



TOXFREE® PLUS 331 LSZH RZ1C4Z1-K (AS+)

LSHF and fire resistant screened power cable, for emergency circuits.

ACCORDING TO: IEC 60502-1



B2_{ca}

APPLICATION

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

CONSTRUCTION

Conductor

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

Insulation

Mica tape + Cross-linked polyethylene type DIX-3 according to HD 603.

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

4 G Grey + Black + Brown + Green/Yellow

Bedding

Low smoke halogen free polyolefin.

Screen

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


Outer sheath


Fireproof polyolefin with low smoke and halogen free fumes under fire conditions.


Orange colour.


CHARACTERISTICS


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

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

 **Fire performance**
Flame non-propagation according to EN 60332-1 / IEC 60332-1.
Fire non-propagation according to EN 60332-3 / IEC 60332-3 and EN 50399.
Fire resistant (PH120) minimum 120 minutes at 840 °C:
According to IEC 60331-2 / EN 50200 for cable diameter ≤ 20 mm.
According to IEC 60331-1 / EN 50362 for cable diameter > 20 mm.
Fire resistant category C (180 minutes at 950°C), W & Z according to BS 6387.
Fire resistant category Rf 1h30 or Rf 1h (according to cross-section) according to NBN S21-300-1.
Reaction to fire CPR: B2_{ca}-s1b,d2,a1 according to EN 50575.
Halogen Free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.
Low smoke emission according to EN 61034 / IEC 61034:
Light transmittance > 60%.

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

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

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

STANDARDS / COMPLIANCE

 According to
IEC 60502-1

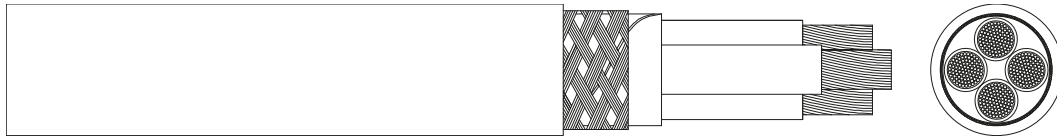
Standards and approvals
RoHS / CE

 CPR (Construction Products Regulation)
B2_{ca}-s1b,d2,a1



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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
4 G 95	43,2	4.510	352	270	0,525

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/mm ²	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.