



# Caledonian

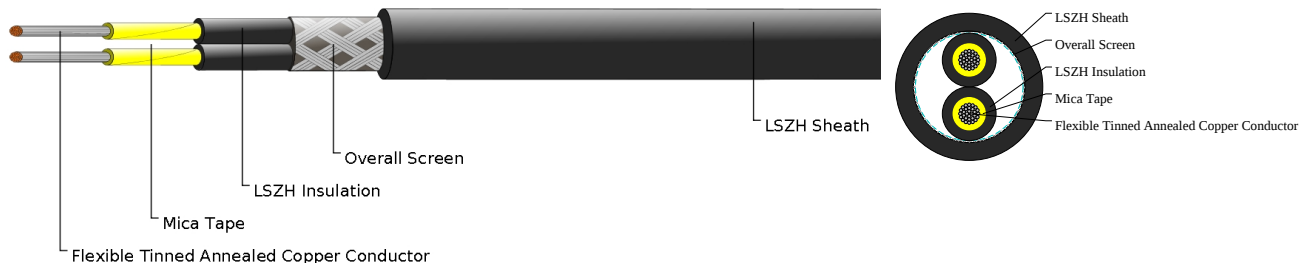
## EN 50264 Rolling Stock Cables

www.caledonian-cables.com

marketing@caledonian-cables.com

### FIREROL Standard Wall Multicore Overall Screened & Fire Resistant Cables

FRL-SW-1M-OS-AS+ PH15/30/60



### APPLICATIONS

- Used as power and control cable for protected installations inside and outside of rail and transport vehicles, where handling and installation cost are an important factor.
- Used in control, auxiliary and main circuit wiring such as cable harnesses, switchboards and control panels, driver desks etc.

### VOLTAGE RATING

0.6/1 kV

### CABLE CONSTRUCTION

Conductor: Flexible tinned annealed copper wires, stranded as per HD 383 (IEC 60228) class 5

Insulation: Mica tape+LSZH elastomeric compound as defined in EN 50264-1 (EI 101 to EI 105)

Overall Screen: Tinned annealed copper wires

Outer Sheath: LSZH elastomeric compound as defined in EN 50264-1 (EM 101 to EM 104)

### MECHANICAL PROPERTIES

Max. Conductor Temperature: 90 °C ( fixed installation )

Min. Permissible Ambient Temperature: -25 °C/-40 °C ( fixed installation )

Bending Radius: 10 x Overall Diameter

### CHEMICAL AND ENVIRONMENTAL PROPERTIES

|                        |                                                     |
|------------------------|-----------------------------------------------------|
| EN 60684-2             | No fluorine                                         |
| EN 50305; EN 60811-2-1 | Resistance to mineral oil & fuel oil, acid & alkali |
| EN 50305               | Resistance to ozone                                 |

### FIRE PERFORMANCE FOR ROLLING STOCK APPLICATION

|             |                                                  |
|-------------|--------------------------------------------------|
| EN 50306-2  | Hazard levels HL1, HL2, HL3                      |
| DIN 5510-2  | Protection level 1/2/3/4                         |
| BS 6853     | Interior use 1a, 1b, II; Exterior use 1a, 1b, II |
| NF F 16-101 | F0                                               |



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|                |                                          |
|----------------|------------------------------------------|
| EN45545-2      | R15 Interior/ R16 Exterior HL1, HL2, HL3 |
| EN 50200: 2006 | PH15, PH30, PH60                         |

### FIRE PERFORMANCE IN GENERAL

|                                                                                   |                                                                                                                                       |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| EN 50265-2-1; IEC 60332-1-2; NF C 32-070 2.1 (C2)                                 | Vertical flame propagation for a single insulated wire or cable                                                                       |
| EN 50266-2-4 + EN 50305; IEC 60332-3-24;NF C 32-070 2.2 (C1); VDE 0472 Teil 804   | Vertical flame spread of vertically mounted bunched wires or cables                                                                   |
| EN 50268-2; IEC 61034-2; NF C 32-073 ;NF C 20-902; NF F 16 101; VDE 0472 Teil 816 | Low Smoke Emission                                                                                                                    |
| EN 50267-2-1; IEC 60754-1; NF C 32-074;NF C 20-454; VDE 0472 Teil 815             | Halogen Free                                                                                                                          |
| EN 50267-2-2/3; IEC 60754-2; NF C 32-074;NF C 20-453; VDE 0472 Teil 813           | Low Corrosivity (Acidity & Conductivity)                                                                                              |
| EN 50305; NF X 70-100; NF F 63 808; TM1-04; BS6853                                | Low Toxicity                                                                                                                          |
| NF F 63 808; BS6853; NF F 16 101                                                  | Smoke Index                                                                                                                           |
| EN45545-2                                                                         | Requirement for fire behavior of materials & components R15/R16                                                                       |
| IEC60331-21                                                                       | The circuit integrity test under fire of cables rated 0.6/1.0kV and below                                                             |
| EN 50200: 2006                                                                    | Resistance to fire of unprotected small cable for use in emergency circuits 5 classifications are defined: PH 15,30,60, 90 or 120mins |

### DIMENSION AND PARAMETERS

| No. of Cores<br>×<br>Cross-sectional Area | Conductor Diameter | Min. Mean Thickness of Insulation | Min. Mean Thickness of Sheath | Diameter Of Core (min.) | Diameter Of Core (max.) | Overall Diameter (min.) | Overall Diameter (max.) | Min. Wire Diameter of Screen | Approx. Weight | Max. Conductor Resistance at 20 °C | Min. Insulation Resistance (EI 105) 20°C | Min. Insulation Resistance (EI 101- EI 104) 20°C |
|-------------------------------------------|--------------------|-----------------------------------|-------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|------------------------------|----------------|------------------------------------|------------------------------------------|--------------------------------------------------|
| No.×mm <sup>2</sup>                       | mm                 | mm                                | mm                            | mm                      | mm                      | mm                      | mm                      | mm                           | kg/km          | MΩ × km                            | MΩ × km                                  | MΩ × km                                          |
| 2×1.5                                     | 1.5                | 0.8                               | 1.4                           | 3.3                     | 3.8                     | 9.5                     | 11.2                    | 0.16                         | 166            | 13.7                               | 150                                      | 75                                               |



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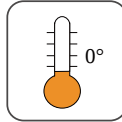
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Acid & Alkaline  
Resistant



Cold Resistant



Fire Resistant  
IEC 60331-21



Fire Retardant  
NF C32-070-2.3(C1)  
IEC60332-3-2/EN50266-2-4



Flame Retardant  
NF C32-070-2.3(C2)  
IEC60332-1-2/EN50265-2-1



Highly Flexible



Impact Resistant



IRM 902  
Mineral Oil Resistant



IRM 903  
Fuel Oil Resistant



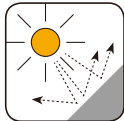
Low Corrosivity  
IEC60754-2/EN50267-2-2/3  
NF C32-074/NF C20-453



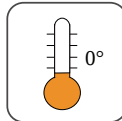
Low Smoke Emission  
IEC 61034-2 / EN 50268-2  
NF C32-073/NF C 20-902



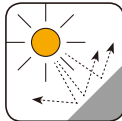
Low Toxicity  
EN 50305; NF X70-100/NF  
F63 808/TM1-04/BS 6853



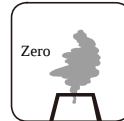
Ozone Resistant



Resistance To  
Soldering Heat



UV Resistant



Zero Halogen  
IEC 60754-1/EN 50267-2-1  
NF C20-454