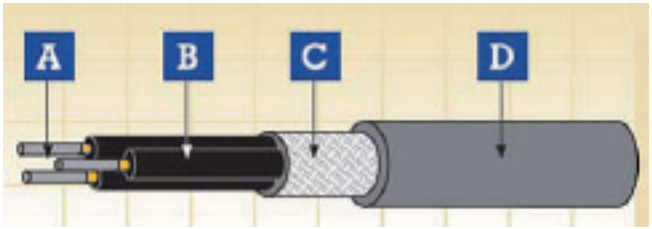
FIREROL Standard Wall Multicore Overall Screened & Fire Resistant Cables 300/500 V or 0.6/1 kV EN 50264-2-2 (FRL-SW-05M-OS-AS+/FRL-SW-1M-OS-AS+)



A. Conductor B. Insulation C. Screen D. Sheath

Application

-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, auxillary and main circuit wiring such as cable harnesses, switchboards and control panels, driver desks etc.

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)

Overal Screen

Tinned annealed copper wires

Outer Sheath

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

Electrical & Mechanical Properties

Nominal Voltage	300/500 V or 0.6/1 kV
Max. Conductor Temperature	90 °C (fixed installation)
Min. Permissible Ambient Temperature	-25 °C/-40 °C (fixed installation)
Bending Radius	10 x Overall Diameter

Chemical & 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, HL4
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

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
IEC60331-21	The circuit integrity test under fire of cables rated 0.6/1.0kV and below

FRL-SW-05M-OS-AS+ 300/500 V

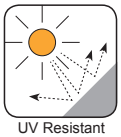
Number and Nominal Cross-Sectional Area (a)	Conductor Diameter (b)	Min. Mean Thickness of Insulation	Diameter of Core (b)		Min. Wire Diameter of Screen	Min. Mean Thickness of Sheath	Overall Diameter		Weight	Max. Conductor Resistance	Min. Insulation Resistance	
			Min.	Max.			Min.	Max.			EI 105	EI 101-EI 104
										20 °C	20 °C	20 °C
n x mm²	mm	mm	mm	mm	mm	mm	mm	mm	kg/km	Ω/km	MΩ x km	MΩ x km
2x1	1.25	0.6	2.7	3.1	0.16	1.4	8.3	9.8	129	20.0	140	70
4x1		0.6	2.7	3.1	0.16	1.4	9.2	10.9	188	20.0	140	70
7x1		0.6	2.7	3.1	0.16	1.4	10.6	12.5	275	20.0	140	70
9x1		0.6	2.7	3.1	0.21	1.4	12.7	14.9	360	20.0	140	70
12x1		0.6	2.7	3.1	0.21	1.4	13.5	15.9	445	20.0	140	70
19x1		0.6	2.7	3.1	0.26	1.5	15.9	18.7	665	20.0	140	70
24x1		0.6	2.7	3.1	0.26	1.6	18.3	21.5	832	20.0	140	70
32x1		0.6	2.7	3.1	0.26	1.6	19.9	23.4	1043	20.0	140	70
37x1		0.6	2.7	3.1	0.26	1.7	20.9	24.5	1181	20.0	140	70
40x1		0.6	2.7	3.1	0.26	1.7	21.6	25.4	1263	20.0	140	70
4x1.5	1.5	0.7	3.0	3.5	0.16	1.4	10.3	12.1	244	13.7	120	60
7x1.5		0.7	3.0	3.5	0.21	1.4	12.1	14.3	380	13.7	120	60
9x1.5		0.7	3.0	3.5	0.21	1.4	14.3	16.8	476	13.7	120	60
12x1.5		0.7	3.0	3.5	0.21	1.5	16.0	18.8	604	13.7	120	60
19x1.5		0.7	3.0	3.5	0.26	1.5	18.0	21.1	895	13.7	120	60
24x1.5		0.7	3.0	3.5	0.26	1.6	20.9	24.5	1120	13.7	120	60
32x1.5		0.7	3.0	3.5	0.26	1.7	22.9	26.9	1430	13.7	120	60
37x1.5		0.7	3.0	3.5	0.26	1.7	23.8	27.9	1610	13.7	120	60
4x2.5	1.95	0.8	3.6	4.2	0.21	1.4	12.0	14.2	330	8.21	90	45
7x2.5		0.8	3.6	4.2	0.21	1.4	13.9	16.4	500	8.21	90	45
9x2.5		0.8	3.6	4.2	0.26	1.5	17.0	20.0	670	8.21	90	45
12x2.5		0.8	3.6	4.2	0.26	1.5	18.2	21.4	830	8.21	90	45
19x2.5		0.8	3.6	4.2	0.26	1.6	21.3	24.9	1200	8.21	90	45
24x2.5		0.8	3.6	4.2	0.26	1.8	24.9	28.9	1560	8.21	90	45

(a)= One earth conductor (green/yellow) can be included upon request

(b)= For information, indicative only


Impact Resistant


Highly Flexible


UV Resistant


Ozone Resistant


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

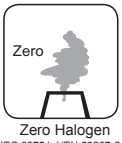

Flame Resistant IEC60331-21


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

FRL-SW-1M-OS-AS+ 0.6/1 kV

Number and Nominal Cross-Sectional Area (a)	Conductor Diameter (b)	Min. Mean Thickness of Insulation	Diameter of Core (b)		Min. Wire Diameter of Screen	Min. Mean Thickness of Sheath	Overall Diameter		Weight	Max. Conductor Resistance	Min. Insulation Resistance	
			Min.	Max.			Min.	Max.			EI 105	EI 101-EI 104
										20 °C	20 °C	20 °C
mm^2	mm	mm	mm	mm	mm	mm	mm	mm	kg/km	Ω/km	MΩ x km	MΩ x km
TWO CORES												
1.5	1.5	0.8	3.3	3.8	0.16	1.4	9.5	11.2	166	13.7	150	75
2.5	1.95	0.8	3.7	4.2	0.16	1.4	10.4	12.2	207	8.21	130	65
4	2.5	0.8	4.2	4.9	0.21	1.4	11.7	13.7	273	5.09	110	55
6	3.0	0.9	4.9	5.7	0.21	1.4	13.1	15.4	351	3.39	90	45
10	3.9	1.1	6.1	7.1	0.21	1.5	15.7	18.5	515	1.95	85	45
16	5.0	1.1	7.5	8.8	0.26	1.5	18.1	21.2	710	1.24	70	35
25	6.4	1.3	8.9	10.3	0.26	1.7	21.8	25.6	1035	0.795	65	35
35	7.7	1.3	10.5	11.8	0.31	1.8	24.6	28.9	1339	0.565	60	30
50	9.2	1.5	11.9	13.8	0.31	1.9	28.4	33.3	1810	0.393	55	30
THREE CORES												
1.5	1.5	0.8	3.3	3.8	0.16	1.4	10.0	11.7	205	13.7	150	75
2.5	1.95	0.8	3.7	4.2	0.16	1.4	10.9	12.8	261	8.21	130	65
4	2.5	0.8	4.2	4.9	0.21	1.4	12.2	14.4	349	5.09	110	55
6	3.0	0.9	4.9	5.7	0.21	1.4	13.8	16.3	457	3.39	90	45
10	3.9	1.1	6.1	7.1	0.26	1.5	16.9	19.9	704	1.95	85	45
16	5.0	1.1	7.5	8.8	0.26	1.6	19.3	22.6	960	1.24	70	35
25	6.4	1.3	8.9	10.3	0.26	1.7	23.1	27.1	1400	0.795	65	35
35	7.7	1.3	10.5	11.8	0.31	1.8	26.2	30.8	1827	0.565	60	30
50	9.2	1.5	11.9	13.8	0.31	2.0	30.5	35.7	2513	0.393	55	30
FOUR CORES												
1.5	1.5	0.8	3.3	3.8	0.16	1.4	10.7	12.6	248	13.7	150	75
2.5	1.95	0.8	3.7	4.2	0.21	1.4	12.0	14.2	335	8.21	130	65
4	2.5	0.8	4.2	4.9	0.21	1.4	13.3	15.6	430	5.09	110	55
6	3.0	0.9	4.9	5.7	0.21	1.4	15.1	17.7	570	3.39	90	45
10	3.9	1.1	6.1	7.1	0.26	1.6	18.6	21.9	896	1.95	85	45
16	5.0	1.1	7.5	8.8	0.26	1.7	21.3	24.9	1200	1.24	70	35
25	6.4	1.3	8.9	10.3	0.31	1.8	25.8	30.2	1815	0.795	65	35
3X35+25	7.7/6.4	1.3/1.3	10.5/8.9	11.8/10.3	0.31	1.9	30.2	35.4	2200	0.565/0.795	60	30
3X50+25	9.2/6.4	1.5/1.3	11.9/8.9	13.8/10.3	0.31	2.1	35.1	41.1	2600	0.393/0.795	55	30

(a)= One earth conductor (green/yellow) can be included upon request

(b)= For information, indicative only