



TOXFREE[®] ZH RZ1 (AS) AI

Aluminium halogen free (LSHF) cable for power transmission.

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



B2_{ca}

APPLICATION

Toxfree[®] ZH RZ1 (AS) AI is an aluminium LSHF cable for fixed installations.

These cables are specially recommended for installation in public places and in installations where safety is a priority.

CONSTRUCTION

Conductor

Aluminium class 2 according to EN 60228 and IEC 60228.

Insulation

Cross-linked polyethylene type XLPE according to IEC 60502-1 and type DIX-3 according to HD 603.

The standard identification of insulated conductors according to HD 308 is the following:

| | |
|-----|--|
| 1 x | Natural |
| 3 x | Brown + Black + Grey |
| 4 x | Brown + Black + Grey + Blue |
| 5 G | Brown + Black + Grey + Blue + Green/Yellow |

Outer sheath

Low smoke halogen free polyolefin.

Green colour. Other outer sheath colours available on request.

CHARACTERISTICS



Electrical performance

Low voltage: 0,6/1 kV.



Thermal performance

Maximum conductor temperature: 90°C.

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

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

Minimum installation and handling temperature: -0°C.



Fire performance

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

Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.

Reaction to fire CPR: B2_{ca} -s1a, d1, a1 (for single core cables) and B2_{ca} -s1b, d1, a1 (for multicore cables) according to EN 50575.

Halogen free according to EN 60754-1 / IEC60754-1.

Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.

Low smoke emission according to EN 61034 / IEC 61034:

Light transmittance > 60%.



Mechanical performance

Minimum bending radius during installation: 5x cable diameter.

Impact resistance: AG2 Medium severity.



Environmental performance

Chemical & Oil resistance: Acceptable.

UV Resistant according to UNE 211605 and EN 50618.

Water resistance: AD8 Submersion.



Installation conditions

Open Air.

Buried.

In conduit.

STANDARDS / COMPLIANCE



According to

IEC 60502-1 / UNE 21123-4



Standards and approvals

RoHS / CE



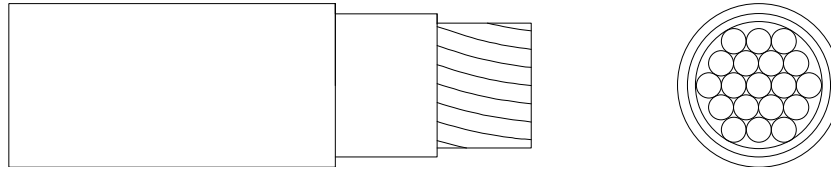
CPR (Construction Products Regulation)

B2_{ca} -s1a, d1, a1 (single core cables)

B2_{ca} -s1b, d1, a1 (multicore cables)



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 25 | 10,9 | 150 | 121 | 98 | 3,075 |
| 1 x 35 | 12 | 200 | 150 | 117 | 2,225 |
| 1 x 50 | 13,3 | 245 | 184 | 139 | 1,643 |
| 1 x 70 | 15,4 | 325 | 237 | 170 | 1,135 |
| 1 x 95 | 16,7 | 415 | 289 | 204 | 0,820 |
| 1 x 120 | 18,1 | 485 | 337 | 233 | 0,648 |
| 1 x 150 | 20,3 | 625 | 389 | 261 | 0,528 |
| 1 x 185 | 22,4 | 725 | 447 | 296 | 0,420 |
| 1 x 240 | 25,2 | 970 | 530 | 343 | 0,320 |
| 1 x 300 | 28,2 | 1.170 | 613 | 386 | 0,256 |
| 1 x 400 | 31,2 | 1.455 | 740 | 445 | 0,199 |
| 1 x 500 | 34,7 | 1.810 | 856 | 505 | 0,155 |
| 1 x 630 | 39,0 | 2.305 | 996 | 575 | 0,120 |
| 3 x 120 | 37,7 | 2.080 | 300 | 233 | 0,648 |
| 3 x 150 | 41,5 | 2.540 | 346 | 261 | 0,528 |
| 3 x 185 | 46,0 | 3.130 | 397 | 296 | 0,420 |
| 3 x 240 | 53,2 | 4.065 | 470 | 343 | 0,320 |
| 3 x 1 x 240 | 53,4 | 2.855 | 466 | 257 | 0,320 |
| 3 x 300 | 58,4 | 4.880 | 543 | 386 | 0,256 |
| 3 x 1 x 300 | 58,5 | 3.430 | 539 | 289 | 0,256 |
| 4 x 50 | 29,1 | 1.150 | 164 | 139 | 1,643 |
| 4 x 70 | 34,4 | 1.565 | 211 | 170 | 1,135 |
| 4 x 95 | 38,1 | 2.145 | 257 | 204 | 0,820 |
| 4 x 120 | 42,0 | 2.545 | 300 | 233 | 0,648 |
| 4 x 150 | 46,8 | 2.985 | 346 | 261 | 0,528 |
| 4 x 185 | 52,5 | 3.840 | 397 | 296 | 0,420 |
| 4 x 240 | 58,2 | 4.890 | 470 | 343 | 0,320 |
| 4 x 300 | 66,3 | 6.045 | 543 | 386 | 0,256 |
| 5 G 70 | 38,6 | 1.930 | 211 | 170 | 1,135 |
| 5 G 95 | 42,1 | 2.400 | 257 | 204 | 0,820 |

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

²⁾ Reference method D2 according to IEC 60364-5-52. 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 $\cos\phi=1$.

In all cases are supposed a single-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/mm² | 299 | 211 | 173 | 134 | 94 | 77 | 67 | 60 | 55 |

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 | 0,8 | 0,76 |

CORRECTION FACTORS FOR SOIL THERMAL RESISTIVITY

| | | | | | | | |
|-----------------------------|-----------|-----------|---------|-----------|---------|-----------|---------|
| Direct buried cables | | | | | | | |
| | 0,5 K·m/W | 0,7 K·m/W | 1 K·m/W | 1,5 K·m/W | 2 K·m/W | 2,5 K·m/W | 3 K·m/W |
| | 1,88 | 1,62 | 1,5 | 1,28 | 1,12 | 1 | 0,9 |

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.