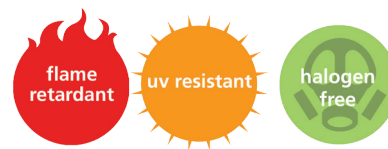


## FR3013 flexible fire rated power cable

Multicore



### Construction:

Flexible bare copper class 5 fine wire stranding, glass mica tape, cross-linked, halogen free, flame-retardant compound type X-HF-110 acc. to AS/NZS 3808, red low smoke halogen-free type HSF-110TP metre marked sheath to AS/NZS 3808.

### Bending Radius:

8 x cable diameter

### Nominal Voltage:

600/1000V

### Temperature Range:

-40°C - 110°C

### Features, Rating and Approvals:

- Flexibility for easy installation
- REACH and RoHS compliant
- Halogen free acc. to IEC 60754-1
- UV-resistant

**Flame-retardant:** AS/NZS 1660.5.1; IEC 60332-3-22 Cat. A; IEC 60332-1

### Cable circuit integrity:

AS/NZS 1660.5.5; IEC 60331; BS 6387, Cat. C.W.Z

### Wiring system circuit integrity:

AS/NZS 3013, Cat. WS52W

**Smoke density:** AS/NZS 1660.5.2; IEC 61034-2

### Halogen acid gas content:

AS/NZS 1660.5.3, IEC 60754-1

### Gases evolved during combustion:

AS/NZS 1660.5.4, IEC 60754-2

### Core Colour Coding:

- Single Cores : Natural
- 2 core + earth : Red, Black, Green/Yellow
- 4 core + earth : Red, White, Blue, Black, Green/Yellow

### Outer Sheath Colour:

Red



### Multi Core with earth

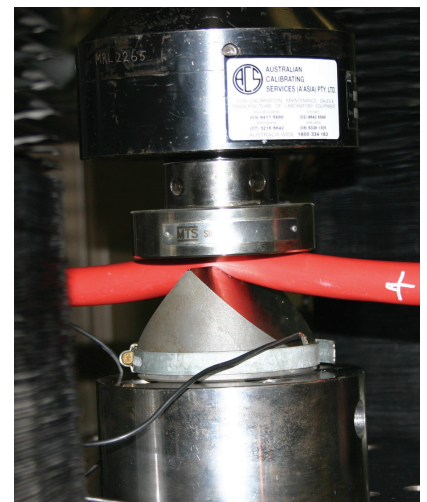
| Part No. | Number of cores and nominal conductor area mm <sup>2</sup> | Earth conductor size mm <sup>2</sup> | Approx. overall Ø mm | Approx. weight kg/km |
|----------|------------------------------------------------------------|--------------------------------------|----------------------|----------------------|
| FR3G1.5R | 1.5mm 2C+E                                                 | 1.5mm                                | 11.2                 | 171                  |
| FR3G2.5R | 2.5mm 2C+E                                                 | 2.5mm                                | 12.3                 | 217                  |
| FR3G4R   | 4mm 2C+E                                                   | 2.5mm                                | 12.9                 | 257                  |
| FR3G6R   | 6mm 2C+E                                                   | 2.5mm                                | 13.8                 | 312                  |
| FR3G10R  | 10mm 2C+E                                                  | 4mm                                  | 15.4                 | 433                  |
| FR3G16R  | 16mm 2C+E                                                  | 6mm                                  | 17.5                 | 605                  |
| FR3G25R  | 25mm 2C+E                                                  | 6mm                                  | 19.9                 | 849                  |
| FR3G35R  | 35mm 2C+E                                                  | 10mm                                 | 21.6                 | 1098                 |
| FR3G50R  | 50mm 2C+E                                                  | 16mm                                 | 25.6                 | 1554                 |
| FR3G70R  | 70mm 2C+E                                                  | 25mm                                 | 29.7                 | 2147                 |
| FR3G95R  | 95mm 2C+E                                                  | 25mm                                 | 32.9                 | 2701                 |
| FR3G120R | 120mm 2C+E                                                 | 35mm                                 | 35.4                 | 3362                 |
| FR3G150R | 150mm 2C+E                                                 | 50mm                                 | 40.5                 | 4263                 |
| FR3G185R | 185mm 2C+E                                                 | 70mm                                 | 45.9                 | 5326                 |
| FR3G240R | 240mm 2C+E                                                 | 95mm                                 | 50.2                 | 6745                 |

## FR3013 flexible fire rated power cable

Multicore

### Multi Core with earth

| Part No. | Number of cores and nominal conductor area mm <sup>2</sup> | Earth conductor size mm <sup>2</sup> | Approx. overall Ø mm | Approx. weight kg/km |
|----------|------------------------------------------------------------|--------------------------------------|----------------------|----------------------|
| FR4G1.5R | 1.5mm 3C+E                                                 | 1.5mm                                | 12.3                 | 205                  |
| FR4G2.5R | 2.5mm 3C+E                                                 | 2.5mm                                | 13.5                 | 262                  |
| FR4G4R   | 4mm 3C+E                                                   | 2.5mm                                | 14.6                 | 333                  |
| FR4G6R   | 6mm 3C+E                                                   | 2.5mm                                | 16                   | 429                  |
| FR4G10R  | 10mm 3C+E                                                  | 4mm                                  | 18.3                 | 618                  |
| FR4G16R  | 16mm 3C+E                                                  | 6mm                                  | 21                   | 884                  |
| FR4G25R  | 25mm 3C+E                                                  | 6mm                                  | 22.8                 | 1121                 |
| FR4G35R  | 35mm 3C+E                                                  | 10mm                                 | 24.7                 | 1459                 |
| FR4G50R  | 50mm 3C+E                                                  | 16mm                                 | 29.4                 | 2063                 |
| FR4G70R  | 70mm 3C+E                                                  | 25mm                                 | 34.2                 | 2867                 |
| FR4G95R  | 95mm 3C+E                                                  | 25mm                                 | 38.2                 | 3635                 |
| FR4G120R | 120mm 3C+E                                                 | 35mm                                 | 41.2                 | 4536                 |
| FR4G150R | 150mm 3C+E                                                 | 50mm                                 | 47                   | 5745                 |
| FR4G185R | 185mm 3C+E                                                 | 70mm                                 | 53.1                 | 7129                 |
| FR4G240R | 240mm 3C+E                                                 | 95mm                                 | 57.9                 | 9065                 |
| FR4G300R | 300mm 3C+E                                                 | 120mm                                | 66                   | 11423                |
|          |                                                            |                                      |                      |                      |
| FR5G1.5R | 1.5mm 4C+E                                                 | 1.5mm                                | 13.5                 | 243                  |
| FR5G2.5R | 2.5mm 4C+E                                                 | 2.5mm                                | 14.8                 | 310                  |
| FR5G4R   | 4mm 4C+E                                                   | 2.5mm                                | 16.1                 | 398                  |
| FR5G6R   | 6mm 4C+E                                                   | 2.5mm                                | 17.6                 | 514                  |
| FR5G10R  | 10mm 4C+E                                                  | 4mm                                  | 20.1                 | 746                  |
| FR5G16R  | 16mm 4C+E                                                  | 6mm                                  | 23.2                 | 1073                 |
| FR5G25R  | 25mm 4C+E                                                  | 6mm                                  | 25.7                 | 1407                 |
| FR5G35R  | 35mm 4C+E                                                  | 10mm                                 | 27.8                 | 1836                 |
| FR5G50R  | 50mm 4C+E                                                  | 16mm                                 | 33.4                 | 2612                 |
| FR5G70R  | 70mm 4C+E                                                  | 25mm                                 | 38.8                 | 3627                 |
| FR5G95M  | 95mm 4C+E                                                  | 25mm                                 | 43.6                 | 4618                 |
| FR5G120R | 120mm 4C+E                                                 | 35mm                                 | 47.1                 | 5786                 |
| FR5G150R | 150mm 4C+E                                                 | 50mm                                 | 53.4                 | 7281                 |
| FR5G185R | 185mm 4C+E                                                 | 70mm                                 | 60.5                 | 9032                 |



## FR3013 flexible fire rated power cable

Conforms to the following standards

TeleFonika fire rated cable has been tested and approved to achieve a WS52W rating and performed to ensure that such cables are fire-resistant.

AS3013 is a classification system which defines a performance criteria for a Wiring System (WS) inclusive of all elements forming part of that system i.e. cable joints, tap-offs, supports and fixings. The classification system prefix will be 'WS' followed by two numerals and a supplementary letter W.

- First numeral indicates the wiring system's ability to maintain circuit integrity to fire.
- Second numeral indicates the wiring system's degree of mechanical protection.
- Supplementary letter 'W' will denote the wiring system's capability of maintaining electrical integrity when Subjected to water spray following a fire.

### Fire Test

| First Numeral | Minimum time for which circuit integrity is retained (min) |
|---------------|------------------------------------------------------------|
| X             | Degree of protection does not apply                        |
| 1             | 15                                                         |
| 2             | 30                                                         |
| 3             | 60                                                         |
| 4             | 90                                                         |
| 5             | 120                                                        |

### Fire with Water Spray

Supplementary letter W – Cables are subjected to fire at 1050°C for 120 minutes, then at 1050°C with water spray for a further 3 minutes.

### Mechanical Test

| Second Numeral | Impact test(J) | Cutting test (kN) | Level of impact protection          |
|----------------|----------------|-------------------|-------------------------------------|
| X              | -              | -                 | Degree of protection does not apply |
| 1              | 2.5            | 0.3               | Light                               |
| 2              | 15             | 1.0               | Moderate                            |
| 3              | 50             | 5.0               | Heavy                               |
| 4              | 500            | 5.0               | Very heavy                          |
| 5              | 5000           | 5.0               | Extremely heavy                     |

### Core Colour:

Table 1

| No. of cores  | As per AS5000 (reduced earth)     |
|---------------|-----------------------------------|
| Single        | Natural                           |
| 2             | Red, Black or Red, White          |
| 2 + earth     | Red, Black, Gn/Ye                 |
| 3 (w/o earth) | Red White, Blue                   |
| 3 + earth     | Red, White, Blue, Gn/Ye           |
| 4 (w/o earth) | Red, White, Blue, Black           |
| 4 + earth     | Red, White, Blue, Black, Gn/Ye    |
| > 5           | White with black numbering, Gn/Ye |



# Data

## Flame propagation tests

### IEC 60332: Test on electrical cables under fire conditions

Part 1 : Test on a single vertical insulated wires or cable

Part 3 : Test on bunched wires and cables under fire condition

The propagation of fires along cable runs is influenced by a number of factors but in particular is relative to the total volume of combustible material in the cable run.

IEC 60332-3 details 3 test categories to test different amount of combustible material contained in a one metre sample bunched cable.

- |                |   |                                                                                                                                                                   |
|----------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IEC 60332-3-22 | - | The number of test pieces required to provide a total volume of 7 litres of non-metallic material shall be bunched on a ladder exposed to flame for 40 minutes.   |
| IEC 60332-3-23 | - | The number of test pieces required to provide a total volume of 3.5 litres of non-metallic material shall be bunched on a ladder exposed to flame for 40 minutes. |
| IEC 60332-3-24 | - | The number of test pieces required to provide a total volume of 1.5 litres of non-metallic material shall be bunched on a ladder exposed to flame for 20 minutes. |

The cable specimens are placed vertically next to each other and then exposed to the flame for a specified duration. After the burning has ceased, the charred or affected portion should not exceed a height of 2.5 meters.

## Acid gas emission tests

### IEC 60754: Test on gases evolved during combustion of electric cables

Part 1 : Determination of the amount of halogen acid gas

Part 2 : Determination of degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity

IEC 60754-1 specifies a method in determining the amount of halogen acid gas, other than hydrofluoric acid, evolved during the combustion of materials based on halogenated polymers and compounds containing halogenated additives taken from electric cables. This standard requires the amount of halogen acid evolved is less than 5mg/g of hydrochloric acid.

IEC 60754-2 specifies a method in determining the degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity. This standard requires the weighted pH value of not less than 4.3 when related to 1 litre of water, and the weighted value of conductivity should not exceed 10µS/mm.

## Smoke emission tests

### IEC 61034: Measurement of smoke density of electric cables burning under defined condition

The 3 meter cube test determines the amount of smoke from electric cables during fire conditions. A one-meter length of cable is placed in a 3m<sup>2</sup> enclosure, and exposed to a beam of light through a clear window. This light travels across the enclosure to a photocell connected to recording equipment in the window on the other end. A fire is then generated within the container and the minimum light transmission recorded. This standard requires a minimum light transmission value greater than 60% is acceptable.

## Installation Guidance

It is the responsibility of the installing contractor to ensure FR cables are installed in accordance with the relevant standards and regulations for fire rated areas.