 50525-3-31 / UNE 211002 / UL 1581

Approvals

CE
SEC
HAR
BUREAU VERITAS
SASO
AENOR
RoHS
UL (in progress)

Thermal performance

Maximum service temperature: 90°C (UL 1581) / 70°C (EN 50525-3-31).
Maximum short-circuit temperature: 160°C (max. 5 s).
Minimum service temperature: -40°C (fixed and protected installations).

Fire performance

Flame non-propagation based on EN 60332-1 and IEC 60332-1.
Fire non-propagation based on EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on EN 60754-1 and IEC 60754-1.
Low smoke emission based on EN 61034 and IEC 61034: Light transmittance > 60%
Low corrosive gases emission based on EN 60754-2 and IEC 60754-2.

Mechanical performance

Minimum bending radius: x5 cable diameter.

Chemical performance

Chemical & Oil resistance: Acceptable.

Water performance

Water resistance: AD3 Sprays.

Other

Metre by metre marking. (from 10mm2 onwards)

Installation conditions

In conduit.

Applications

Marine use.
Electrical panel wiring.
Public places.

Packaging

Small cross sections (from 0,75 mm2 to 6 mm2) are supplied in high-resistant boxes. Medium cross sections (from 10 mm2 to 35 mm2) are supplied in 100 m sealed coils. Greater cross sections (>35 mm2) are supplied in drums.

Top Cable




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Aprox Weight (Kg/km)	Open Air 30°C (A)	Buried (3 cores)	Voltage Drop (V/A · km)
1 x 0,75	2,3	11	11	-	62,40
1 x 1	2,5	13	14	-	46,80
1 x 1,5	2,9	19	17,5	15,5	31,90
1 x 2,5	3,5	30	24	21	19,20
1 x 4	4,1	44	32	28	11,90
1 x 6	4,6	62	41	36	7,92
1 x 10	6,0	106	57	50	4,58
1 x 16	6,9	157	76	68	2,90
1 x 25	8,8	246	101	89	1,87
1 x 35	9,9	336	125	110	1,33
1 x 50	11,8	476	151	134	0,93
1 x 70	13,5	657	192	171	0,65
1 x 95	15,6	873	232	207	0,49
1 x 120	17,0	1.096	269	239	0,39
1 x 150	18,9	1.375	309	275	0,31
1 x 185	21,5	1.678	353	314	0,25
1 x 240	24,5	2.205	415	370	0,19

Maximum admissible intensities according to IEC 60364-5-52.
For other installation conditions, please refer to correction factors in the appendix to this catalogue.
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Top Cable


Top Cable

Top Cable Xtrem
Offshore range

General standards for offshore cables

Top Cable

General standards for offshore cables

Cables installed in oil rigs are often exposed to extreme conditions such as as mud, oils, fire or high temperatures. The construction and materials used in Top Cable Xtrem Offshore cable range are specifically designed to meet these demanding environments.

CONDUCTOR

Electrolytic annealed tinned copper. Our conductors are flexible class 5 according to IEC 60228; saving time, resources and costs in the installation process. BFOU cables have conductors fully wrapped in mica-glass under the insulation.

INSULATION

Halogen Free Ethylene Propylene Rubber (EPR) according to IEC 60092-351 that has excellent mechanical and electrical properties and it can withstand 250°C temperature in a short circuit and continuous conductor temperature of 90°C.

BEDDING

Halogen Free bedding material over the cores for all RFOU and BFOU cables.

ARMOUR / BRAID

Tinned copper wire braid according to IEC 60092-350 offers both EMI and mechanical protection. Cross section of the braid is designed according to IEC 600092-352.

SHEATHING MATERIAL

Mud resistant thermosetting compound, black color type SHF MUD. This material is halogen free, low smoke, non-corrosive and low opacity smoke emission and no fire and flame propagation. It's also MUD resistant according to NEK 606. This makes these cables suitable for installation in oil rigs for power, lighting and control and data circuits.

METRE BY METRE MARKING

Ensures the ease of tracking and replacement of cables.

STANDARDS

The standards applicable for offshore installations are based on:

- Offshore Power cables 0,6/1kV: IEC 60092-353
- Offshore Control cables 0,6/1kV: IEC 60092-353
- Offshore Instrumentation cables 250V: IEC 60092-376
- Offshore Medium Voltage: IEC 60092-354

Top Cable Xtrem Offshore range

Top Cable

Top Cable Xtrem Offshore range

Our portfolio for Offshore applications includes a full range of medium voltage, low voltage, control and instrumentation cables. All of them available according to the different fire performances: flame and fire retardant, and fire resistant.

All Xtrem Offshore cables are designed and produced according to international standards. Our choice of materials and constructions ensure that the cables are resistant to most chemicals and hydrocarbons, which are commonly used on oil rigs and onboard ships. Top Cable's range fully complies with the requirements specified in the IEC 60092 series of standards and is mud resistant according to NEK 606.

Offshore cables designation

R	Halogen Free Ethylene Propylene Rubber (EPR)
B	Fire Resistant Tape + Insulation
F	Halogen Free Thermosetting Bedding Compound
0	Tinned copper wire braid armour
X	No armoured / No outer sheath
U	Halogen Free Thermosetting Compound SHF2 or SHF MUD (NEK 606)
(i)	Individual (per pairs or triads) Copper / Polyester tape screen
(c)	Overall (global) Copper / Polyester tape screen
VFD	Variable Frequency Drive cable
P1	0,6/1kV RFOU power and control Halogen Free
P1/P8	0,6/1kV RFOU power and control Halogen Free + Mud resistant
P2	3,6/6kV RFOU power medium voltage Halogen Free
P2/P9	3,6/6kV RFOU power medium voltage Halogen Free + Mud resistant
P3	6/10kV RFOU power medium voltage Halogen Free
P3/P10	6/10kV RFOU power medium voltage Halogen Free + Mud resistant
P4	8,7/15kV RFOU power medium voltage Halogen Free
P4/P11	8,7/15kV RFOU power medium voltage Halogen Free + Mud resistant
P19	12/20kV RFOU power medium voltage Halogen Free
P19/P21	12/20kV RFOU power medium voltage Halogen Free + Mud resistant
P20	18/30kV RFOU power medium voltage Halogen Free
P20/P22	18/30kV RFOU power medium voltage Halogen Free + Mud resistant
P5	0,6/1kV BFOU power and control Halogen Free / Fire Resistant
P5/P12	0,6/1kV BFOU power and control Halogen Free + Mud resistant / Fire Resistant
S1	250V RFOU (i) instrumentation (individual screen) Halogen Free
S1/S5	250V RFOU (i) instrumentation (individual screen) Halogen Free + Mud resistant
S2	250V RFOU (c) instrumentation (common screen) Halogen Free
S2/S6	250V RFOU (c) instrumentation (common screen) Halogen Free + Mud resistant
S3	250V BFOU (i) instrumentation (individual screen) Halogen Free / Fire Resistant
S3/S7	250V BFOU (i) instrumentation (individual screen) Halogen Free + Mud resistant / Fire Resistant
S4	250V BFOU (c) instrumentation (common screen) Halogen Free / Fire Resistant
S4/S8	250V BFOU (c) instrumentation (common screen) Halogen Free + Mud resistant / Fire Resistant

General summary chart

TOP CABLE XTREM OFFSHORE CABLES

	APPLICATION			FIRE PERFORMANCE		SCREEN		
	Power		Instrumentation	Fire	Fire Resistant	Individual	Overall	
	MV	0,6/1kV	250V	(AS)	(AS+)	01 (Al/polyester)	02 (Al/polyester)	MUD RESISTANT
XTREM RFOU P1/P8		✓		✓				✓
XTREM RFOU (i) S1/S5			✓	✓		✓		✓
XTREM RFOU (c) S2/S6			✓	✓			✓	✓
XTREM RFOU P2/P9, P3/P10, P4/P11, P19/P21, P20/P22	✓			✓				✓
XTREM BFOU P5/P12		✓			✓			✓
XTREM BFOU (i) S3/S7			✓		✓	✓		✓
XTREM BFOU (c) S4/S8			✓		✓		✓	✓
XTREM RFOU VFD		✓		✓			✓	✓
XTREM RFOU P1		✓		✓				
XTREM RFOU (i) S1			✓	✓		✓		
XTREM RFOU (c) S2			✓	✓			✓	
XTREM RFOU P2, P3, P4, P19, P20	✓			✓				
XTREM BFOU P5		✓			✓			
XTREM BFOU (i) S3			✓		✓	✓		
XTREM BFOU (c) S4			✓		✓		✓	
XTREM UX		✓		✓				✓

Top Cable

XTREM OFFSHORE RFOU P1/P8

Offshore power 0,6/ 1kV

IEC 60092-353 / NEK TS 606

DESIGN

1. Conductor

Class 5 tinned copper, based on IEC 60228.

2. Insulation

Halogen Free Ethylene propylene, type EPR according to IEC 60092-351.
The standard identification is the following:
1 conductor ..... natural
2 conductors ..... blue + brown
3 conductors ..... brown + black + grey
4 conductors ..... brown + black + grey + blue
5 or more conductors .....white numbered

3. Bedding

Halogen Free compound.

4. Braid / Armour

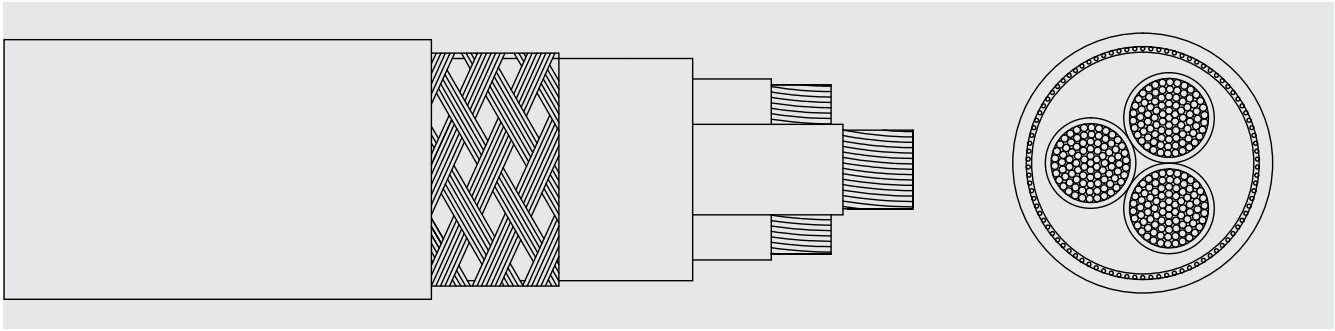
Tinned copper wire braid.

5. Outer sheath

Mud resistant thermosetting compound, black colour, low smoke and halogen free, type SHF MUD.

APPLICATIONS

Offshore power 0,6/1kV cable. These cables have been specially designed to operate reliably in the harshest oil rig conditions. Heavy duty, mud resistant, power and control cables for Offshore applications. Halogen free, flame and fire non propagator. Excellent resistance to oils, abrasion, petrochemical fluids, moisture and salt water. Based on IEC 60092-353 and NEK TS 606. Xtrem RFOU cables are suitable for power distribution in fixed installations in vessels and oil rigs.



CHARACTERISTICS

Electrical performance
LOW VOLTAGE 0,6/1kV

Standards
IEC 60092-353 / NEK TS 606

Approvals
DNV-GL
ABS
CE
ROHS

Thermal performance
Maximum service temperature: 90°C
Maximumshort-circuittemperature:250°C(maximum5s)
Minimumservicetemperature:fixed-40°Cmobile-25°C

Fire performance
Flame non-propagation based on UNE-EN 60332-1 and IEC 60332-1.
Fire non-propagation based on UNE-EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on UNE-EN 60754-1 and IEC 60754-1.
Low smoke emission based on UNE-EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on UNE-EN 60754-2 and IEC 60754-2.

Mechanical performance
Mechanical stress impact: AG3. High severity
Minimum bending radius: 6 x cable diameter

Chemical performance
Chemical & oil resistance: excellent

Water performance
Water resistance: AD6 waves.

Other
Metre by metre marking.

Installation conditions
Open air
Public places
Marine use
On tray
In conduit
Wall attached

Applications
Oil rigs
Marine use
Public places

Mud resistance
According to NEK TS 606




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Weight (Kg/km)	Open Air 45°C (A)	Voltage drop (V/A·km)	Conductor resistance at 20°C (Ohm/Km)
1 x 16	13,26	310	86	2,74	1,2400
1 x 25	15,64	450	117	1,76	0,7950
1 x 35	16,83	570	147	1,25	0,5650
1 x 50	18,77	760	180	0,87	0,3930
1 x 70	20,39	1.040	233	0,61	0,2770
1 x 95	22,77	1.310	285	0,46	0,2100
1 x 120	24,30	1.590	333	0,36	0,1640
1 x 150	26,66	1.920	386	0,29	0,1320
1 x 185	28,92	2.340	444	0,24	0,1080
1 x 240	31,95	2.965	528	0,18	0,0817
1 x 300	35,19	3.660	612	0,14	0,0654
2 x 1,5/4	12,18	235	23	30,30	13,7000
2 x 2,5/4	13,70	275	31,0	18,10	8,2100
2 x 4/6	14,78	365	43	11,24	5,0900
2 x 6/6	16,10	4.047	55	7,48	3,3900
2 x 10/10	18,02	585	75	4,30	1,9500
2 x 16/16	20,18	725	100	2,74	1,2400
2 x 25/16	24,06	1.060	130	1,76	0,7950
3 x 1,5/4	12,93	265	20	30,30	13,7000
3 x 2,5/6	14,23	315	28	18,10	8,2100
3 x 4/6	15,68	420	37	11,24	5,0900
3 x 6/6	16,78	495	47	7,48	3,3900
3 x 10/10	19,10	725	65	4,30	1,9500
3 x 16/16	21,45	990	87	2,74	1,2400
3 x 25/16	25,49	1.440	110	1,76	0,7950
3 x 35/16	28,04	1.850	137	1,25	0,5650
3 x 50/25	32,66	2.430	167	0,87	0,3930
3 x 70/35	36,57	3.220	214	0,61	0,2770
3 x 95/50	41,68	4.295	259	0,46	0,2100
3 x 120/60	45,59	5.245	301	0,36	0,1640
3 x 150/75	50,47	6.475	347	0,29	0,1320
3 x 185/95	55,78	7.990	397	0,24	0,1080
3 x 240/120	62,28	9.615	468	0,18	0,0817
4G2,5	15,34	320	25	18,10	8,2100
4G4	16,77	380	34	11,24	5,0900
4G6	18,20	590	42	7,48	3,3900
4G10	20,67	880	57	4,30	1,9500
4G16	23,28	1.250	77	2,74	1,2400
4G25	27,96	1.720	100	1,76	0,7950
4G35	30,82	2.200	120	1,25	0,5650
4G50	36,37	2.900	145	0,87	0,3930
4G70	40,28	3.700	180	0,61	0,2770
4G95	46,44	4.650	225	0,46	0,2100
4G120	50,34	5.700	260	0,36	0,1640
4G150	56,24	7.000	300	0,29	0,1320
4G185	61,70	8.300	340	0,24	0,1080
4G240	68,99	9.750	400	0,18	0,0817
4 x 1,5/4	14,44	300	18	30,30	13,7000
4 x 2,5/6	15,52	340	25	18,10	8,2100
4 x 4/6	17,05	400	34	11,24	5,0900
4 x 6/6	18,37	610	42	7,48	3,3900
4 x 10/10	20,67	900	57	4,30	1,9500
4 x 16/16	23,28	1.300	77	2,74	1,2400
4 x 25/16	27,96	1.765	100	1,76	0,7950
4 x 35/16	30,82	2.300	120	1,25	0,5650
4 x 50/25	36,37	3.000	145	0,87	0,3930
4 x 70/35	40,28	3.800	180	0,61	0,2770
4 x 95/50	46,44	4.800	225	0,46	0,2100
4 x 120/60	50,34	20.264	260	0,36	0,1640
4 x 150/75	56,24	7.200	300	0,29	0,1320
4 x 185/95	61,70	8.500	340	0,24	0,1080
4 x 240/120	68,99	10.000	400	0,18	0,0817
5G2,5	16,57	450	23	18,10	8,2100
5G4	18,18	600	34	11,24	5,0900
5G6	19,78	850	39	7,48	3,3900
5G10	22,55	1.100	53	4,30	1,9500
5G16	25,47	1.500	72	2,74	1,2400
5G25	30,72	2.000	93	1,76	0,7950
5G35	34,36	2.800	112	1,25	0,5650

For further technical data please request this cable's technical datasheet.
Top Cable reserves the right to carry out any modification whatsoever without giving previous notice.
For more information: sales@topcable.com

Top Cable

Top Cable

XTREM OFFSHORE RFOU (i) S1/S5

Offshore instrumentation 250 V individually screened

IEC 60092-376 / NEK TS 606

DESIGN

1. Conductor

Class 5 tinned copper, based on IEC 60228.

2. Insulation

Halogen Free Ethylene propylene, type EPR according to IEC 60092-351.
The standard identification is the following per pair:
1 x ..... blue
2 x ..... black
Each pair is numbered.
3 x ..... brown (for triads)

3. Screen

Individual polyester/copper tape with tinned copper drain wire.

4. Bedding

Halogen Free compound.

5. Braid / Armour

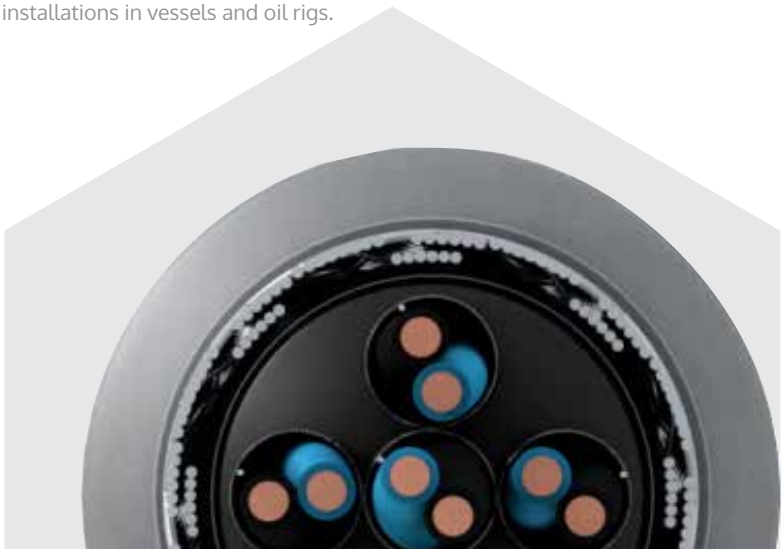
Tinned copper wire braid.

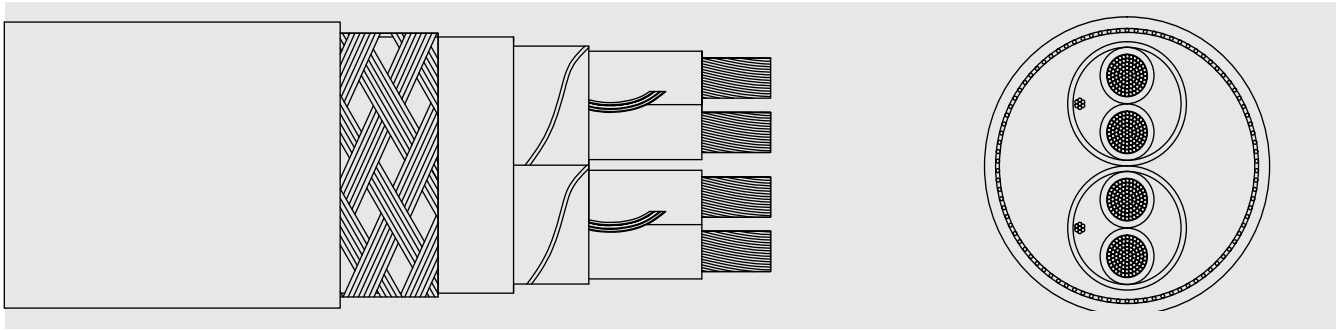
6. Outer sheath

Mud resistant thermosetting compound, black colour, low smoke and halogen free, type SHF MUD.

APPLICATIONS

Offshore instrumentation 250 V individually screened cable. Heavy duty, mud resistant, instrumentation cables for Offshore applications. Halogen free, flame and fire non propagator. Excellent resistance to oils, abrasion, petrochemical fluids, moisture and salt water. Based on IEC 60092-376 and NEK TS 606. These cables offer excellent performance in the harsh environments encountered offshore. Suitable for fixed installations in vessels and oil rigs.





CHARACTERISTICS

Electrical performance

INSTRUMENTATION 250V

Standards

IEC 60092-376 / NEK TS 606

Approvals

DNV-GL
CE
ROHS

Thermal performance

Maximum service temperature: 90°C
Maximum short-circuit temperature: 250°C (maximum 5s)
Minimum service temperature: fixed -40°C mobile -25°C

Fire performance

Flame non-propagation based on UNE-EN 60332-1 and IEC 60332-1.
Fire non-propagation based on UNE-EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on UNE-EN 60754-1 and IEC 60754-1.
Low smoke emission based on UNE-EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on UNE-EN 60754-2 and IEC 60754-2.

Mechanical performance

Mechanical stress impact: AG3. High severity
Minimum bending radius: 6 x cable diameter

Chemical performance

Chemical & oil resistance: excellent

Water performance

Water resistance: AD6 waves.

Other

Metre by metre marking

Installation conditions

Open air
Public places
Marine use
On tray
In conduit
Wall attached

Applications

Oil rigs
Marine use
Public places

Mud resistance

According to NEK TS 606




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Weight (Kg/km)	Open Air 45°C (A)	Voltage drop (V/A·km)	Conductor resistance at 20°C (Ohm/Km)
1 x 2 x 0,75	10,4	155	17,1	62,5	28,3
2 x 2x 0,75	15,0	310	13,7	62,5	28,3
4 x 2 x 0,75	17,4	415	11,2	62,5	28,3
8 x 2 x 0,75	21,7	645	8,9	62,5	28,3
12 x 2 x 0,75	26,3	865	7,7	62,5	28,3
16 x 2 x 0,75	29,0	1.000	7,0	62,5	28,3
19 x 2 x 0,75	30,4	1.170	6,5	62,5	28,3
24 x 2 x 0,75	35,7	1.400	6,5	62,5	28,3
1 x 2 x 1,5	11,6	190	23,0	32,0	14,5
2 x 2x 1,5	17,8	390	18,4	32,0	14,5
4 x 2 x 1,5	20,4	585	15,0	32,0	14,5
7 x 2 x 1,5	23,5	800	12,4	32,0	14,5
8 x 2 x 1,5	25,9	930	12,0	32,0	14,5
12 x 2 x 1,5	31,1	1.265	10,3	32,0	14,5
16 x 2 x 1,5	33,2	1.600	9,4	32,0	14,5
19 x 2 x 1,5	37,3	1.885	9,0	32,0	14,5
24 x 2 x 1,5	41,7	2.400	8,5	32,0	14,5

Top Cable

XTREM OFFSHORE RFOU (c) S2/S6

Offshore instrumentation 250 V collectively screened

IEC 60092-376 / NEK TS 606

DESIGN

1. Conductor

Class 5 tinned copper, based on IEC 60228.

2. Insulation

Halogen Free Ethylene propylene, type EPR according to IEC 60092-351.
The standard identification is the following per pair:
1 x ..... blue
2 x ..... black
Each pair is numbered.
3 x ..... brown (for triads)

3. Screen

Individual polyester/copper tape with tinned copper drain wire.

4. Bedding

Halogen Free compound.

5. Braid / Armour

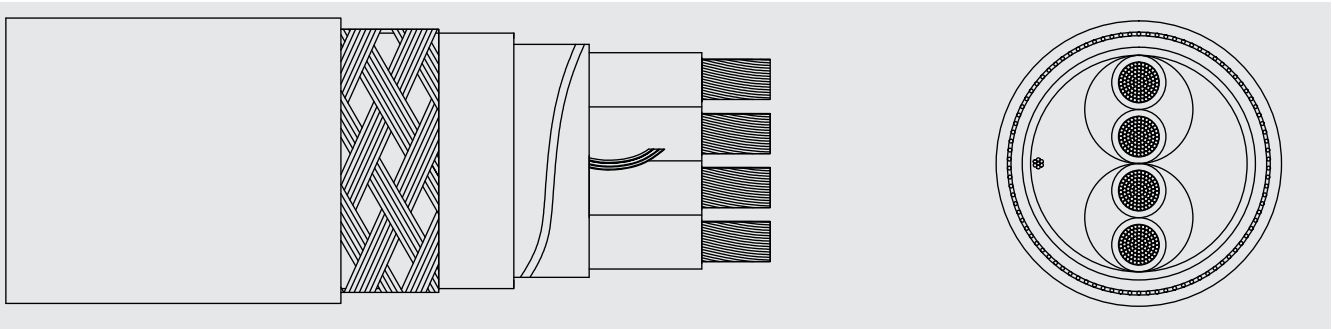
LSZH polyolephine outer sheath SHF1 type. Black colour, non-toxic and fire retardant.

6. Outer sheath

Mud resistant thermosetting compound, black colour, low smoke and halogen free, type SHF MUD.

APPLICATIONS

Offshore power 0,6/1kV cable. These cables have been specially designed to operate reliably in the harshest oil rig conditions. Heavy duty, mud resistant, power and control cables for Offshore applications. Halogen free, flame and fire non propagator. Excellent resistance to oils, abrasion, petrochemical fluids, moisture and salt water. Based on IEC 60092-353 and NEK TS 606. Xtrem RFOU cables are suitable for power distribution in fixed installations in vessels and oil rigs.



CHARACTERISTICS

Electrical performance
LOW VOLTAGE 0,6/1kV

Standards
IEC 60092-353 / NEK TS 606

Approvals
DNV-GL
CE
ROHS

Thermal performance
Maximum service temperature: 90°C
Maximumshort-circuittemperature:250°C(maximum5s)
Minimumservice temperature: fixed -40°C mobile -25°C

Fire performance
Flame non-propagation based on UNE-EN 60332-1 and IEC 60332-1.
Fire non-propagation based on UNE-EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on UNE-EN 60754-1 and IEC 60754-1.
Low smoke emission based on UNE-EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on UNE-EN 60754-2 and IEC 60754-2.

Mechanical performance
Mechanical stress impact: AG3. High severity
Minimum bending radius: 6 x cable diameter

Chemical performance
Chemical & oil resistance: excellent

Water performance
Water resistance: AD6 waves.

Other
Metre by metre marking

Installation conditions
Open air
Public places
Marine use
On tray
In conduit
Wall attached

Applications
Oil rigs
Marine use
Public places

Mud resistance
According to NEK TS 606




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Weight (Kg/km)	Open Air 45°C (A)	Voltage drop (V/A·km)	Conductor resistance at 20°C (Ohm/Km)
1 x 2 x 0,75	10,8	160	17,1	62,5	28,3
2 x 2x 0,75	16,0	325	13,7	62,5	28,3
4 x 2 x 0,75	18,1	390	11,2	62,5	28,3
8 x 2 x 0,75	22,5	650	8,9	62,5	28,3
12 x 2 x 0,75	26,8	810	7,7	62,5	28,3
16 x 2 x 0,75	29,9	980	7,0	62,5	28,3
19 x 2 x 0,75	31,4	1.100	6,5	62,5	28,3
24 x 2 x 0,75	36,8	1.320	6,5	62,5	28,3
1 x 2 x 1,5	12,0	200	23,0	32,0	14,5
2 x 2x 1,5	18,2	415	18,4	32,0	14,5
4 x 2 x 1,5	20,0	550	15,0	32,0	14,5
7 x 2 x 1,5	24,1	800	12,4	32,0	14,5
8 x 2 x 1,5	26,0	850	12,0	32,0	14,5
12 x 2 x 1,5	30,0	1.100	10,3	32,0	14,5
16 x 2 x 1,5	32,5	1.350	9,4	32,0	14,5
19 x 2 x 1,5	36,5	1.690	9,0	32,0	14,5
24 x 2 x 1,5	40,5	2.000	8,5	32,0	14,5

Top Cable

XTREM OFFSHORE RFOU MV

Offshore power medium voltage

IEC 60092-354 / NEK TS 606

DESIGN

1. Conductor

Class 5 tinned copper, based on IEC 60228.

2. Semiconducting

Semiconducting halogen free compound.

3. Insulation

Halogen Free Ethylene propylene, type EPR according to IEC 60092-351.

4. Insulation screen

Semiconducting halogen free compound + tinned copper wire braid.
The standard identification is the following:
1 conductor ..... Natural
3 conductors .....off-white + black + red (other colors available as option)

5. Inner sheath

Halogen Free compound.

6. Braid / Armour

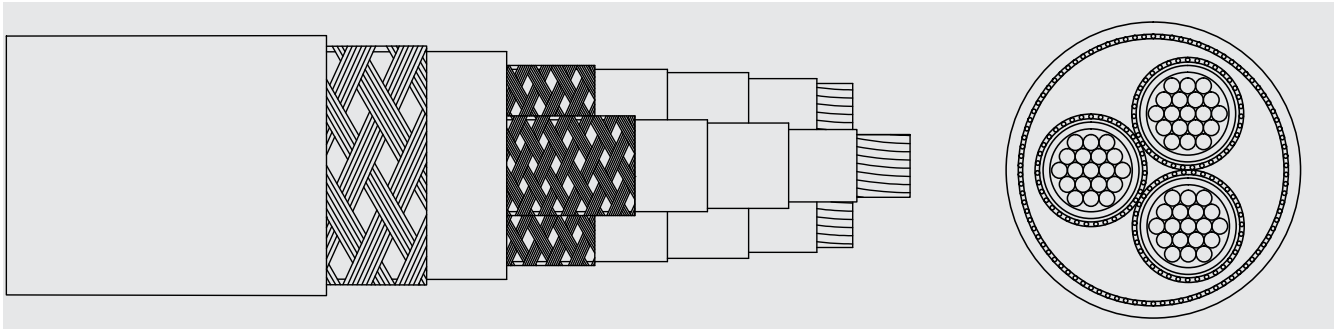
Tinned copper wire braid.

7. Outer sheath

Mud resistant thermosetting compound, red colour, low smoke and halogen free, type SHF MUD.

APPLICATIONS

Offshore power Medium Voltage cables. Medium voltage heavy duty, mud resistant cables for offshore applications. Halogen free, flame and fire non propagator. Excellent resistance to oils, abrasion, petrochemical fluids, moisture and salt water. Based on IEC 60092-354 and NEK TS 606. Suitable for fixed installations in vessels and oil rigs. TS 606. Xtrem RFOU cables are suitable for power distribution in fixed installations in vessels and oil rigs.



CHARACTERISTICS

Electrical performance

MEDIUM VOLTAGE 3,6/6kV, 6/10kV, 8,7/15kV, 12/20kV, 18/30kV

Standards

IEC 60092-354 / NEK TS 606

Thermal performance

Maximum service temperature: 90°C
Maximumshort-circuittemperature:250°C(maximum5s)
Minimumservicetemperature: fixed-40°Cmobile-25°C

Fire performance

Flame non-propagation based on UNE-EN 60332-1 and IEC 60332-1.
Fire non-propagation based on UNE-EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on UNE-EN 60754-1 and IEC 60754-1.
Low smoke emission based on UNE-EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on UNE-EN 60754-2 and IEC 60754-2.

Mechanical performance

Mechanical stress impact: AG3. High severity
Minimum bending radius: 15 x cable diameter

Chemical performance

Chemical & oil resistance: excellent

Water performance

Water resistance: AD6 waves.

Other

Metre by metre marking

Installation conditions

Open air
Wall attached
On tray
In conduit

Applications

Oil rigs
Marine use
Public places

Mud resistance

According to NEK TS 606




DIMENSIONS RFOU P2/P9 3,6/6 kV

Cross section (mm2)	Overall Diameter	Weight (Kg/ km)	Ampacity Open Air 45°C (A)	Conductor resistance at 20°C (Ohm/Km)
1 x 50	26,5	1.330	196	0,3930
1 x 70	28,5	1.610	242	0,2770
1 x 95	30,6	1.920	293	0,2100
1 x 120	32,0	2.255	339	0,1640
1 x 150	33,7	2.570	389	0,1320
1 x 185	35,8	3.035	444	0,1080
1 x 240	39,5	3.745	522	0,0817
3 x 50/25	51,3	4.540	137	0,3930
3 x 70/35	55,4	5.590	169	0,2770
3 x 95/50	59,3	6.810	205	0,2100
3 x 120/60	63,8	8.150	237	0,1640

DIMENSIONS RFOU P4/P11 8,7/15 kV

Cross section (mm2)	Overall Diameter	Weight (Kg/ km)	Ampacity Open Air 45°C (A)	Conductor resistance at 20°C (Ohm/Km)
1 x 50	30,7	1.630	196	0,3930
1 x 70	32,5	1.940	242	0,2770
1 x 95	34,6	2.270	293	0,2100
1 x 120	37,0	2.700	339	0,1640
1 x 150	38,7	3.100	389	0,1320
1 x 185	40,6	3.585	444	0,1080
1 x 240	43,7	4.300	522	0,0817
3 x 50/25	60,5	5.980	137	0,3930
3 x 70/35	64,6	7.065	169	0,2770
3 x 95/50	68,7	8.370	205	0,2100
3 x 120/60	72,9	9.750	237	0,1640

DIMENSIONS RFOU P3/P10 6/10 kV

Cross section (mm2)	Overall Diameter	Weight (Kg/ km)	Ampacity Open Air 45°C (A)	Conductor resistance at 20°C (Ohm/Km)
1 x 50	28,5	1.470	196	0,3930
1 x 70	30,2	1.730	242	0,2770
1 x 95	32,0	2.090	293	0,2100
1 x 120	34,1	2.410	339	0,1640
1 x 150	35,6	2.750	389	0,1320
1 x 185	38,2	3.250	444	0,1080
1 x 240	41,2	4.030	522	0,0817
3 x 50/25	55,2	5.200	137	0,3930
3 x 70/35	59,2	6.150	169	0,2770
3 x 95/50	63,6	7.490	205	0,2100
3 x 120/60	67,7	8.795	237	0,1640

DIMENSIONS RFOU P19/P21 12/20 kV

Cross section (mm2)	Overall Diameter	Weight (Kg/ km)	Ampacity Open Air 45°C (A)	Conductor resistance at 20°C (Ohm/Km)
1 x 50	33,0	1.810	196	0,3930
1 x 70	34,8	2.080	242	0,2770
1 x 95	37,4	2.490	293	0,2100
1 x 120	39,1	2.830	339	0,1640
1 x 150	41,1	3.280	389	0,1320
1 x 185	43,4	3.795	444	0,1080
1 x 240	46,2	4.530	522	0,0817
3 x 50/25	65,5	6.745	137	0,3930
3 x 70/35	69,5	7.810	169	0,2770
3 x 95/50	73,6	9.170	205	0,2100
3 x 120/60	77,8	10.650	237	0,1640

XTREM OFFSHORE BFOU P5/P12

Fire resistant offshore power 0,6/1kV

IEC 60092-353 / NEK TS 606

DESIGN

1. Conductor

Class 5 tinned copper, based on IEC 60228.

2/3 Insulation

Mica tape + Halogen Free Ethylene propylene, type EPR according to IEC 60092-351.
The standard identification is the following:
1 conductor ..... natural
2 conductors ..... blue + brown
3 conductors ..... brown + black + grey
4 conductors ..... brown + black + grey + blue
5 or more conductors .....white numbered.

4. Bedding

Halogen Free compound.

5. Braid / Armour

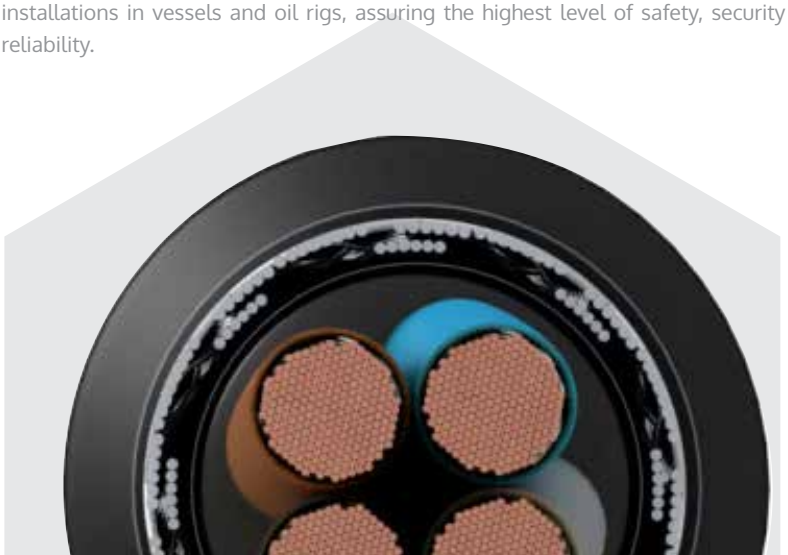
Tinned copper wire braid.

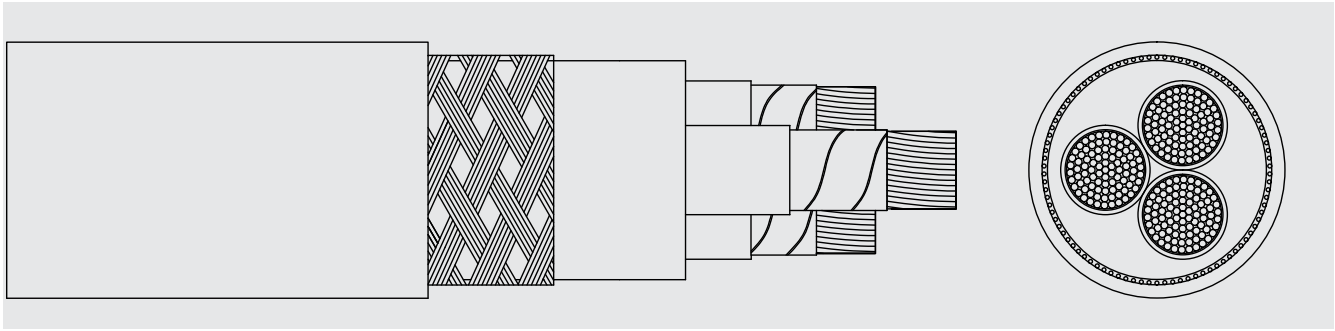
6. Outer sheath

Mud resistant thermosetting compound, black colour, low smoke and halogen free, type SHF MUD.

APPLICATIONS

Fire resistant offshore power 0,6/1kV cables. These fire resistant cables are 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, they do not emit toxic or corrosive gases, thereby protecting public health and avoiding any possible damage to electronic equipment. They are also heavy duty, mud resistant cables for Offshore applications.Halogen free, flame and fire non propagator. Excellent resistance to oils, abrasion, petrochemical fluids, moisture and salt water. Based on IEC 60092-353 and NEK TS 606. Suitable for fixed installations in vessels and oil rigs, assuring the highest level of safety, security and reliability.





CHARACTERISTICS

Electrical performance

LOW VOLTAGE 0,6/1 kV

Standards

IEC 60092-353 / NEK TS 606

Approvals

DNV-GL
ABS
CE
ROHS

Thermal performance

Maximum service temperature: 90°C
Maximumshort-circuittemperature:250°C(maximum5s)
Minimumservicetemperature: fixed -40°C mobile -25°C

Fire performance

Flame non-propagation based on UNE-EN 60332-1 and IEC 60332-1.
Fire non-propagation based on UNE-EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on UNE-EN 60754-1 and IEC 60754-1.
Low smoke emission based on UNE-EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on UNE-EN 60754-2 and IEC 60754-2.
Fire resistant: according to IEC 60331-21 (90 min. at 750 °C) | according to IEC 60331-2 / EN 50200 for Ø cable < 20 mm (120 min. at 840 °C) | according to IEC 60331-1 / EN 50362 for Ø cable > 20 mm (120 min. at 840 °C)

Mechanical performance

Mechanical stress impact: AG3. High severity
Minimum bending radius: 6 x cable diameter

Chemical performance

Chemical & oil resistance: excellent

Water performance

Water resistance: AD6 waves.

Other

Metre by metre marking

Installation conditions

Open air
Wall attached
On tray
In conduit

Applications

Oil rigs
Marine use
Public places

Mud resistance

According to NEK TS 606




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Weight (Kg/km)	Open Air 45°C (A)	Voltage drop (V/A·km)	Max conductor resistance at 20°C (Ohm/Km)
1 x 16	12,7	325	86	2,74	1,2400
1 x 25	15,0	470	117	1,76	0,7950
1 x 35	16,3	600	147	1,25	0,5650
1 x 50	18,7	795	180	0,87	0,3930
1 x 70	19,7	1.090	233	0,61	0,2770
1 x 95	22,3	1.380	285	0,46	0,2100
1 x 120	24,3	1.650	333	0,36	0,1640
1 x 150	26,0	1.970	386	0,29	0,1320
1 x 185	28,3	2.450	444	0,24	0,1080
1 x 240	31,0	3.000	528	0,18	0,0817
1 x 300	34,9	3.700	612	0,14	0,0654
2 x 1,5/4	13,4	270	23	30,30	13,7000
2 x 2,5/4	14,5	305	31,0	18,10	8,2100
2 x 4/6	15,2	400	43	11,24	5,0900
2 x 6/6	16,7	450	55	7,48	3,3900
2 x 10/10	18,8	620	75	4,30	1,9500
2 x 16/16	21,3	750	100	2,74	1,2400
2 x 25/16	24,9	1.110	130	1,76	0,7950
3 x 1,5/4	14,3	310	20	30,30	13,7000
3 x 2,5/6	15,4	350	28	18,10	8,2100
3 x 4/6	15,9	430	37	11,24	5,0900
3 x 6/6	17,6	530	47	7,48	3,3900
3 x 10/10	19,7	760	65	4,30	1,9500
3 x 16/16	22,9	1.000	87	2,74	1,2400
3 x 25/16	26,4	1.440	110	1,76	0,7950
3 x 35/16	29,2	1.931	137	1,25	0,5650
3 x 50/25	35,3	2.589	167	0,87	0,3930
3 x 70/35	37,4	3.300	214	0,61	0,2770
3 x 95/50	43,1	4.452	259	0,46	0,2100
3 x 120/60	47,8	5.400	301	0,36	0,1640
3 x 150/75	51,4	6.700	347	0,29	0,1320
3 x 185/95	56,7	8.200	397	0,24	0,1080
3 x 240/120	62,7	9.800	468	0,18	0,0817
4G2,5	16,4	425	25	18,10	8,2100

Cross section (mm2)	Diameter (mm)	Weight (Kg/km)	Open Air 45°C (A)	Voltage drop (V/A·km)	Max conductor resistance at 20°C (Ohm/Km)
4G4	17,0	460	34	11,24	5,0900
4G6	19,1	650	42	7,48	3,3900
4G10	21,5	960	57	4,30	1,9500
4G16	24,6	1.400	77	2,74	1,2400
4G25	29,0	1.900	100	1,76	0,7950
4G35	32,6	2.250	120	1,25	0,5650
4G50	38,9	3.100	145	0,87	0,3930
4G70	41,2	4.000	180	0,61	0,2770
4G95	48,0	5.050	225	0,46	0,2100
4G120	52,8	6.300	260	0,36	0,1640
4G150	57,3	7.600	300	0,29	0,1320
4G185	62,7	9.000	340	0,24	0,1080
4G240	69,4	10.400	400	0,18	0,0817
4 x 1,5/4	15,6	385	18	30,30	13,7000
4 x 2,5/6	16,5	440	25	18,10	8,2100
4 x 4/6	17,3	480	34	11,24	5,0900
4 x 6/6	19,2	680	42	7,48	3,3900
4 x 10/10	21,6	1.000	57	4,30	1,9500
4 x 16/16	24,6	1.450	77	2,74	1,2400
4 x 25/16	29,0	1.950	100	1,76	0,7950
4 x 35/16	32,6	2.500	120	1,25	0,5650
4 x 50/25	38,9	3.300	145	0,87	0,3930
4 x 70/35	41,2	4.200	180	0,61	0,2770
4 x 95/50	48,0	5.300	225	0,46	0,2100
4 x 120/60	52,8	6.600	260	0,36	0,1640
4 x 150/75	57,3	8.000	300	0,29	0,1320
4 x 185/95	62,7	9.500	340	0,24	0,1080
4 x 240/120	69,4	11.000	400	0,18	0,0817
5G2,5	17,7	520	23	18,10	8,2100
5G4	18,5	690	34	11,24	5,0900
5G6	20,8	980	39	7,48	3,3900
5G10	23,4	1.265	53	4,30	1,9500
5G16	26,9	1.725	72	2,74	1,2400
5G25	31,9	2.300	93	1,76	0,7950
5G35	36,2	3.220	112	1,25	0,5650

Top Cable

XTREM OFFSHORE BFOU (i) S3/S7

Fire resistant offshore instrumentation 250 V individually screened

IEC 60092-376 / NEK TS 606

DESIGN

1. Conductor

Class 5 tinned copper, based on IEC 60228.

2/3 Insulation

Mica Tape + Halogen Free Ethylene propylene, type EPR according to IEC 60092-351.
The standard identification is the following per pair:
1 x ..... blue
2 x ..... black
Each pair is numbered.
3 x ..... brown (for triads)

4. Screen

Individual polyester/copper tape with tinned copper drain wire.

5. Bedding

Halogen Free compound.

6. Braid / Armour

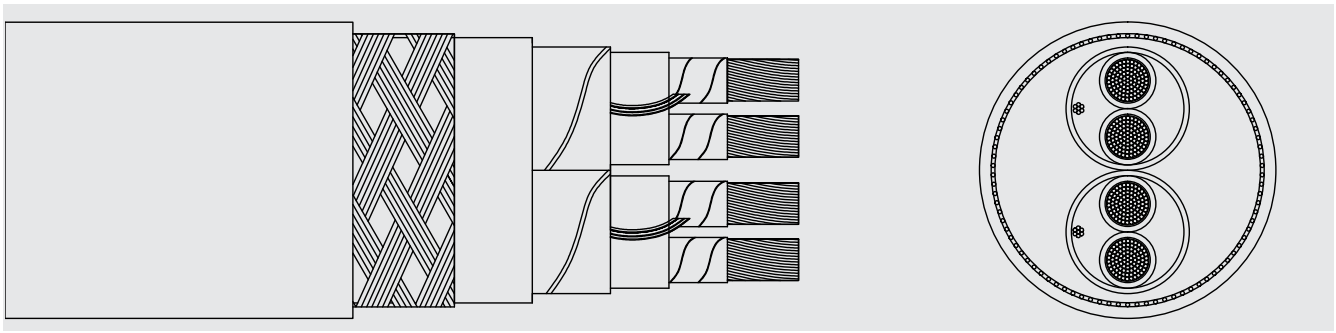
Tinned copper wire braid.

7. Outer sheath

Mud resistant thermosetting compound, black colour, low smoke and halogen free, type SHF MUD.

APPLICATIONS

Fire resistant offshore instrumentation 250 V individually screened cables. These fire resistant cables are specially designed to transmit data in the presence of fire. In case of fire, they do not emit toxic or corrosive gases, thereby protecting public health and avoiding any possible damage to electronic equipment. They are also heavy duty, mud resistant cables for Offshore applications. Halogen free, flame and fire non propagator. Excellent resistance to oils, abrasion, petrochemical fluids, moisture and salt water. Based on IEC 60092-376 and NEK TS 606. Suitable for fixed installations in vessels and oil rigs, assuring the highest level of safety, security and reliability.



CHARACTERISTICS

Electrical performance
INSTRUMENTATION 250V

Standards
IEC 60092-376 / NEK TS 606

Approvals
DNV-GL
CE
ROHS

Thermal performance
Maximum service temperature: 90°C
Maximumshort-circuittemperature:250°C(maximum5s)
Minimum service temperature: fixed -40°C mobile -25°C

Fire performance
Flame non-propagation based on UNE-EN 60332-1 and IEC 60332-1.
Fire non-propagation based on UNE-EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on UNE-EN 60754-1 and IEC 60754-1.
Low smoke emission based on UNE-EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on UNE-EN 60754-2 and IEC 60754-2.
Fire resistant: according to IEC 60331-21 (90 min. at 750 °C) | according to IEC 60331-2 / EN 50200 for Ø cable < 20 mm (120 min. at 840 °C) | according to IEC 60331-1 / EN 50362 for Ø cable > 20 mm (120 min. at 840 °C)

Mechanical performance
Mechanical stress impact: AG3. High severity
Minimum bending radius: 6 x cable diameter

Chemical performance
Chemical & oil resistance: excellent

Water performance
Water resistance: AD6 waves.

Other
Metre by metre marking

Installation conditions
Open air
Wall attached
On tray
In conduit

Applications
Oil rigs
Marine use
Public places

Mud resistance
According to NEK TS 606




DIMENSIONS

Cross section (mm2)	Inner diameter (mm)	Outer diameter (mm)	Weight (Kg/km)	Open Air 45°C (A)	Voltage drop (V/A·km)	Max. Conductor resistance at 20°C (Ohm/Km)
1 x 2 x 0,75	7,5	11,3	170	17,1	62,5	28,3
2 x 2x 0,75	12,7	17,3	355	13,7	62,5	28,3
4 x 2 x 0,75	15,0	19,6	500	11,2	62,5	28,3
8 x 2 x 0,75	19,3	24,3	790	8,9	62,5	28,3
12 x 2 x 0,75	22,6	28,0	1.020	7,7	62,5	28,3
16 x 2 x 0,75	26,4	32,2	1.350	7,0	62,5	28,3
19 x 2 x 0,75	28,5	34,5	1.750	6,5	62,5	28,3
24 x 2 x 0,75	32,0	38,6	2.200	6,5	62,5	28,3
1 x 2 x 1,5	8,5	12,3	210	23,0	32,0	14,5
2 x 2x 1,5	14,1	18,7	440	18,4	32,0	14,5
4 x 2 x 1,5	17,4	22,4	675	15,0	32,0	14,5
7 x 2 x 1,5	19,5	24,5	950	12,4	32,0	14,5
8 x 2 x 1,5	20,3	25,3	1.060	12,0	32,0	14,5
12 x 2 x 1,5	23,9	29,7	1.475	10,3	32,0	14,5
16 x 2 x 1,5	28,0	34,0	1.850	9,4	32,0	14,5
19 x 2 x 1,5	32,0	38,5	2.400	9,0	32,0	14,5
24 x 2 x 1,5	36,5	43,2	3.000	8,5	32,0	14,5
1 x 3 x 1,5	8,9	12,7	230	23,0	32,0	14,5

Top Cable

XTREM OFFSHORE BFOU (c) S4/S8

Fire resistant offshore instrumentation 250 V collectively screened

IEC 60092-376 / NEK TS 606

DESIGN

1. Conductor

Class 5 tinned copper, based on IEC 60228.

2/3. Insulation

Mica Tape + Halogen Free Ethylene propylene, type EPR according to IEC 60092-351.
The standard identification is the following per pair:
1 x ..... blue
2 x ..... black
Each pair is numbered.
3 x ..... brown (for triads)

4. Screen

Collective polyester/copper tape with tinned copper drain wire.

5. Bedding

Halogen Free compound.

6. Braid / Armour

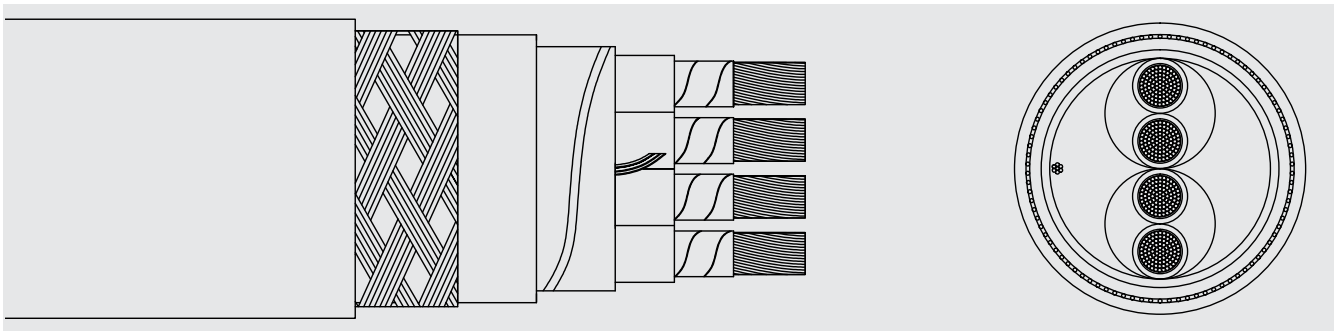
Tinned copper wire braid.

7. Outer sheath

Mud resistant thermosetting compound, black colour, low smoke and halogen free, type SHF MUD.

APPLICATIONS

Fire resistant offshore instrumentation 250 V collectively screened cables. These fire resistant cable is specially designed to transmit data in the presence of fire. In case of fire, they do not emit toxic or corrosive gases, thereby protecting public health and avoiding any possible damage to electronic equipment. They are also heavy duty, mud resistant cables for Offshore applications. Oil resistant, halogen free, flame and fire non propagators. Based on IEC 60092-376 and NEK TS 606. Suitable for fixed installations in vessels and oil rigs, assuring the highest level of safety, security and reliability.



CHARACTERISTICS

Electrical performance

INSTRUMENTATION 250V

Standards

IEC 60092-376 / NEK TS 606

Approvals

DNV-GL
CE

ROHS

Thermal performance

Maximum service temperature: 90°C
Maximumshort-circuittemperature:250°C(maximum5s)
Minimumservicetemperature: fixed-40°Cmobile-25°C

Fire performance

Flame non-propagation based on UNE-EN 60332-1 and IEC 60332-1.
Fire non-propagation based on UNE-EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on UNE-EN 60754-1 and IEC 60754-1.
Low smoke emission based on UNE-EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on UNE-EN 60754-2 and IEC 60754-2.
Fire resistant: according to IEC 60331-21 (90 min. at 750 °C) | according to IEC 60331-2 / EN 50200 for Ø cable < 20 mm (120 min. at 840 °C) | according to IEC 60331-1 / EN 50362 for Ø cable > 20 mm (120 min. at 840 °C)

Mechanical performance

Mechanical stress impact: AG3. High severity
Minimum bending radius: 6 x cable diameter

Chemical performance

Chemical & oil resistance: excellent

Water performance

Water resistance: AD6 waves.

Other

Metre by metre marking

Installation conditions

Open air
Wall attached
On tray
In conduit

Applications

Oil rigs
Marine use
Public places

Mud resistance

According to NEK TS 606




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Weight (Kg/km)	Open Air 45°C (A)	Voltage drop (V/A·km)	Max. Conductor resistance at 20°C (Ohm/Km)
1 x 2 x 0,75	11,8	180	17,1	62,5	28,3
2 x 2x 0,75	18,2	375	13,7	62,5	28,3
4 x 2 x 0,75	20,0	460	11,2	62,5	28,3
8 x 2 x 0,75	25,6	600	8,9	62,5	28,3
12 x 2 x 0,75	30,6	730	7,7	62,5	28,3
16 x 2 x 0,75	33,7	1.100	7,0	62,5	28,3
19 x 2 x 0,75	35,4	1.510	6,5	62,5	28,3
24 x 2 x 0,75	41,6	2.050	6,5	62,5	28,3
1 x 2 x 1,5	13,0	230	23,0	32,0	14,5
2 x 2x 1,5	20,4	480	18,4	32,0	14,5
4 x 2 x 1,5	22,1	655	15,0	32,0	14,5
7 x 2 x 1,5	27,5	955	12,4	32,0	14,5
8 x 2 x 1,5	29,0	1.050	12,0	32,0	14,5
12 x 2 x 1,5	33,4	1.250	10,3	32,0	14,5
16 x 2 x 1,5	38,0	1.700	9,4	32,0	14,5
19 x 2 x 1,5	39,8	2.150	9,0	32,0	14,5
24 x 2 x 1,5	46,9	2.700	8,5	32,0	14,5

Top Cable

XTREM OFFSHORE RFOU VFD EMC

Offshore power VDF EMC

IEC 60092-353 / NEK TS 606

DESIGN

1. Conductor

Class 5 tinned copper, based on IEC 60228.

2. Grounding conductor

From 6 mm2, the grounding conductor is divided into three conductors; the equivalent section of the three protective conductors together is approximately 50% of the section of the phase conductor.

3. Insulation

Halogen Free Ethylene propylene, type EPR according to IEC 60092-351.
The standard identification is the following:
4G ..... brown + black + grey + green/yellow (up to 4 mm2 conductors)
3x + 3G..... brown + black + grey + green/yellow (3x) (from 6 mm2 conductors)

4. Bedding

Halogen Free compound.

5. Screen

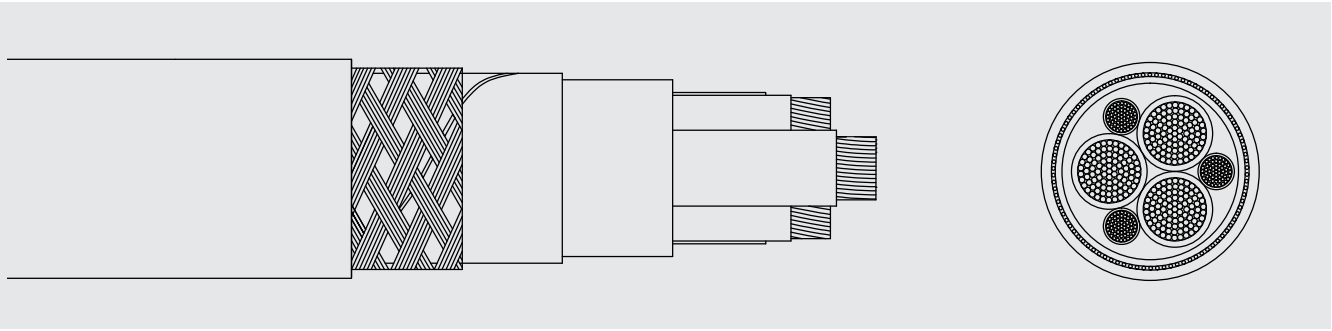
Copper-polyester tape helically placed over the bedding. The tape serves as a screen. Over the tape there is a tinned copper braid screen. The tape and the braid act as a double screen to cut out all of the electromagnetic interference. The screen has a cover of 100% and its total section is approximately 10% of one of the conductors.

6. Outer sheath

Mud resistant thermosetting compound, black colour, low smoke and halogen free, type SHF MUD.

APPLICATIONS

Our offshore power Variable Frequency Drive (VFD) cables have been designed for use in drive systems where variable frequency drives are used to protect equipment against the effects of electro-magnetic interference (EMI). As well as the appropiate screening the outer-sheath is based on IEC 60092-353 and NEK TS 606. Suitable for fixed installation.



CHARACTERISTICS

Electrical performance

LOW VOLTAGE 0,6/1kV

Standards

IEC 60092-353 / NEK TS 606

Approvals

DNV-GL
ABS
CE
ROHS

Thermal performance

Maximum service temperature: 90°C.
Maximum short-circuit temperature: 250°C (maximum 5 s).
Minimum service temperature: fixed -40°C mobile -25°C.

Fire performance

Flame non-propagation based on UNE-EN 60332-1 and IEC 60332-1.
Fire non-propagation based on UNE-EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on UNE-EN 60754-1 and IEC 60754-1.
Low smoke emission based on UNE-EN 61034 and IEC 61034.: Light transmittance > 60%
Low corrosive gases emission based on UNE-EN 60754-2 and IEC 60754-2.

Mechanical performance

Mechanical stress impact: AG3. High severity
Minimum bending radius: 6 x cable diameter.

Chemical performance

Chemical & oil resistance: excellent.

Water performance

Water resistance: AD6 waves.

Other

Metre by metre marking.

Installation conditions

Open air
Wall attached
On tray
In conduit

Applications

Oil rigs
Marine use
Public places

Mud resistance

According to NEK TS 606

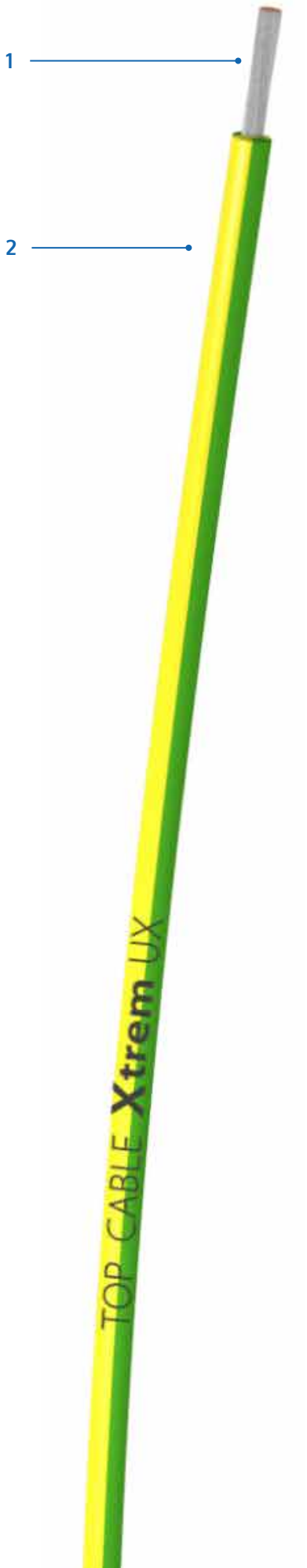



DIMENSIONS

Cross section (mm2)	Diameter (mm)	Weight (Kg/km)	Open Air 45°C (A)	Voltage drop (V/A·km)	Max. Conductor resistance at 20°C (Ohm/Km)
3 x 25 + 3G6	25,7	1.610	110	1,76	0,7950
3 x 35 + 3G6	28,3	2.070	137	1,25	0,5650
3 x 50 + 3G10	33,4	2.700	167	0,87	0,3930
3 x 70 + 3G16	37,0	3.600	214	0,61	0,2770
3 x 95 + 3G16	42,5	4.800	259	0,46	0,2100
3 x 120 + 3G25	45,9	5.865	301	0,36	0,1640
3 x 150 + 3G25	51,3	7.250	347	0,29	0,1320
3 x 185 + 3G35	56,2	9.000	397	0,24	0,1080
3 x 240 + 3G50	62,8	10.800	468	0,18	0,0817

Top Cable

XTREM OFFSHORE UX 0,6/1kV



The Offshore wiring cable

IEC 60092-353 / NEK TS 606

DESIGN

1. Conductor

Tinned copper, class 5 (flexible), based on EN 60228

2. Insulation

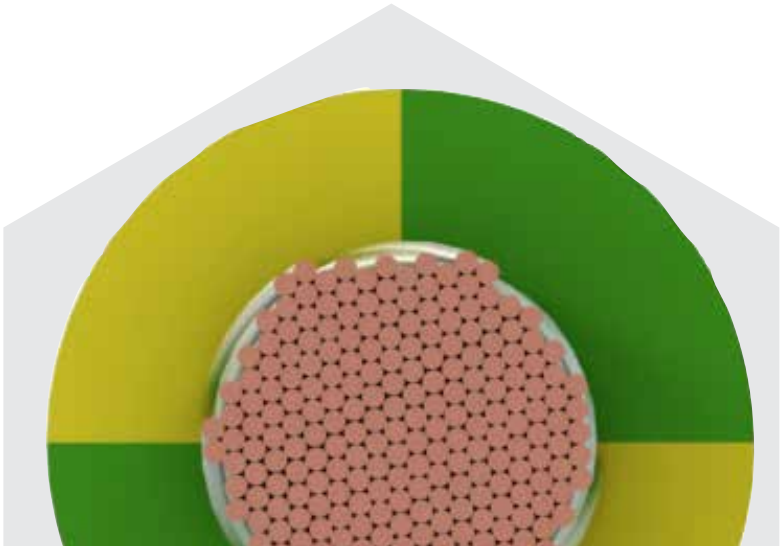
Mud resistant thermosetting compound, low smoke and halogen free, type SHF MUD.

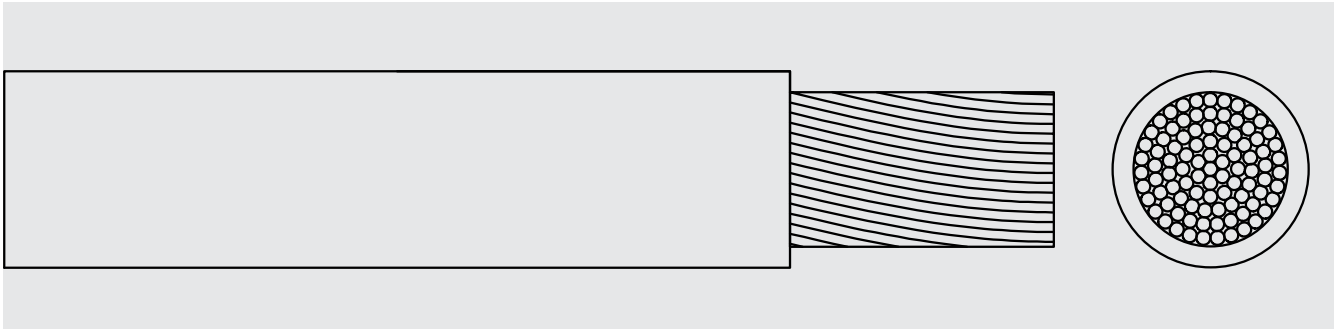
The standard identification is the following:

Yellow/Green	For protective earth
Other colours	When used as single wire (HD 308.52)

APPLICATIONS

The Xtrem Offshore UX 0,61/kV halogen free single core cable is a safety cable. In the event of fire, it does not emit toxic gases, thereby protecting people. Nor does it give off corrosive gases, avoiding any possible damage to electronic equipment. For these reasons it is highly recommended for switchboard wiring in marine and oil rigs applications.





CHARACTERISTICS

Electrical performance
LOW VOLTAGE 0,6/1kV

Standards
IEC 60092-353 / NEK TS 606

Approvals
CE
ROHS

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

Fire performance
Flame non-propagation based on UNE-EN 60332-1 and IEC 60332-1.
Fire non-propagation based on UNE-EN 60332-3-22 and IEC 60332-3-22.
LSZH (Low Smoke Zero Halogen) based on UNE-EN 60754-1 and IEC 60754-1.
Low smoke emission based on UNE-EN 61034 and IEC 61034: Light transmittance > 60%
Low corrosive gases emission based on UNE-EN 60754-2 and IEC 60754-2.

Mechanical performance
Minimum bending radius: 5 x cable diameter.

Chemical performance
Chemical & oil resistance: excellent.

Water performance
Water resistance A6 waves.

Other
Metre by metre marking.

Installation conditions
In conduit.

Applications
Electrical panel wiring.

Mud resistance
According to NEK TS 606




DIMENSIONS

Cross section (mm2)	Diameter (mm)	Weight (Kg/km)	Open Air 45°C (A)	Voltage drop (V/A·km)	Max. Conductor resistance at 20°C (Ohm/Km)
1 x 2,5	3,95	45	25	17,70	8,2100
1 x 4	4,50	60	35	11,00	5,0900
1 x 6	5,05	80	46	7,32	3,3900
1 x 10	6,00	120	64	4,23	1,9500
1 x 16	7,00	180	88	2,68	1,2400
1 x 25	8,80	280	117	1,73	0,7950
1 x 35	9,90	370	147	1,25	0,5650
1 x 50	11,80	520	180	0,87	0,3930
1 x 70	13,20	730	233	0,61	0,2770
1 x 95	15,40	970	285	0,46	0,2100
1 x 120	16,90	1.220	333	0,36	0,1640
1 x 150	19,00	1.520	386	0,29	0,1320
1 x 185	21,10	1.890	444	0,24	0,1080
1 x 240	23,90	2.450	528	0,18	0,0817
1 x 300	26,90	3.090	612	0,14	0,0654

Marine and offshore environment

Top Cable

Marine and offshore environment

Top Cable is one of the leaders in maufacturing Halogen Free and Rubber Cables worldwide. The quality of our materials and products is well-known and recognized by customers on a global scale. We are continuously working in new cable developments and applications to meet the most demanding markets, such as Marine and Offshore cable needs.

Top Cable supplies a complete range of marine cables for vessels, shipyards, bulk carriers, containerships, FPSOs, tankers, drill ships, cruise ships, feeder vessels, reefers, gas tankers, as well as offshore cables for oil rigs, drilling rigs, offshore platforms, and such like.

Our range of cables includes halogen free low smoke emission cables, fire resistant cables, and also cables which are mud resistant for oil and gas applications and platforms.

HALOGEN FREE

For both marine and offshore applications.
These safety cables are halogen free, flame and fire non propagators.

MUD RESISTANCE

For offshore applications.
Mud resistant cables specially designed to operate reliably in the harshest oil rig conditions.

STANDARDS

The standards applicable for marine and offshore installations are based on:

- Marine Power and control cables 0,6/1kV: IEC 60092-353.
- Marine Instrumentation cables 250V: IEC 60092-376.
- Marine Medium Voltage cables: IEC 60092-354.
- Offshore Power cables 0,6/1kV: IEC 60092-353. NEK TS 606.
- Offshore Control cables 0,6/1kV: IEC 60092-353. NEK TS 606.
- Offshore Instrumentation cables 250V: IEC 60092-376. NEK TS 606.
- Offshore Medium Voltage: IEC 60092-354. NEK TS 606.

Marine and offshore standards and tests

STANDARDS	DESIGNATION TITLE
IEC 60092-350	Electrical installations in ships - Part 350: General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications
IEC 60092-360	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables
IEC 60092-352	Electrical installations in ships Part 352: Choice and installation of electrical cables
IEC 60092-353	Electrical installations in ships Part 353: Single and multicore non-radial field power cables with extruded solid insulation for rated voltage 1 kV and 3 kV.
IEC 60092-354	Electrical installations in ships – Part 354: Single -and three-core power cables with extruded solid insulation for rated voltages 6 kV (Um = 7,2kV) up to 30 kV (Um = 36 kV)
IEC 60092-376	Electrical installations in ships – Part 376: Cables for control and instrumentation circuits 150/250 V (300 V)
IEC 60228	Conductors of insulated cables.
NEK TS 606	Cables for offshore installations - halogen-free and/or mud resistant -- Technical specification
IEC 60331-1	Test method for fire with shock at a temperature of at least 830°C for cables of rated voltage up to and including 0,6/1,0 kV and with an overall diameter exceeding 20 mm
IEC 60331-2	Test method for fire with shock at a temperature of at least 830°C for cables of rated voltage up to and including 0,6/1,0 kV and with an overall diameter not exceeding 20 mm
IEC 60331-3	Test method for fire with shock at a temperature of at least 830°C for cables of rated voltage up to and including 0,6/1,0 kV tested in a metal enclosure
IEC 60331-11	Test for electric cables under fire conditions – Circuit integrity – Part 11 Apparatus – Fire alone at a flame temperature of at least 750°C
IEC 60331-21	Test for electric cables under fire conditions – Circuit integrity – Part 21 Procedures and requirements – Cables of rated voltage up to and including 0,6/1kV
IEC 60331-25	Test for electric cables under fire conditions – Circuit integrity – Part 25 Procedures and requirements – Optical fibre cables
IEC 60332-1-1	Test on electric and optical fibre cables under fire conditions. Part 1-1 Test for vertical flame propagation for a single insulated wire or cable - Apparatus
IEC 60332-1-2	Test on electric and optical fibre cables under fire conditions. Part 1-2 Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame
IEC 60332-1-3	Test on electric and optical fibre cables under fire conditions. Part 1-3 Test for vertical flame propagation for a single insulated wire or cable – Procedure for determination of flaming droplets/particles

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Marine and offshore standards and tests

STANDARDS	DESIGNATION TITLE
IEC 60332-2-1	Test on electric and optical fibre cables under fire conditions. Part 2-1 Test for vertical flame propagation for a single small insulated wire or cable - Apparatus
IEC 60332-2-2	Test on electric and optical fibre cables under fire conditions. Part 2-2 Test for vertical flame propagation for a single small insulated wire or cable – Procedure for diffusion flame
IEC 60332-3-10	Tests on electric and optical fibre cables under fire conditions. Part 3-10: test for vertical flame spread of vertically-mounted bunched wires or cables – Apparatus
IEC 60332-3-21	Tests on electric cables under fire conditions. Part 3-21 Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A F/R
IEC 60332-3-22	Tests on electric and optical fibre cables under fire conditions. Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A
IEC 60332-3-23	Tests on electric and optical fibre cables under fire conditions. Part 3-23: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category B
IEC 60332-3-24	Tests on electric and optical fibre cables under fire conditions. Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category C
IEC 60332-3-25	Tests on electric and optical fibre cables under fire conditions. Part 3-25: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category D
IEC 60446	Basic and safety principles for man-machine interface, marking and identification – Identification of conductors by colours or alphanumerics
IEC 60501-1	Power cables with extruded insulation and their accessories for rated voltages from 1 kV (Um = 1,2 kV) up to 30 kV (Um = 36 kV) – Part 1: Cables for rated voltages of 1 kV (Um = 1,2 kV) and 3 kV (Um = 3,6 kV)
IEC 60754-1	Test on gases evolved during combustion of electrical cables. Part 1: Determination of the amount of halogen acid gas.
IEC 60754-2	Test on gases evolved during combustion of electrical cables. Part 2: Determination of degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity.
IEC 60811	Common test methods for insulating and sheathing materials of electric cables.
IEC 61034-1	Measurement of smoke density of cables burning under defined conditions - Part 1: Test apparatus
IEC 61034-2	Measurement of smoke density of cables burning under defined conditions - Part 2: Test procedure and requirements

Halogen free cables (ZERO HALOGEN)

Top Cable

Halogen free cables (ZERO HALOGEN)

Halogen free cables remarkably improve the fire safety on ships and oil rigs by not emitting toxic fumes or thick smoke. In addition no corrosive gases damaging the ship and its equipment are emitted in case of a fire. The halogen free range of cables includes both flame retardant and fire resistant cables.

These cables have been specifically designed according to IEC applicable standards in order to comply with the requirements for marine and offshore installations in terms of construction, properties and performances. Our cables carry the approvals of leading certifying bodies in the maritime industry.

Because personal safety is our top priority, halogen free cables are suitable for marine installations where fire, smoke emission and toxic fumes create a potential threat to life and equipment.

THEY DO NOT EMIT TOXIC FUMES

Thus avoiding the often lethal effects of gasses and acids produced by the combustion of cables that contain halogens.

THEY DO NOT EMIT CORROSIVE SUBSTANCES

As they do not emit hydrochloric acid, the electronic equipment and computers do not suffer corrosive damage.

LOW SMOKE EMISSION

LSZH Toxfree cables prevent the loss of visibility in the case of fire, thus allowing people to be evacuated quickly and facilitating the work of the rescue team.

RECOMMENDED FOR PUBLIC PLACES

In the event of fire, LSZH Toxfree cables do not emit toxic gases, thereby protecting people.

NO FLAME PROPAGATION

The special no flame propagation properties of the LSZH Toxfree cable range prevent disasters and improve the safety of the installations.

NO FIRE PROPAGATION PROPERTIES

The special no fire propagation properties of the LSZH Toxfree cable range prevent disasters and improve the safety of the installations.

FIRE RESISTANCE

Fire resistant cables transmit electric power in the extreme conditions of a prolonged fire, assuring an electric supply to emergency services.

ENVIRONMENTALLY FRIENDLY

They do not emit dioxins into the atmosphere as they do not contain any halogen substances.

Mud resistant cables

Top Cable

It is difficult to find a more demanding environment for a cable than an oil rig: extremely high and low temperatures, heavy duty requirements, presence of water, salt, oils, chemical components and mud. Mud makes the difference between oil rigs and other industrial and petrochemical installations.

MUD DEFINITION

Liquid drilling fluid is often called drilling mud. In geotechnical engineering, this drilling fluid is used to aid the drilling of boreholes into the earth. Often used while drilling oil and natural gas wells and on exploration drilling rigs, drilling fluids are also used for much simpler boreholes, such as water wells. The three main categories of drilling fluids are water-based muds (WBM), which can be dispersed and non-dispersed; non-aqueous muds, usually called oil-based mud (OBM), Synthetic-based fluid (SBM) (Otherwise known as Low Toxicity Oil Based Mud or LTOBM) often used on offshore rigs because it has the properties of an oil-based mud, but the toxicity of the fluid fumes are much less than an oil-based fluid; and air/gaseous and foam fluids.

The main functions of drilling fluids include providing hydrostatic pressure to prevent formation fluids from entering into the well bore, keeping the drill bit cool and clean during drilling, carrying out drill cuttings, and suspending the drill cuttings while drilling is paused and when the drilling assembly is brought in and out of the hole. The drilling fluid used for a particular job is selected to avoid formation damage and to limit corrosion.

All of this can help you to understand the special properties and characteristics the outer sheath of the Offshore cables must have.

MUD RESISTANCE TEST

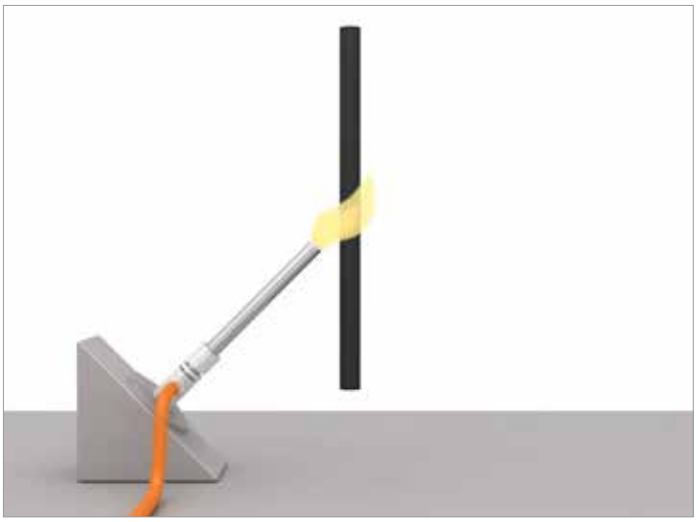
Mud resistant cables shall be designed with sheathing compounds suitable for installation and operation in contact with MUD. The suitability of sheathing materials for use in areas in which the cables are exposed to drilling fluids is heavily dependent upon the type of fluid present. Each type of fluid contains additives which they can have a deleterious effect on the sheathing material. The mud resistant cables shall have a sheath (SHF Mud) in accordance with NEK 606. They must also comply with the requirements in IEC 60092-359 for SHF2.

Test fluid	Temperature	Duration	Tensile strength variation	Elongation at break variation	Volume swell variation	Weight increase variation
Mineral oil type IRM 903	100°C	7 d	30%	30%	30%	30%
Calcium Bromide Brine (Waterbased)	70°C	56 d	25%	25%	20%	15%
Carbo Sea (Oil based)	70°C	56 d	25%	25%	20%	15%

Conformance tests for marine and offshore: flammability, fire propagation, fire resistant tests

Top Cable

Flammability and fire propagation tests



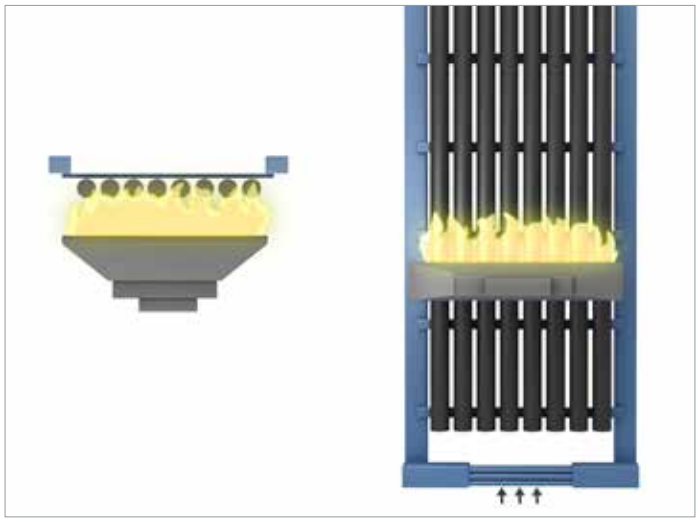
FLAME NON PROPAGATION

Marine use

Oil rigs

Based on EN 60332-1 / IEC 60332-1

The test consists of placing a 60 cm piece of cable in a vertical position in a cabinet, to avoid air currents, and applying a flame of 1 KW caloric power for 30 seconds. Once the heat source has been cut off, the flame must self extinguish while keeping the upper part intact. Thereby proving that the flame does not propagate. Most cables meet this minimum safety requirement, so that a short-circuit of brief duration does not cause a fire.



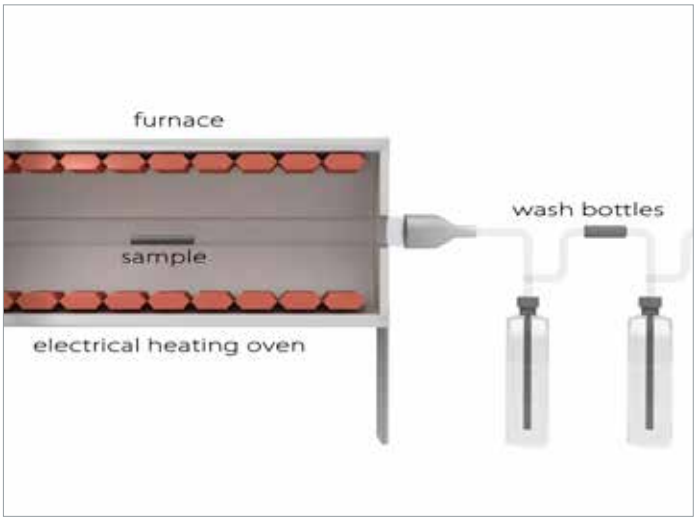
FIRE NON PROPAGATION

Marine use

Oil rigs

Based on EN 60332-3 / IEC 60332-3-22 (cat A)

The test consists of placing a number of cables together, in vertical positioning, in a large cabinet. At the base of the bunch of cables a flame of 20,5 KW is applied by means of a propane burner for duration of 40 minutes. Once the heat source is turned off, the remaining flame on the cables must self-extinguish leaving the upper part of the cable intact. Thereby proving that the cable does not propagate the spread of the flame for more than 2 m. Utilizing cables that meet this test prevent a localized fire from extending to other areas through the cable network.



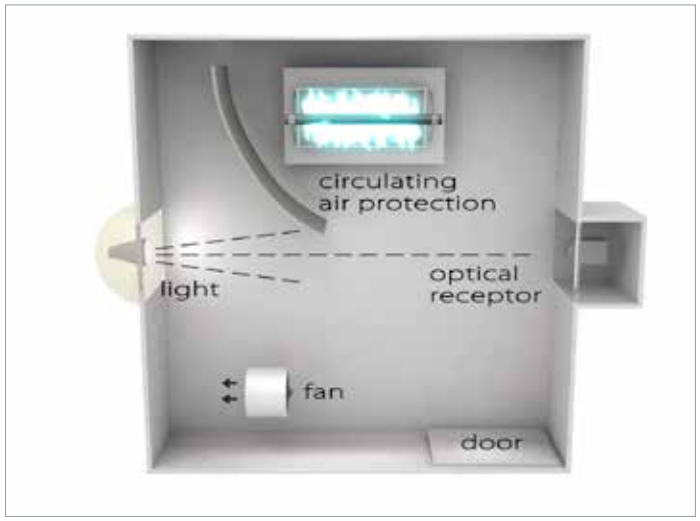
HALOGEN FREE

Marine use

Oil rigs

Based on EN-50267 / IEC 60754

The test consists of placing 1,0g of the insulating material of the cable in a laboratory oven and burning it. The gases released are chemically analyzed and the content of hydrochloric acid, pH and conductivity are measured. The halogens present must be less than 0.5%. By utilizing halogen-free insulating materials the toxicity of the gases released during a fire are reduced, thereby reducing the risk of poisoning by inhalation.



SMOKE OPACITY MEASUREMENT

Marine use

Oil rigs

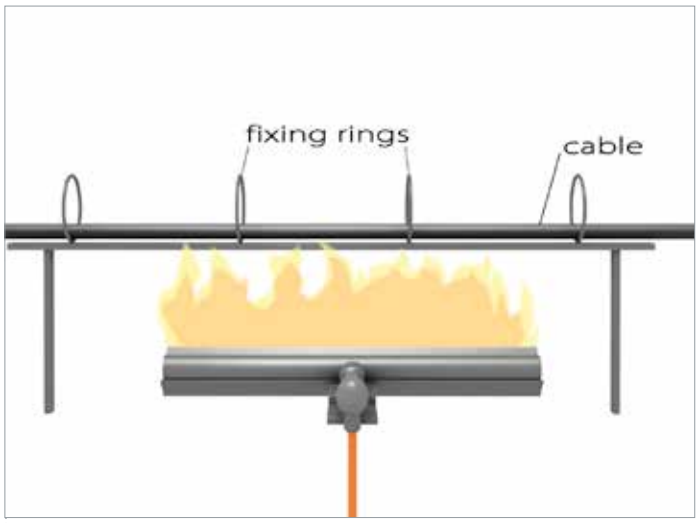
Based on EN 61034 / IEC 61034-2

The test consists of burning a number of 1m lengths of cable in a cabinet with a volume of 27 m^3. Smoke opacity is measured with a lamp with a constant brightness and a photometer. Luminous transmittance must be greater than 60%. By reducing smoke opacity in the event of a fire, the rapid location of emergency exits and the evacuation of the building are facilitated.

IEC: International Electrotechnical Commision
EN: European Norm

Conformance tests for marine and offshore: flammability, fire propagation, fire resistant tests

Top Cable

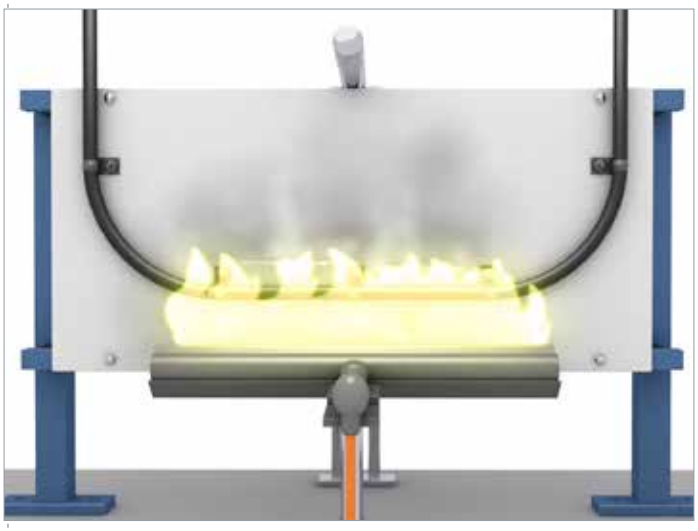


FIRE RESISTANCE

Marine use

Based on IEC 60331-21

The test consists of applying a high temperature flame of 750 º C during a recommended period of 90 min. The cable must withstand the full intensity of the flame without failure. The cable must be able to continue supplying power in the event of a fire, assuring electricity to emergency circuits like signaling lights, acoustic alarms, etc. Optionally the test can be performed at 1000ºC.



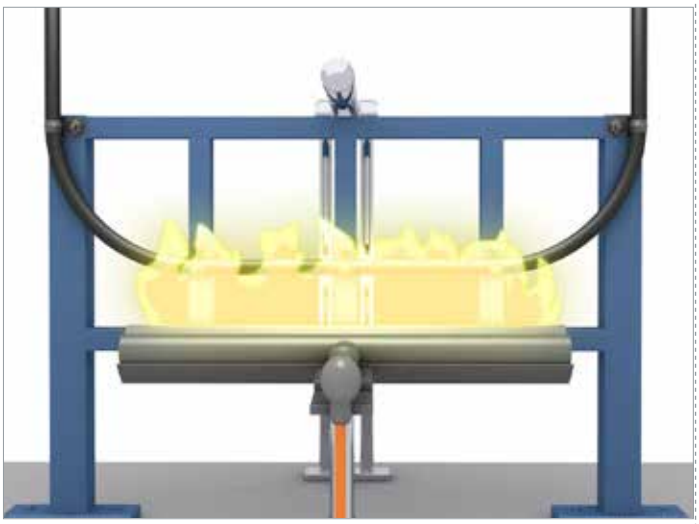
FIRE RESISTANCE

Oil rigs

Based on IEC 60331-2 and EN 50200

The cable is secured onto a positioning board and a flame is applied from the front. The positioning board is subjected to shocks every 5 minutes during the combustion period. The apparatus used must be according to IEC 60331-11. **Cables with a diameter < 20 mm .**

Recommended temperature and duration test are: min. 842 °C and 120 min. When fire is applied, it must still be possible to transmit power or signals via all conductors. There must be no short circuit between the conductors or to the shielding.



FIRE RESISTANCE

Oil rigs

Based on IEC 60331-1

The cable is secured onto a metallic structure and a flame is applied from the front. The positioning board is subjected to shocks every 5 minutes during the combustion period. The apparatus used must be according to IEC 60331-11. **Cables with a diameter > 20 mm.**

Recommended temperature and duration test are: min. 842 °C and 120 min. When fire is applied, it must still be possible to transmit power or signals via all conductors. There must be no short circuit between the conductors or to the shielding.


Top Cable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Conformance tests for offshore: mud, oil, ozone, and low temperature resistance

Top Cable

Conformance tests for offshore: mud, oil, ozone, and low temperature resistance

MUD Oil rigs

MUD RESISTANCE

Based on NEK 606: 2016

Mud resistant cables shall be designed with sheathing compounds suitable for installation and operation in contact with MUD. The suitability of sheathing materials for use in areas in which the cables are exposed to drilling fluids is heavily dependent upon the type of fluid present. Each type of fluid contains additives which they can have a deleterious effect on the sheathing material.

Mud resistant cables shall have a sheath (SHF Mud) in accordance with NEK 606. It must also comply with the requirements in IEC 60092-359 for SHF2.

Oil rigs

OIL RESISTANCE

Based on IEC 60092-359

The sampling and test procedure shall be carried out in accordance with Clause 10 of IEC 60811-404, employing the conditions given in IEC 60092-359.

Mechanical properties are tested after oil immersion in hot oil type IRM 902 at 100ºC for 24 hours. The mechanical limit properties of the outer sheath are: 40% maximum variation in tensile strength, 40% maximum variation in elongation at break.

O_3 Oil rigs

OZONE RESISTANCE

Based on IEC 60811-403

Electrical equipment in a closed environment can produce high levels of ozone in the air. Ozone testing is a method used to determine a rubber or elastomer's resistance to ozone degradation.

Performed at 25ºC+/- 2ºC temperature for 24h with a maximum of 0,025 to 0,030 % ozone concentration in volume. After test sheath and underlying components shall not show cracks or breaks

Oil rigs

LOW TEMPERATURE RESISTANCE

Based on IEC 60092-350: 8.9 and CSA 22.2 n0. 03

Artic environments are very common in oil rigs installations. Cables must therefore withstand extremelly low temperatures. Cables become more rigid at lower temperatures due to the changing elasticity of insulating and outer sheath materials. Polymers have been designed to prevent cracks when bent at low temperatures circumstances.

Our cables have been tested their properties at low temperatures according to CSA 22.2 No. 03. The tests performed are: cold bend test at -40ºC and impact test at -35ºC.

IEC: International Electrotechnical Commission
EN: European Norm
NEK: Norwegian industry standard for the Offshore Oil and Gas, Ship & Marine Industries

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Appendix

Cable drum Dimensions

The dimensional standards to which the drums supplied by Top Cable comply.

Dimensions table

A	B	C	D	DRUMS
630 mm	315 mm	370 mm	450 mm	BM 00600
800 mm	400 mm	520 mm	600 mm	BM 00800
1.000 mm	500 mm	610 mm	710 mm	BM 001000
1.250 mm	630 mm	710 mm	810 mm	BM 001250
1.400 mm	710 mm	810 mm	930 mm	BM 001400
1.600 mm	900 mm	980 mm	1.100 mm	BM 001600
1.800 mm	1.120 mm	960 mm	1.100 mm	BM 001800
2.000 mm	1.250 mm	960 mm	1.100 mm	BM 002000
2.240 mm	1.400 mm	1.190 mm	1.350 mm	BM 002200
2.500 mm	1.500 mm	1.190 mm	1.350 mm	BM 002500

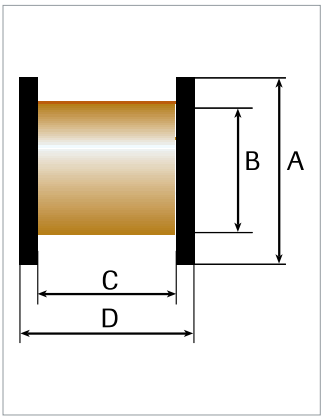

Table of capacities ../..

Table of capacities (m)

	External drum diameter (mm)							
ø Cables (mm)	630	800	1.000	1.250	1.400	1.600	1.800	2.000
3	8.650	-	-	-	-	-	-	-
4	4.866	-	-	-	-	-	-	-
5	3.114	7.057	-	-	-	-	-	-
6	2.163	4.901	-	-	-	-	-	-
7	1.589	3.601	6.600	-	-	-	-	-
8	1.216	2.757	5.053	-	-	-	-	-
9	961	2.178	3.992	-	-	-	-	-
10	779	1.764	3.234	5.850	-	-	-	-
11	643	1.458	2.673	4.835	-	-	-	-
12	541	1.225	2.246	4.062	5.789	-	-	-
13	461	1.044	1.914	3.461	4.932	-	-	-
14	397	900	1.650	2.985	4.253	-	-	-
15	346	784	1.437	2.600	3.705	5.388	-	-
16	304	689	1.263	2.285	3.256	4.735	5.263	-
17	269	610	1.119	2.024	2.884	4.195	6.662	-
18	240	545	998	1.805	2.573	3.742	4.159	5.105
19	216	489	896	1.620	2.309	3.358	3.732	4.582
20	195	441	808	1.462	2.084	3.031	3.368	4.135
21	177	400	733	1.326	1.890	2.749	3.055	3.751
22	161	365	668	1.209	1.722	2.505	2.784	3.417
23	147	334	611	1.106	1.576	2.292	2.547	3.127
24	135	306	561	1.016	1.447	2.105	2.339	2.872
25	125	282	517	936	1.334	1.940	2.156	2.646
26	115	261	478	865	1.233	1.793	1.993	2.447
27	-	242	444	802	1.143	1.663	1.848	2.269
28	-	225	412	746	1.063	1.546	1.719	2.110
29	-	210	385	696	991	1.441	1.602	1.967
30	-	196	359	650	926	1.347	1.497	1.838

Table of capacities

Table of capacities (m)

	External drum diameter (mm)							
ø Cables (mm)	630	800	1.000	1.250	1.400	1.600	1.800	2.000
31	-	184	v337	609	867	1.261	1.402	1.721
32	-	172	316	571	814	1.184	1.316	1.615
33	-	162	297	537	765	1.113	1.237	1.519
34	-	-	280	506	721	1.049	1.166	1.431
35	-	-	264	478	680	990	1.100	1.350
36	-	-	250	451	643	935	1.040	1.276
37	-	-	236	427	609	886	984	1.208
38	-	-	224	405	577	840	933	1.145
39	-	-	213	385	548	797	886	1.087
40	-	-	202	366	521	758	842	1.034
41	-	-	192	348	496	721	802	984
42	-	-	-	332	473	687	764	938
43	-	-	-	316	451	565	729	895
44	-	-	-	302	431	526	696	854
45	-	-	-	289	412	599	665	817
46	-	-	-	276	394	573	637	782
47	-	-	-	265	377	549	610	749
48	-	-	-	254	362	526	585	718
49	-	-	-	244	347	505	561	589
50	-	-	-	234	333	485	539	662
51	-	-	-	225	320	466	518	636
52	-	-	-	216	308	448	498	612
53	-	-	-	-	297	432	480	589
54	-	-	-	-	286	416	462	567
55	-	-	-	-	276	401	445	547
56	-	-	-	-	266	387	430	527
57	-	-	-	-	257	373	415	509
58	-	-	-	-	248	360	401	492
59	-	-	-	-	239	348	387	475
60	-	-	-	-	232	337	374	459


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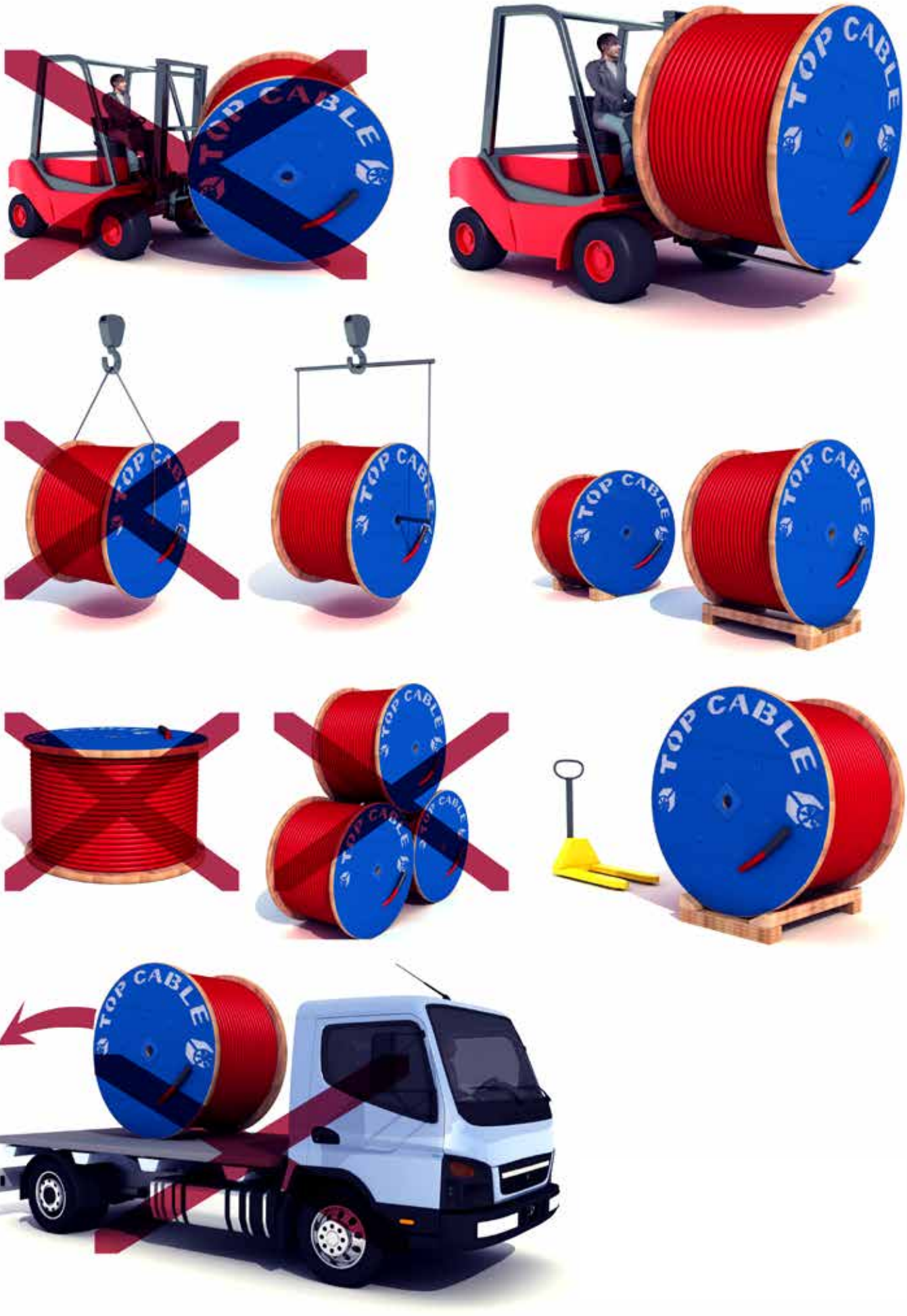

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TOP CABLE

One of the leading brands in the manufacture of electric cables.



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