

TOXFREE® MARINE PLUS XZ1-K (AS+)

The marine fire resistant power cable.

ACCORDING TO: IEC 60092-353



APPLICATION

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

CONSTRUCTION

Conductor

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

Insulation

Mica Tape + Cross linked polyethylene type HF XLPE 90°C according to IEC 60092-360.

The standard identification is the following:

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

Other colours available on request.

Outer sheath

Low smoke halogen free thermoplastic polyolefin, type SHFI according to IEC 60092-360.

Orange colour.

Non-toxic, fire retardant and fire resistant.

CHARACTERISTICS



Electrical performance

Low voltage: 0,6/1 kV.



Thermal performance

Maximum conductor temperature: 90°C.

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

Minimum service temperature: -40°C (fixed and protected installations).

Lowest installation temperature: -15°C



Fire performance

Flame non-propagation according to IEC 60332-1.

Fire non-propagation according to IEC 60332-3-22.

Fire resistant minimum 90 minutes at 840 °C:

According to IEC 60331-2 for cable diameter ≤ 20 mm.

According to IEC 60331-1 for cable diameter > 20 mm.

Low smoke halogen free according to IEC 60754-1.

Low corrosive gases emission according to IEC 60754-2.

Low smoke emission according to IEC 61034:

light transmittance > 60%.



Mechanical performance

Minimum bending radius during installation:

≤ 25mm 4x cable diameter.

> 25mm 6x cable diameter.

Impact resistance: AG2 medium severity.



Environmental performance

Chemical & Oil resistance: Good.

UV Resistant according to EN 50618.

Water resistance: AD6 waves.



Installation conditions

Open Air.

In conduit on a bulkhead.

On a bulkhead.

STANDARDS / COMPLIANCE



According to
IEC 60092-353

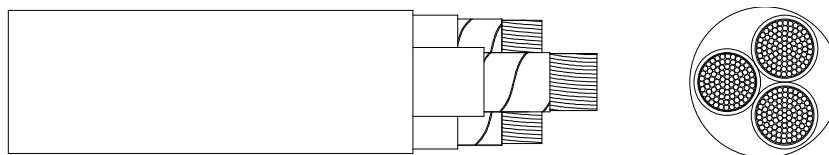


Standards and approvals

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



DIMENSIONS & ADMISSIBLE INTENSITIES



Cross-section (mm ²)	Diameter (mm)	Weight (kg/km)	Open Air (A) ¹	Voltage drop (V/A · km) ²	R 20°C (Ω/km)
1 x 2,5	5,9	51	25	17,7	7,98
1 x 4	6,4	68	35	11,0	4,95
1 x 6	7,0	89	46	7,32	3,3
1 x 10	7,9	133	64	4,23	1,91
1 x 16	9,1	195	88	2,68	1,21
1 x 25	10,9	290	117	1,73	0,78
1 x 35	12,2	393	147	1,23	0,554
1 x 50	13,9	540	180	0,86	0,386
1 x 70	15,8	741	233	0,60	0,272
1 x 95	17,9	969	285	0,46	0,206
1 x 120	19,5	1.212	333	0,36	0,161
1 x 150	21,8	1.504	386	0,29	0,129
1 x 185	24,4	1.828	444	0,24	0,106
1 x 240	27,4	2.379	528	0,18	0,0801
1 x 300	30,1	2.981	612	0,14	0,0641
2 x 1,5	9,2	121	23	34,0	13,3
2 x 2,5	10,1	154	31	20,4	7,98
2 x 4	11,4	209	43	12,7	4,95
2 x 6	12,4	266	55	8,45	3,3
2 x 10	14,5	395	75	4,89	1,91
2 x 16	16,1	542	100	3,10	1,21
3 x 1,5	10,0	140	23	34,0	13,3
3 x 2,5	11,0	186	31	20,4	7,98
3 x 4	12,2	247	43	12,7	4,95
3 x 6	13,3	321	55	8,45	3,3
3 x 10	15,7	489	75	4,89	1,91
3 x 16	17,9	701	87	2,68	1,21
3 x 25	22,3	1.097	110	1,73	0,78
3 x 35	25,3	1.470	137	1,23	0,554
3 x 50	28,9	2.013	167	0,852	0,386
3 x 70	31,6	2.677	214	0,600	0,272
3 x 95	37,7	3.575	259	0,454	0,206
3 x 120	41,5	4.480	301	0,355	0,161
3 x 150	46,4	5.566	347	0,284	0,129
3 x 185	52,0	6.806	397	0,234	0,106
3 x 240	58,4	8.813	468	0,176	0,0801
3 x 400	74,8	13.750	634	0,107	0,0486
4 x 1,5	11,1	170	20	29,5	13,3
4 x 2,5	12,0	221	28	17,7	7,98

TOXFREE[®] MARINE PLUS XZ1-K (AS+)

Cross-section (mm ²)	Diameter (mm)	Weight (kg/km)	Open Air (A) ¹	Voltage drop (V/A · km) ²	R 20°C (Ω/km)
4 x 4	13,3	298	37	11,0	4,95
4 x 6	14,9	400	47	7,32	3,3
4 x 10	17,4	609	65	4,23	1,91
4 x 16	20,1	883	87	2,68	1,21
4 x 25	25,1	1.379	110	1,73	0,78
4 x 35	27,3	1.820	137	1,23	0,554
4 x 50	32,7	2.558	167	0,86	0,386
4 x 70	37,0	3.467	214	0,60	0,272
4 x 95	42,0	4.524	259	0,46	0,206
4 x 120	46,2	5.675	301	0,36	0,161
4 x 150	51,6	7.083	347	0,29	0,129
4 x 185	57,9	8.654	397	0,24	0,106
4 x 240	65,1	11.243	468	0,18	0,0801
5 x 1,5	12,0	199	20	29,5	13,3
5 x 2,5	13,2	264	28	17,7	7,98
5 x 4	14,9	364	37	11,0	4,95
5 x 6	16,6	490	47	7,32	3,3
5 x 10	19,3	747	65	4,23	1,91
5 x 16	22,4	1.088	87	2,68	1,21
7 x 1,5	12,9	240	11	29,5	13,3
7 x 2,5	14,7	334	15	17,7	7,98
10 x 1,5	15,6	337	10	29,5	13,3
12 x 1,5	16,6	395	9	29,5	13,3
12 x 2,5	19,5	561	12	17,7	7,98
14 x 1,5	17,8	394	9	29,5	13,3
16 x 1,5	19,2	454	8	29,5	13,3
19 x 1,5	20,0	514	8	29,5	13,3
19 x 2,5	23,0	730	11	17,7	7,98
24 x 1,5	22,7	640	7	29,5	13,3
27 x 1,5	24,0	709	7	29,5	13,3
27 x 2,5	27,8	1.023	9	17,7	7,98

¹Reference method F for single-core and method E for multicore cables according to IEC 60092-352 in open air at 45°C ambient temperature.

²At maximum conductor temperature and cosφ=1.

For cables having 2 conductors and 3 conductors up to 10 mm², are supposed a single-phase circuit.

For cables having more of 5 conductors are supposed that all are loaded.

For the rest of the cables are supposed a three-phase circuit.

SHORT-CIRCUIT CURRENT-CARRYING CAPACITIES

Time (s)	0,1	0,2	0,3	0,5	1	1,5	2	2,5	3
A/mm ²	452	320	261	202	143	117	101	90	83

CORRECTION FACTORS FOR AIR TEMPERATURE

Air T. (°C)	35	40	45	50	55	60	65	70	75	80
Factor	1,10	1,05	1	0,94	0,88	0,82	0,74	0,67	0,58	0,47

Other correction factors (for grouping cables, for harmonic currents), that are not in this specification, can be applied. Further information can be found in IEC 60092-352.