

- Construction and tests. Standards: UNE 211025
- Compliance with the Low Voltage Directive (LVD): 2014/35 / EU
- Construction Products Regulation (CPR) - Regulation (EU) N° 305/2011: Reaction to fire - C<sub>ca</sub>-s1b,d1,a1
- Certified by AENOR (Nbr. 042/001093 - UNE 211025 – Product range: From 1 to 5 cores. From 1,5 up to 300 mm<sup>2</sup>)
- PH120 – Resistance to fire (EN 50200, EN 50362, IEC 60331-2, IEC 60331-1 – 120 minutes)
- RoHS compliant

## 1. TECHNICAL FEATURES

### 1.1. Technical designation

SZ1-K 0,6/1 kV PH120 (AS+)

### 1.2. Rated Voltage

U<sub>0</sub>/U<sub>Um</sub> = 0,6 / 1 / 1,2 kV C.A 1,5 kV C.C. / U<sub>max</sub> = 1,8 kV C.C

### 1.3. Maximum Conductor Temperatures

Normal operation	90°C
Short circuit (5 seconds max.)	250°C

### 1.4. Voltage test.

Alternate current 3,5 kV (5 minutes)

### 1.5. Fire Performance. Standard

#### - Resistance to fire:

EN 50200, EN 50362, IEC 60331-1 & 2 (PH120 - At least 120 minutes, 842 °C)

*(These cables keep the electrical supply and the integrity of the circuits & equipment although they are affected directly by the fire, at least 120 minutes at 830-870 °C).*

#### - Reaction to fire: C<sub>ca</sub>-s1b,d1,a1 (EN 50575:2014+A1:2016)

- Flame retardant: EN 60332-1-2; IEC 60332-1 (H<sub>≤</sub>425 mm)
- Fire retardant: EN 50399 (flame source: 20,5 kW; F<sub>s</sub> ≤ 2 m)
- Low heat generation: EN 50399 (flame source: 20,5 kW)
  - Total heat released: THR ≤ 30 MJ
  - Maximum value of the heat released: Peak HRR ≤ 60 kW
  - Indication of heat increase: FIGRA ≤ 300 W/s
- Low production and opacity of emitted smokes (s1b):
  - s1: Total smoke production (TSP) ≤ 50 m<sup>2</sup> & Peak value of smokes released (Peak SPR) ≤ 0,25 m<sup>2</sup>/s
  - s1b: s1 + 60% < Transmittance < 80 % (UNE EN 61034-2; IEC 61034-2)
- Low production of flaming droplets (d1):
  - d1: No flaming droplets/particles persisting longer than 10' occurs within 1200'. (EN 50399 - flame source: 20,5 kW):
- Low acidity and conductivity of the emitted gases:
  - a1: pH ≥ 4,3 conductivity < 2,5 μS/mm (EN 60754-2; IEC 60754-2)

DoP: MC1000SZ1K

Range classified: 1x(1,5 ... 240 mm<sup>2</sup>) / 2x(1,5 ... 35 mm<sup>2</sup>) / 3x(1,5 ... 70 mm<sup>2</sup>) / 4x(1,5 ... 120 mm<sup>2</sup>) / 5G(1,5 ... 95 mm<sup>2</sup>)

For more information, please check out "CPR/DoP" section in our website [www.miguelez.com](http://www.miguelez.com).

\*The packaging labels of these cables include the CE marking according to the CPR Regulation ((UE) N° 305/2011) articles 8 and 9.

Other performances:

- Fire retardant: UNE EN 60332-3-24 / IEC 60332-3-24 (cat. C)
- Halogen free. Low emission of toxic gases: UNE EN 50267-2-1 / IEC 60754-1  
*In case of fire, the emission of hydro-chlorate acid is lower to 0.5%. Fluor < 0,1%*

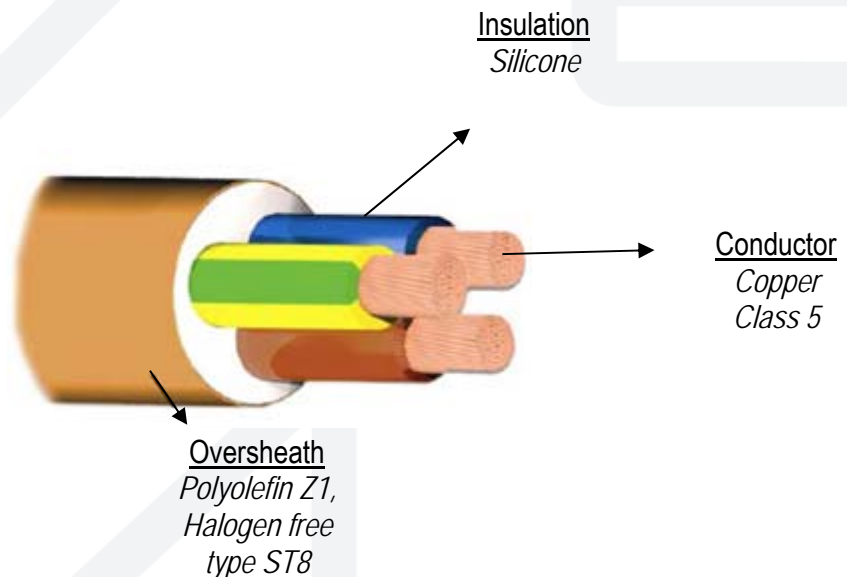
## 2. CABLE DESCRIPTION.

### 2.1. Construction.

Based on standard UNE 211025

- Conductor.  
Flexible, annealed, plain copper conductor, class 5 according to IEC 60228; UNE EN 60228;
- Insulation.  
Special cross-linked, halogen free compound (silicone) acc. to EN 50363-1.
- Core. Assembly of conductors.  
In multicore cables, the cores are cabled helically.
- Filler  
Extruded filler for multicore cables.  
The materials are suitable for the operating temperature of the cable and compatible with the insulating and sheathing material.
- Oversheath  
Halogen free material based on a thermoplastic polyolefin type ST8 acc. to International standard IEC 60502-1 & Polyolefin Z1 according to the requirements of Spanish standard UNE 21123-4.  
Sheath colour: orange.

### 2.2. Design.



### 2.3. Marking.

This cable is marked with the initials (AS+) = High Security reinforced cable  
AENOR MIGUELEZ AFIREFENIX SZ1-K 0,6/1kV PH120 (AS+) NXS YY 90°C clase Cca-s1b,d1,a1 EN 50575 X,x mts

Where:

- *N* = Number of cores
- *X* = *X* or *G*. *X* = without *G/Y* conductor; *G* = with *G/Y* conductor
- *S* = Cross sectional area in mm<sup>2</sup>
- *YY* = Last two digits of the year of manufacture
- *X,x m* = Meter marking

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### 3. APPLICATIONS.

#### 3.1. Installation.

Fixed installation

#### 3.2. User Guide.

AFIREFENIX SZ1-K 0,6/1 kV PH120 (AS+) cables are recommended for all those installations in which it is necessary to keep the integrity of the circuits and equipment although they are affected directly by the fire. Adequate for non-autonomous security circuits and service circuits with a centralised autonomous source (alarm circuits, signalling and emergency lighting systems, acoustic signalling, smoke extractors, water pumps for fire extinction).

It is specially indicated their use in public concurrence places (airports, museums, malls and shopping centres, schools, hospitals, cinemas, hotels, sports stadiums...), and in general, whenever an important fire risk exists or it's required a low smoke emission and corrosive gazes in case of fire (i.e.: Railway and roadway tunnels, canalisations with bunched cables, vertical canalisations in buildings...).

Cables AFIREFENIX SZ1-K 0,6/1 kV PH120 (AS+) are suitable for transport and distribution of electrical energy in fixed facilities.

#### 3.3. Installation methods<sup>1</sup>

- Surface mounted (directly installed or on cable trays, cable ladders, cleats, brackets or in cable ducting (conduit, pipes or similar closed systems)).  
In the case the cable is installed on cable brackets or cleats, the horizontal distance between cleats should not surpass 20 times the overall diameter of the cable. The distance is also valid between points of support in case of laying on cable racks or inside cable trays. The maximal distance between supports will never be greater than 80 cm under any circumstances.
- Embedded (in cable ducting).
- In building voids and cavities (directly or on cable trays, cable ladders, in cable ducting).
- Buried in ground (in conduit)

In case of separate laying of single-core cables, cleats made of plastics or cleats consisting of non-magnetic metals must be used.

Cables and bundles of cables are to be tightened in such a way that damages in form of indentation marks by pressure caused by heat expansion are avoided.

Lowest temperature for cable laying and installation: Lowest temperature of cable during installation is 0°C under normal conditions of care. This temperature is valid for the cable itself and not for the environment. If possible, the temperature of the cable shall be raised before laying, e.g. in a heated building, to facilitate handling and reduce the risk of damages.

#### Minimum bending radius:

D= Overall diameter of the cables (mm)	MINIMUM BENDING RADIUS
D ≤ 50	5 D
D > 50	6 D

D= Overall diameter of the cables (mm)

Bending nearby the temperature limits should be carried out extra carefully.

#### Maximum pulling force:

The maximum pulling force must not exceed:

- $F = 50 \times S$  (N), where "S" is the cross-sectional area of the conductors (mm<sup>2</sup>) and 50 N/mm<sup>2</sup> is the permissible tensile stress for cables with copper conductors (if the traction force is applied on the conductors)
- $F = 5 \times D^2$  (N), where D = overall diameter of the cable (mm). (if the traction force is applied on the outer sheath)

<sup>1</sup> It must be respected the methods of installation established by the standards and regulations that will affect each individual case. The user must be careful with the chosen installation method and accessories in order to assure the same safety warranties and fire performance than the cable.

**4. DIMENSIONAL CHARACTERISTICS**

5.

Cross sectional area	Insulation thickness	Overall $\phi$	Weight	Max. Electrical resistance at 20°C D.C.
mm <sup>2</sup>	mm	mm	kg/km	$\Omega$ /km

1x1,5	0,8	6,2	54	13,3
1x2,5	0,8	6,4	67	7,98
1x4	1,0	7,4	93	4,95
1x6	1,0	8,0	110	3,3
1x10	1,0	9,0	160	1,91
1x16	1,0	9,9	218	1,21
1x25	1,2	11,7	314	0,78
1x35	1,2	12,9	416	0,554
1x50	1,4	14,7	575	0,386
1x70	1,4	16,5	780	0,272
1x95	1,6	19,0	1.010	0,206
1x120	1,6	20,3	1.240	0,161
1x150	1,8	23,0	1.560	0,129
1x185	2,0	24,9	1.872	0,106
1x240	2,2	28,0	2.465	0,0801
1x300	2,4	29,4	2.890	0,0641

Weight and overall diameter values are approximate and subject to normal manufacturing tolerances

**NOTE: In blue color, products with reaction to fire classification.**

Cross sectional area	Insulation thickness	Overall $\phi$	Weight	Max. Electrical resistance at 20°C D.C.
mm <sup>2</sup>	mm	mm	kg/km	$\Omega$ /km

2x1,5	0,8	9	105	13,3
2x2,5	0,8	9,8	140	7,98
2x4	1	12	223	4,95
2x6	1	13,2	277	3,3
2x10	1	14,8	389	1,91
2x16	1	17	547	1,21
2x25	1,2	20,6	805	0,78
2x35	1,2	25	1.084	0,554
2x50	1,4	26,5	1.511	0,386
2x70	1,4	29,5	1.997	0,272
2x95	1,6	33,6	2.618	0,206
3G1,5	0,8	9,5	125	13,3
3G2,5	0,8	10,3	170	7,98
3G4	1	12,7	260	4,95
3G6	1	14	350	3,3
3G10	1	15,7	500	1,91
3x16	1	18,1	670	1,21
3x25	1,2	21,9	1.172	0,78
3x35	1,2	26,4	1.577	0,554
3x50	1,4	30,3	2.215	0,386
3x70	1,4	34	2.955	0,272
3x95	1,6	35,9	3.860	0,206

Weight and overall diameter values are approximate and subject to normal manufacturing tolerances

**NOTE: In blue color, products with reaction to fire classification.**

Cross sectional area mm <sup>2</sup>	Insulation thickness mm	Overall $\varnothing$ mm	Weight kg/km	Max. Electrical resistance at 20°C D.C. $\Omega$ /km
<i>4G1,5</i>	<i>0,8</i>	<i>10,3</i>	<i>160</i>	<i>13,3</i>
<i>4G2,5</i>	<i>0,8</i>	<i>11,3</i>	<i>210</i>	<i>7,98</i>
<i>4G4</i>	<i>1</i>	<i>13,8</i>	<i>310</i>	<i>4,95</i>
<i>4G6</i>	<i>1</i>	<i>15,3</i>	<i>415</i>	<i>3,3</i>
<i>4G10</i>	<i>1</i>	<i>17,2</i>	<i>692</i>	<i>1,91</i>
<i>4x16</i>	<i>1</i>	<i>19,9</i>	<i>1.100</i>	<i>1,21</i>
<i>4x25</i>	<i>1,2</i>	<i>24,1</i>	<i>1.260</i>	<i>0,78</i>
<i>4x35</i>	<i>1,2</i>	<i>29,1</i>	<i>1.960</i>	<i>0,554</i>
<i>4x50</i>	<i>1,4</i>	<i>33,4</i>	<i>2.600</i>	<i>0,386</i>
<i>4x70</i>	<i>1,4</i>	<i>38,1</i>	<i>3.505</i>	<i>0,272</i>
<i>4x95</i>	<i>1,6</i>	<i>43,5</i>	<i>4.558</i>	<i>0,206</i>
<i>4x120</i>	<i>1,6</i>	<i>49</i>	<i>5.740</i>	<i>0,161</i>
<i>4x150</i>	<i>1,8</i>	<i>50,1</i>	<i>7.771</i>	<i>0,129</i>
<i>4x185</i>	<i>2</i>	<i>52,6</i>	<i>8.602</i>	<i>0,106</i>
<i>4x240</i>	<i>2,2</i>	<i>59,2</i>	<i>11.165</i>	<i>0,0801</i>
<i>5G1,5</i>	<i>0,8</i>	<i>11,2</i>	<i>190</i>	<i>13,3</i>
<i>5G2,5</i>	<i>0,8</i>	<i>12,5</i>	<i>245</i>	<i>7,98</i>
<i>5G4</i>	<i>1</i>	<i>15,2</i>	<i>380</i>	<i>4,95</i>
<i>5G6</i>	<i>1</i>	<i>16,7</i>	<i>500</i>	<i>3,3</i>
<i>5G10</i>	<i>1</i>	<i>19</i>	<i>720</i>	<i>1,91</i>
<i>5G16</i>	<i>1</i>	<i>21,9</i>	<i>1.070</i>	<i>1,21</i>
<i>5G25</i>	<i>1,2</i>	<i>26,6</i>	<i>1.580</i>	<i>0,78</i>
<i>5G35</i>	<i>1,2</i>	<i>32</i>	<i>2.360</i>	<i>0,554</i>
<i>5G50</i>	<i>1,4</i>	<i>37,1</i>	<i>3.260</i>	<i>0,386</i>
<i>5G70</i>	<i>1,4</i>	<i>42</i>	<i>4.250</i>	<i>0,272</i>
<i>5G95</i>	<i>1,6</i>	<i>48</i>	<i>5.400</i>	<i>0,206</i>

Weight and overall diameter values are approximate and subject to normal manufacturing tolerances

**NOTE: In blue color, products with reaction to fire classification.**

## 5. COLORS (Core Identification)

The identification of the conductors is according to the standard HD 308 S2.

- 2x - brown and blue
- 3x - brown, black and gray
- 3G - brown, blue and yellow / green
- 4x - brown, black, gray, blue
- 4G - brown, black, gray, yellow / green
- 5G - brown, black, gray, blue, yellow / green

