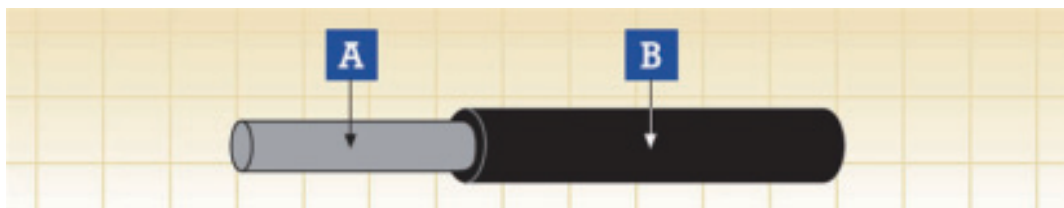


FIREROL Standard Wall Single Core Unsheathed Cables

500 V, 1000 V, 1500 V, 3000 V

NF F 63-826 (FRF-SW-05SU/FRF-SW-1SU,FRF-SW-1.5SU/FRF-SW-3SU)



A. Conductor B. Insulation

Application

These cables are 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, suitable for use in control, auxiliary and main circuit wiring such as cable harnesses, switchboards and control panels, driver desks etc.

Construction

Conductor

Stranded tinned copper wires to IEC 60228 Class 5

Insulation

Special halogen free compound

Electrical & Mechanical Properties

Nominal Voltage

500 V, 1000 V, 1500 V, 3000 V

Max. Conductor Temperature

90 °C/105 °C

Temperature Range

-25 °C~90 °C

Bending Radius

4 × Overall Diameter

Standards

NF F 63-826

NF F 16-101

BS 6853

Fire Performance in General

EN 50265-2-1; IEC 60332-1-2; NF C 32-070 2.1 (C2)

EN 50266-2-4 + EN 50305; IEC 60332-3-24;

NF C 32-070 2.2 (C1); VDE 0472 Teil 804

EN 50268-2; IEC 61034-2; NF C 32-073 ;

NF C 20-902; NF F 16 101; VDE 0472 Teil 816

EN 50267-2-1; IEC 60754-1; NF C 32-074;

NF C 20-454; VDE 0472 Teil 815

EN 50267-2-2/3; IEC 60754-2; NF C 32-074;

NF C 20-453; VDE 0472 Teil 813

EN 50305; NF X 70-100; NF F 63 808; TM1-04; BS6853

NF F 63 808; BS6853; NF F 16 101

Vertical flame propagation for a single insulated wire or cable

Vertical flame spread of vertically mounted bunched wires or cables

Low Smoke Emission

Halogen Free

Low Corrosivity (Acidity & Conductivity)

Low Toxicity

Smoke Index

FRF-SW-05SU 500 V

Nominal Cross-Sectional Area	Number & Nominal Diameter of Strands	Nominal Insulation Thickness	Overall Diameter		Weight
			Min.	Max.	
mm ²	No/mm	mm	mm	mm	kg/km
1.0	32/0.20	1.3	3.8	4.5	26
1.5	30/0.25	1.3	4.1	4.8	33
2.5	50/0.25	1.3	4.5	5.2	43
4.0	56/0.30	1.3	5.0	5.8	59
6.0	84/0.30	1.4	5.7	6.5	82
10.0	80/0.40	1.5	6.9	8.1	135
16.0	126/0.40	1.5	8.2	9.2	210

FRF-SW-1SU 1000 V

Nominal Cross-Sectional Area	Number & Nominal Diameter of Strands	Nominal Insulation Thickness	Overall Diameter		Weight
			Min.	Max.	
mm ²	No/mm	mm	mm	mm	kg/km
1.5	30/0.25	1.5	4.4	5.2	42
2.5	50/0.25	1.5	4.8	5.6	55
4.0	56/0.30	1.5	5.4	6.2	72
6.0	84/0.30	1.6	6.1	6.9	96
10.0	80/0.40	1.6	7.0	8.3	154
16.0	126/0.40	1.6	8.3	9.4	218
25.0	196/0.40	1.7	9.8	11.0	316
35.0	276/0.40	1.8	11.2	12.5	440
50.0	396/0.40	1.9	13.0	14.3	580
70.0	360/0.50	2.0	14.7	16.3	830
95.0	475/0.50	2.0	16.6	18.4	1040
120.0	608/0.50	2.1	18.6	20.5	1310

FRF-SW-1.5SU 1500 V

Nominal Cross-Sectional Area	Number & Nominal Diameter of Strands	Nominal Insulation Thickness	Overall Diameter		Weight
			Min.	Max.	
mm ²	No/mm	mm	mm	mm	kg/km
1.5	30/0.25	2.3	6.0	6.8	59
2.5	50/0.25	2.3	6.4	7.2	73
4.0	56/0.30	2.3	7.0	7.8	91
6.0	84/0.30	2.3	7.5	8.3	120
10.0	80/0.40	2.3	8.4	9.7	160
16.0	126/0.40	2.3	9.7	10.8	235
25.0	196/0.40	2.3	11.0	12.2	330
35.0	276/0.40	2.4	12.4	13.7	480
50.0	396/0.40	2.5	14.2	15.5	610
70.0	360/0.50	2.7	16.1	17.7	860
95.0	475/0.50	2.7	18.0	19.8	1070
120.0	608/0.50	2.8	20.0	21.9	1340
150.0	756/0.50	2.8	21.8	23.8	1620
185.0	925/0.50	2.9	23.7	25.9	1940
240.0	1221/0.50	3.1	26.6	29.1	2550
300.0	1525/0.50	3.45	29.4	31.9	2950



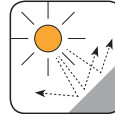
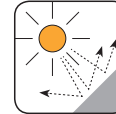
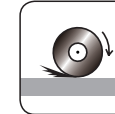

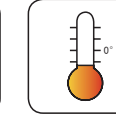
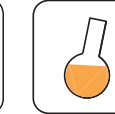







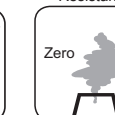
NF F 63-826 Rolling Stock Cables

FRF-SW-3SU 3000 V

Nominal Cross-Sectional Area	Number & Nominal Diameter of Strands	Nominal Insulation Thickness	Overall Diameter		Weight
			Min.	Max.	
mm ²	No/mm	mm	mm	mm	kg/km
2.5	50/0.25	3.1	8.0	8.8	94
4.0	56/0.30	3.1	8.5	9.5	124
6.0	84/0.30	3.1	8.8	9.9	135
10.0	80/0.40	3.1	10.0	11.3	200
16.0	126/0.40	3.1	11.2	12.4	265
25.0	196/0.40	3.1	12.5	13.8	375
35.0	276/0.40	3.2	13.9	15.3	493
50.0	396/0.40	3.3	15.7	17.2	680
70.0	360/0.50	3.4	17.5	19.1	930
95.0	475/0.50	3.5	19.5	21.4	1066
120.0	608/0.50	3.6	21.6	23.5	1530
150.0	756/0.50	3.6	23.3	25.5	1740
185.0	925/0.50	3.7	25.2	27.6	2100
240.0	1221/0.50	3.9	28.1	31.7	2460
300.0	1525/0.50	4.45	31.4	35.0	3050

NF F 63-826 Rolling Stock Cables

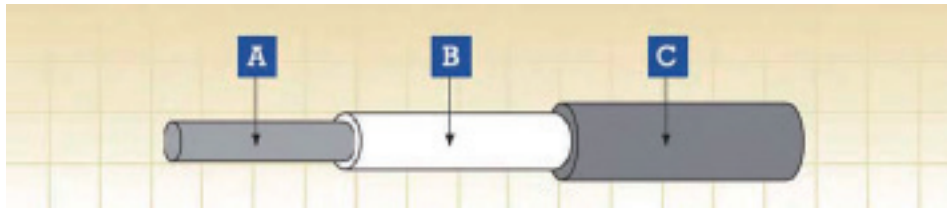


 Impact Resistant	 Highly Flexible	 UV Resistant	 Ozone Resistant	 Abrasion Retardant	 Cold Resistant	 Resistance To Soldering Heat	 Acid & Alkaline Resistant
 IRM 903 Fuel Oil Resistant	 IRM 902 Mineral Oil Resistant	 Fire Retardant NF C32-070-2.2(C1) IEC60332-3-24/EN50266-2-4	 Flame Retardant NF C32-070-2.1(C2) IEC60332-1-2/EN50265-2-1	 Low Toxicity EN 50305; NF X70-100/NF F63 808/TM1-04/BS 6853	 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	 Zero IEC 60754-1/EN 50267-2-1 NF C20-454

FIREROL Standard Wall Single Core Sheathed Cables

1500 V, 3000 V

NF F 63-826 (FRF-SW-1.5S/FRF-SW-3S)



A. Conductor B. Insulation C. Sheath

Application

These cables are 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, suitable for use in control, auxiliary and main circuit wiring such as cable harnesses, switchboards and control panels, driver desks etc.

Construction

Conductor

Stranded tinned copper wires to IEC 60228 Class 5

Insulation

Halogen free compound

Sheath

Halogen free compound

Electrical & Mechanical Properties

Nominal Voltage	1500 V, 3000 V
Max. Conductor Temperature	90 °C/105 °C
Temperature Range	-25 °C~90 °C
Bending Radius	4 × Overall Diameter

Standards

NF F 63-826
NF F 16-101
BS 6853

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 NF F 63 808; BS6853; NF F 16 101	Low Toxicity Smoke Index

NF F 63-826 Rolling Stock Cables



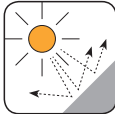
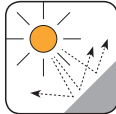











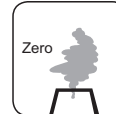
FRF-SW-1.5S 1500 V

Nominal Cross-Sectional Area	Number & Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Sheath Thickness	Overall Diameter		Weight
				Min.	Max.	
mm ²	No/mm	mm	mm	mm	mm	kg/km
1.5	30/0.25	2.3	1.5	8.9	9.9	130
2.5	50/0.25	2.3	1.5	9.3	10.3	145
10.0	80/0.40	2.3	1.8	11.9	13.3	290
50.0	396/0.40	2.5	2.2	18.3	20.3	850
120.0	608/0.50	2.8	2.6	25.0	27.5	1770
150.0	756/0.50	2.8	2.6	26.7	29.3	2150
185.0	925/0.50	2.9	2.8	29.0	31.8	2530

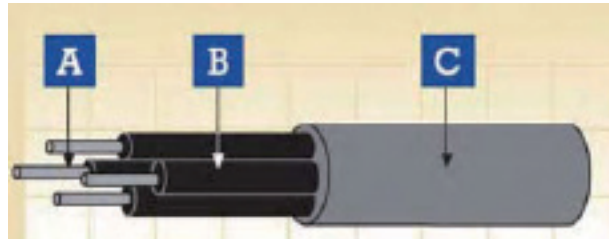
FRF-SW-3S 3000V

Nominal Cross-Sectional Area	Number & Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Sheath Thickness	Overall Diameter		Weight
				Min.	Max.	
mm ²	No/mm	mm	mm	mm	mm	kg/km
150.0	756/0.50	3.6	2.6	28.2	30.9	2270
185.0	925/0.50	3.7	2.8	30.5	33.4	2660



 Impact Resistant	 Highly Flexible	 UV Resistant	 Ozone Resistant	 Abrasion Retardant	 Cold Resistant	 Resistance To Soldering Heat	 Acid & Alkaline Resistant
 IRM 903 Fuel Oil Resistant	 IRM 902 Mineral Oil Resistant	 Fire Retardant NF C32-070-2.2(C1) IEC60332-3-24/EN50266-2-4	 Flame Retardant NF C32-070-2.1(C2) IEC60332-1-2/EN50265-2-1	 Low Toxicity EN 50305; NF X70-100/NF F63 808/TM1-04/BS 6853	 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	 Zero IEC 60754-1/EN 50267-2-1 NF C20-454

FIREROL Standard Wall Multicore Unscreened Cables 500 V NF F 63-826 (FRF-SW-05M)



A. Conductor B. Insulation C. Sheath

Application

These cables are 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, suitable for use in control, auxiliary and main circuit wiring such as cable harnesses, switchboards and control panels, driver desks etc.

Construction

Conductor

Stranded tinned copper wires to IEC 60228 Class 5

Insulation

Halogen free compound

Sheath

Halogen free compound

Electrical & Mechanical Properties

Nominal Voltage	500 V
Max. Conductor Temperature	90 °C/105 °C
Temperature Range	-25 °C~+90 °C
Bending Radius	4 × Overall Diameter

Standards

NF F 63-826
NF F 16-101
BS 6853

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 NF F 63 808; BS6853; NF F 16 101	Low Toxicity Smoke Index



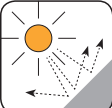
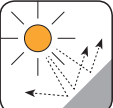











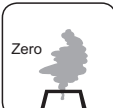
NF F 63-826 Rolling Stock Cables

FRF-SW-05M 500 V

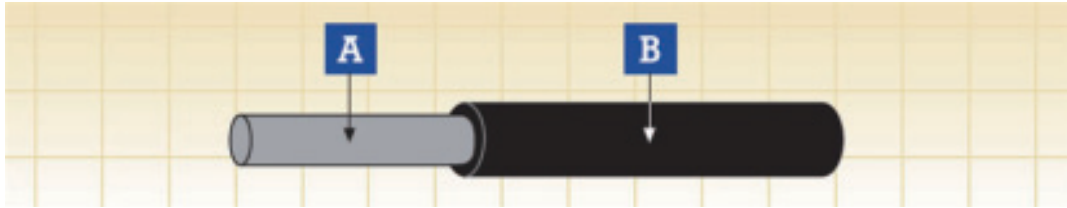
Number of Cores	Nominal Cross-Sectional Area	Number & Nominal Diameter of Strands	Nominal Sheath Thickness	Overall Diameter		Weight
				Min.	Max.	
-	mm ²	No/mm	mm	mm	mm	kg/km
2	1.5	30/0.25	1.0	8.6	9.9	115
4	1.5	30/0.25	1.1	10.1	11.4	160
7	1.5	30/0.25	1.1	11.9	13.3	245
13	1.5	30/0.25	1.2	16.5	18.0	425
19	1.5	30/0.25	1.2	18.3	19.9	675
37	1.5	30/0.25	1.5	25.1	27.1	1170
2	2.5	50/0.25	1.1	10.0	11.3	185
4	2.5	50/0.25	1.2	11.7	13.1	275
13	2.5	50/0.25	1.4	19.5	21.1	750
19	2.5	50/0.25	1.4	21.6	23.4	980

NF F 63-826 Rolling Stock Cables



 Corona Resistant	 Highly Flexible	 UV Resistant	 Ozone Resistant	 Abrasion Retardant	 Cold Resistant	 Resistance To Soldering Heat	 Acid & Alkaline Resistant
 IRM 903 Fuel Oil Resistant	 IRM 902 Mineral Oil Resistant	 Fire Retardant NF C32-070-2-2(C1) IEC60332-3-24/EN50266-2-4	 Flame Retardant NF C32-070-2-1(C2) IEC60332-1-2/EN50265-2-1	 Low Toxicity EN 50305; NF X70-100/NF F63 808/TM1-04/BS 6853	 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	 Zero Halogen IEC 60754-1/EN 50267-2-1 NF C20-454

FIREROL Extra-Flexible Standard Wall Single Core Unsheathed Cable 1500 V NF F 63-826 (FRF-SW-1.5SU-EF)



A. Conductor B. Insulation

Application

These cables are 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, suitable for use in control, auxiliary and main circuit wiring such as cable harnesses, switchboards and control panels, driver desks etc.

Construction

Conductor

Stranded tinned copper wires to IEC 60228 Class 6

Insulation

Special halogen free compound

Electrical & Mechanical Properties

Nominal Voltage	1500 V
Max. Conductor Temperature	90 °C/105 °C
Temperature Range	-25 °C~+90 °C
Bending Radius	3 × Overall Diameter

Standards

NF F 63-826
NF F 16-101
BS 6853

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 NF F 63 808; BS6853; NF F 16 101	Low Toxicity Smoke Index



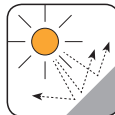
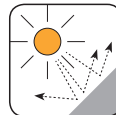
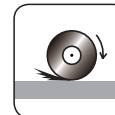
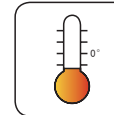
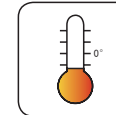








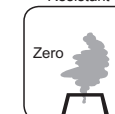
NF F 63-826 Rolling Stock Cables

FRF-SW-1.5SU-EF 1500 V

Nominal Cross-Sectional Area	Number & Nominal Diameter of Strands	Nominal Insulation Thickness	Overall Diameter		Weight
			Min.	Max.	
mm ²	No/mm	mm	mm	mm	kg/km
10.0	320/0.20	2.3	8.4	9.5	187
16.0	512/0.20	2.3	9.7	10.8	266
25.0	800/0.20	2.3	11.0	12.2	354
35.0	1120/0.20	2.4	12.4	13.7	440
50.0	705/0.30	2.5	14.2	15.5	613
70.0	990/0.30	2.7	16.1	17.7	875
95.0	1340/0.30	2.7	18.0	19.8	1045
120.0	1690/0.30	2.8	20.0	21.9	1350
150.0	2123/0.30	2.8	21.8	23.8	1650
185.0	1470/0.40	2.9	23.7	25.9	2130



NF F 63-826 Rolling Stock Cables

 Impact Resistant	 Highly Flexible	 UV Resistant	 Ozone Resistant	 Abrasion Retardant	 Cold Resistant	 Resistance To Soldering Heat	 Acid & Alkaline Resistant
 IRM 903 Fuel Oil Resistant	 IRM 902 Mineral Oil Resistant	 Fire Retardant NF C32-070-2.2(C1) IEC60332-3-24/EN50266-2-4	 Flame Retardant NF C32-070-2.1(C2) IEC60332-1-2/EN50265-2-1	 Low Toxicity EN 50305; NF X70-100/NF F63 808/TM1-04/BS 6853	 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	 Zero IEC 60754-1/EN 50267-2-1 NF C20-454