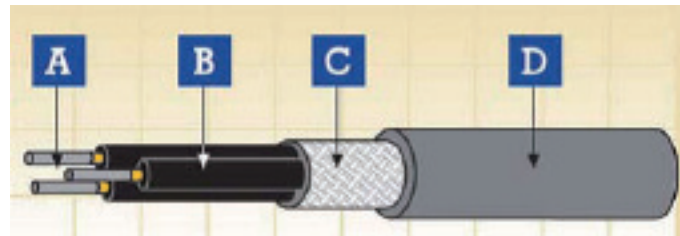


FIREROL Medium Wall Multicore Overall Screened & Fire Resistant Cables 300/500 V or 0.6/1 kV EN 50264-3-2(FRL-MW-05M-OS-AS⁺/FRL-MW-1M-OS-AS⁺)



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

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 106 to EI 110)

Overall Screen

Tinned annealed copper wires

Outer Sheath

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

Fixed installation:

10 x Overall Diameter (D<12mm);

12 x Overall Diameter (D>12mm)

Flexible installation:

20 x Overall Diameter (D<12mm);

25 x Overall Diameter (D>12mm)

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;

Vertical flame spread of vertically mounted bunched wires or cables

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

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

Low Smoke Emission

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
 IEC60331-21

Halogen Free

Low Corrosivity (Acidity & Conductivity)

Low Toxicity

Smoke Index

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

FRL-MW-05M-OS-AS⁺ 300/500 V

Nominal Cross-Sectional Area (a)	Conductor Diameter (b)	Min. Mean Thickness of Insulation	Core Dimensions		Min. Screen Wire Diameter	Min. Average Sheath Thickness	Overall Diameter		Weight	Max. Conductor Resistance 20 °C	Min. Insulation Resistance	
			Min.	Max.			Min.	Max.			EI 110 20 °C	EI 106/7/8/9 20 °C
n x mm ²	mm	mm	mm	mm	mm	mm	mm	mm	kg/km	Ω/km	MΩ x km	MΩ x km
2 x 1	1.25	0.4	2.24	2.64	0.16	0.6	6.24	7.34	81	20.0	15.0	7.5
4 x 1	1.25	0.4	2.24	2.64	0.16	0.7	7.24	8.44	132	20.0	15.0	7.5
7 x 1	1.25	0.4	2.24	2.64	0.16	0.7	8.44	9.84	203	20.0	15.0	7.5
9 x 1	1.25	0.4	2.24	2.64	0.21	0.8	10.44	12.14	275	20.0	15.0	7.5
12 x 1	1.25	0.4	2.24	2.64	0.21	0.8	11.14	12.94	346	20.0	15.0	7.5
19 x 1	1.25	0.4	2.24	2.64	0.26	1.0	13.44	15.64	538	20.0	15.0	7.5
24 x 1	1.25	0.4	2.24	2.64	0.26	1.0	15.44	18.04	667	20.0	15.0	7.5
32 x 1	1.25	0.4	2.24	2.64	0.26	1.0	16.84	19.64	846	20.0	15.0	7.5
37 x 1	1.25	0.4	2.24	2.64	0.26	1.0	17.44	20.34	953	20.0	15.0	7.5
40 x 1	1.25	0.4	2.24	2.64	0.26	1.2	18.44	21.54	1044	20.0	15.0	7.5
4 x 1.5	1.5	0.5	2.64	3.14	0.16	0.7	8.24	9.64	180	13.7	14.0	7.0
7 x 1.5	1.5	0.5	2.64	3.14	0.21	0.7	9.84	11.54	295	13.7	14.0	7.0
9 x 1.5	1.5	0.5	2.64	3.14	0.21	1.0	12.34	14.44	395	13.7	14.0	7.0
12 x 1.5	1.5	0.5	2.64	3.14	0.21	1.0	13.24	15.44	497	13.7	14.0	7.0
19 x 1.5	1.5	0.5	2.64	3.14	0.26	1.0	15.54	18.14	750	13.7	14.0	7.0
24 x 1.5	1.5	0.5	2.64	3.14	0.26	1.2	18.34	21.44	955	13.7	14.0	7.0
32 x 1.5	1.5	0.5	2.64	3.14	0.26	1.2	20.04	23.44	1215	13.7	14.0	7.0
37 x 1.5	1.5	0.5	2.64	3.14	0.26	1.2	20.74	24.24	1372	13.7	14.0	7.0
4 x 2.5	1.95	0.5	3.14	3.64	0.21	0.7	9.44	11.04	249	8.21	13.0	6.5
7 x 2.5	1.95	0.5	3.14	3.64	0.21	0.8	11.34	13.24	398	8.21	13.0	6.5
9 x 2.5	1.95	0.5	3.14	3.64	0.26	1.0	14.14	16.54	539	8.21	13.0	6.5
12 x 2.5	1.95	0.5	3.14	3.64	0.26	1.0	15.24	17.74	681	8.21	13.0	6.5
19 x 2.5	1.95	0.5	3.14	3.64	0.26	1.2	18.04	21.04	1027	8.21	13.0	6.5
24 x 2.5	1.95	0.5	3.14	3.64	0.26	1.2	20.84	24.34	1278	8.21	13.0	6.5

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

(b)= For information, indicative only

EN 50264 Rolling Stock Cables

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

Nominal Cross-Sectional Area (a)	Conductor Diameter (b)	Min. Mean Thickness of Insulation	Core Dimensions		Min. Screen Wire Diameter	Min. Average Sheath Thickness	Overall Diameter		Weight	Max. Conductor Resistance 20 °C	Min. Insulation Resistance	
			Min.	Max.			Min.	Max.			EI 110 20 °C	EI 106/7/8/9 20 °C
TWO CORES												
1.5	1.5	0.7	3.04	3.54	0.16	0.70	8.14	10.14	121	13.7	21.0	10.5
2.5	1.95	0.7	3.44	4.04	0.16	0.70	8.94	10.94	157	8.21	17.2	8.6
4	2.5	0.7	4.04	4.64	0.21	0.80	10.44	12.94	224	5.09	14.2	7.1
6	3.0	0.7	4.44	5.24	0.21	0.80	11.14	13.84	287	3.39	12.2	6.1
10	3.9	0.7	5.34	6.14	0.21	1.00	13.64	16.84	424	1.95	9.8	4.9
16	5.0	0.7	6.34	7.44	0.26	1.00	16.24	20.04	606	1.24	7.9	3.9
25	6.4	0.9	8.04	9.34	0.26	1.20	20.04	24.84	909	0.795	7.3	3.6
35	7.7	0.9	9.24	10.84	0.31	1.40	23.04	28.14	1213	0.565	6.7	3.3
50	9.2	1.0	10.84	12.64	0.31	1.40	26.64	32.54	1631	0.393	6.3	3.1
THREE CORES												
1.5	1.5	0.7	3.04	3.54	0.16	0.70	8.64	10.64	156	13.7	21.0	10.5
2.5	1.95	0.7	3.44	4.04	0.16	0.70	9.44	11.64	207	8.21	17.2	8.6
4	2.5	0.7	4.04	4.64	0.21	0.80	11.04	13.54	295	5.09	14.2	7.1
6	3.0	0.7	4.44	5.24	0.21	0.80	11.84	14.54	384	3.39	12.2	6.1
10	3.9	0.7	5.34	6.14	0.26	1.00	14.64	18.24	593	1.95	9.8	4.9
16	5.0	0.7	6.34	7.44	0.26	1.20	17.64	21.54	848	1.24	7.9	3.9
25	6.4	0.9	8.04	9.34	0.26	1.20	21.54	26.34	1251	0.795	7.3	3.6
35	7.7	0.9	9.24	10.84	0.31	1.40	24.74	30.04	1674	0.565	6.7	3.3
50	9.2	1.0	10.84	12.64	0.31	1.60	28.54	34.84	2309	0.393	6.3	3.1
FOUR CORES												
1.5	1.5	0.7	3.04	3.54	0.16	0.70	9.34	11.54	194	13.7	21.0	10.5
2.5	1.95	0.7	3.44	4.04	0.21	0.80	10.64	13.14	280	8.21	17.2	8.6
4	2.5	0.7	4.04	4.64	0.21	0.80	12.04	14.74	371	5.09	14.2	7.1
6	3.0	0.7	4.44	5.24	0.21	1.00	13.34	16.34	503	3.39	12.2	6.1
10	3.9	0.7	5.34	6.14	0.26	1.00	16.14	19.74	752	1.95	9.8	4.9
16	5.0	0.7	6.34	7.44	0.26	1.20	19.54	23.84	1082	1.24	7.9	3.9
25	6.4	0.9	8.04	9.34	0.31	1.40	24.24	29.54	1666	0.795	7.3	3.6
3x35+25	7.7/6.4	0.9/0.9	9.24/8.04	10.84/9.34	0.31	1.40	27.14	33.14	2152	0.565/0.795	6.7	3.3
3x50+25	9.2/6.4	1.0/0.9	10.84/8.04	12.64/9.34	0.31	1.60	31.74	38.44	2946	0.393/0.795	6.3	3.1

(a)= For information, indicative only

 Highly Flexible	 Abrasion Retardant	 UV Resistant	 Ozone Resistant	 Fire Resistant IEC60331-21	 Cold Resistant	 Resistance To Soldering Heat	 Acid & Alkaline Resistant
 IRM 903 Fuel Oil Resistant	 IRM 902 Mineral Oil Resistant	 Low Toxicity EN 50305; NF X70-100/NF F63 808/TM1-04/BS 6853	 Fire Retardant NF C32-070-2.2(C1) IEC 60332-3/EN50266	 Flame Retardant NF C32-070-2.1(C2) IEC 60332-1/EN 50265-2-1	 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 C20-902	 Zero Halogen IEC 60754-1/EN 50267-2-1 NF C20-454