



B2_{ca}
C_{ca}

APPLICATION

Toxfree® ZH YMz1Kf is a LSHF safety cable for fixed installations. In the event of fire, it does not emit toxic or corrosive gases, preventing any possible harm to people or electronic equipment. For these reasons this cable is highly recommended for use in high fire risk and very high fire risk buildings according to NEN 8012.

CONSTRUCTION

Conductor

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

Insulation

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

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

Outer sheath

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

CHARACTERISTICS



Electrical performance
Low voltage: 0,6/1 kV



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



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



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



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



Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE



According to
IEC 60502-1



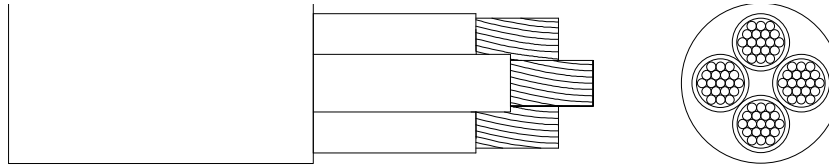
Standards and approvals
KEMA-KEUR / / RoHS / CE



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



DIMENSIONS & ADMISSIBLE INTENSITIES



Cross-section (mm ²)	Diameter (mm)	Weight (kg/km)	Open air (A) ¹	Buried (A) ²	Voltage drop (V/A · km) ³
1 x 2,5	7,1	75	29	30	17,7
1 x 4	7,6	95	40	39	11,0
1 x 6	8,2	115	53	49	7,32
1 x 10	9,2	165	74	65	4,23
1 x 16	10,2	225	101	84	2,68
1 x 25	11,8	320	135	107	1,73
1 x 35	12,1	390	169	129	1,23
1 x 50	13,9	535	207	153	0,86
1 x 70	15,7	730	268	188	0,603
1 x 95	17,3	930	328	226	0,457
1 x 120	19,1	1.165	383	257	0,357
1 x 150	21,0	1.445	444	287	0,286
1 x 185	23,1	1.740	510	324	0,235
1 x 240	26,1	2.260	607	375	0,178
1 x 300	28,8	2.815	703	419	0,142
1 x 400	33,8	3.760	823	493	0,108
1 x 500	37,9	4.835	946	558	0,085
1 x 630	43,7	6.385	1.088	634	0,064
2 x 1,5	9,8	130	26	26	34,0
2 x 2,5	10,7	165	36	34	20,4
2 x 4	11,1	190	49	44	12,7
2 x 6	12,2	245	63	56	8,45
2 x 10	13,6	355	86	73	4,89
2 x 16	15,3	495	100	84	3,1
3 G 1,5	11,3	170	26	26	34,0
3 G 2,5	12,1	210	36	34	20,4
3 G 4	12,2	240	49	44	12,7
3 G 6	13,4	315	63	56	8,45
3 G 10	14,6	435	86	73	4,89
3 x 16	16,8	645	100	84	2,68
3 x 25	20,7	975	127	107	1,73
3 x 35	23,5	1.305	158	129	1,23
3 x 50	27,1	1.800	192	153	0,86
3 x 70	30,6	2.470	246	188	0,603
3 x 185	49,9	6.265	456	324	0,235
3 x 16 + 1 x 10	19,1	800	100	84	2,68
3 x 25 + 1 x 16	22,5	1.165	127	107	1,73
3 x 35 + 1 x 16	24,4	1.480	158	129	1,23
3 x 50 + 1 x 25	28,6	2.050	192	153	0,86
3 x 70 + 1 x 35	32,9	2.815	246	188	0,603
3 x 95 + 1 x 50	37,1	3.690	298	226	0,457
3 x 120 + 1 x 70	40,8	4.700	346	257	0,357
3 x 150 + 1 x 70	45,9	5.725	399	287	0,286
3 x 185 + 1 x 95	51,4	7.000	456	324	0,235
3 x 240 + 1 x 120	58,6	9.185	538	375	0,178
3 x 300 + 1 x 150	64,8	11.315	621	419	0,142
4 G 1,5	11,7	185	23	23	29,3
4 G 2,5	12,2	225	32	30	17,7
4 G 4	13,2	290	42	39	11,0
4 G 6	14,7	385	54	49	7,32

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Cross-section (mm ²)	Diameter (mm)	Weight (kg/km)	Open air (A) ¹	Buried (A) ²	Voltage drop (V/A · km) ³
4 G 10	16,3	565	75	65	4,23
4 x 16	18,8	815	100	84	2,68
4 x 25	23,8	1.275	127	107	1,73
4 x 35	25,9	1.700	158	129	1,23
4 x 50	30,1	2.310	192	153	0,86
4 x 70	34,8	3.185	246	188	0,603
4 x 95	39,9	4.184	298	226	0,457
4 x 120	44,8	5.305	346	257	0,357
4 x 150	49,3	6.548	399	287	0,286
4 x 185	54,8	7.965	456	324	0,235
4 x 240	62,2	10.305	538	375	0,178
4 x 300	68,5	12.745	621	419	0,142
5 G 1,5	13,1	235	23	23	29,3
5 G 2,5	14,4	300	32	30	17,7
5 G 4	14,8	360	42	39	11,0
5 G 6	16,3	470	54	49	7,32
5 G 10	18,0	685	75	65	4,23
5 G 16	20,9	1.000	100	84	2,68
5 G 25	25,9	1.550	127	107	1,73
5 G 35	28,3	2.050	158	129	1,23
5 G 50	33,7	2.840	192	153	0,86
5 G 70	38,6	3.905	246	188	0,603
5 G 95	43,5	5.080	298	226	0,457
5 G 120	49,5	6.405	346	257	0,357
5 G 150	55,1	7.935	399	287	0,286
5 G 185	61,1	9.665	456	324	0,235
5 G 240	68,8	12.620	538	375	0,178

¹ Reference method F for single-core and method E for multicore cables according to IEC 60364-5-52 / NEN 1010:2020 in open air at 30°C ambient temperature.

² Reference method D2 according to IEC 60364-5-52 / NEN 1010:2020. Directly buried at 0,7 m depth with soil thermal resistivity of 2,5 K·m/W and 20°C of ground temperature.

³ At maximum conductor temperature and $\cos\varphi=1$.

Cables having 2 and 3 conductors up to 10 mm² are supposed a single-phase circuit. The rest of the cables are supposed a three-phase circuit.

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SHORT-CIRCUIT CURRENT-CARRYING CAPACITIES

Time (s)	0,1	0,2	0,3	0,5	1	1,5	2	2,5	3
A/mm²	452	320	261	202	143	117	101	90	83

CORRECTION FACTORS FOR AIR TEMPERATURE

Air T. (°C)	20	25	30	35	40	45	50	55	60
Factor	1,08	1,04	1	0,96	0,91	0,87	0,82	0,76	0,71

CORRECTION FACTORS FOR GROUND TEMPERATURE

Ground T. (°C)	10	15	20	25	30	35	40	45	50
Factor	1,07	1,04	1	0,96	0,93	0,89	0,85	0,80	0,76

CORRECTION FACTORS FOR SOIL THERMAL RESISTIVITY

Moisture degree of soil	Very damp	Slightly damp	Slightly dry	Dry	Very dry
Thermal Resist. (K·m/W)	1	1,5	2	2,5	3
Factor	1,50	1,28	1,12	1	0,90

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 60364-5-52 / NEN 1010:2020.