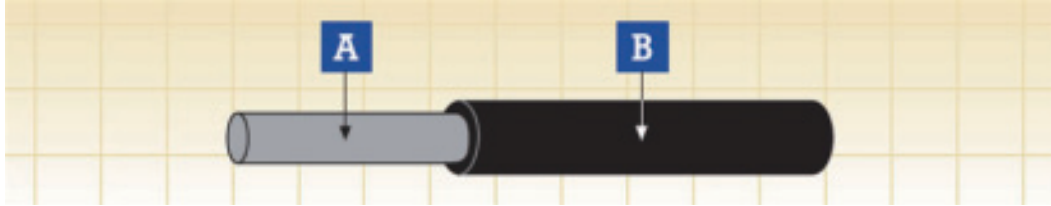


## FIREROL High Temperature Single Core Unsheathed Cables

### 1.8/3 kV or 3.6/6 kV

### EN 50382-2 (FRL-HT-3SU/FRL-HT-6SU)



A. Conductor B. Insulation

### Construction

#### Conductor

Flexible tinned annealed copper wires (red copper only for 150 °C core temperature) class 5 according to HD 383

#### Insulation

Silicon rubber according to EN 50382-1 (EI 111)

### Electrical & Mechanical Properties

Nominal Voltage

1.8/3 kV or 3.6/6 kV

Max. Conductor Temperature

120 °C/150 °C (fixed installation)

Min. Permissible Ambient Temperature

-25 °C/-40 °C (fixed installation)

Bending Radius

3 x Overall Diameter (D<12mm);

4 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

Halogen Free

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

NF C 20-454; VDE 0472 Teil 815

Low Corrosivity (Acidity & Conductivity)

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

NF C 20-453; VDE 0472 Teil 813

Low Toxicity

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

Smoke Index

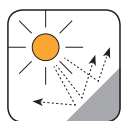
NF F 63 808; BS6853; NF F 16 101



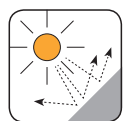
Impact Resistant



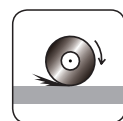
Highly Flexible



UV Resistant



Ozone Resistant



Abrasion Retardant



Cold Resistant



Resistance To Soldering Heat



Acid & Alkaline Resistant

# EN 50382 High Temperature Rolling Stock Cables

## FRL-HT-3SU 1.8/3 kV

Nominal Cross-Sectional Area mm <sup>2</sup>	Conductor Diameter (a) mm	Min. Mean Thickness of Insulation mm	Overall Diameter		Weight kg/km	Max. Conductor Resistance		Min. Insulation Resistance	
			Min. mm	Max. mm		Tinned Conductor	Plain Conductor	20 °C MΩ x km	150 °C MΩ x km
						20 °C Ω/km	20 °C Ω/km		
1.5	1.5	2.5	6.3	7.3	50	13.7	13.3	970	1.90
2.5	1.95	2.5	6.7	7.8	70	8.21	7.98	840	1.60
4	2.5	2.5	7.2	8.4	80	5.09	4.95	720	1.40
6	3.0	2.5	7.7	9.0	100	3.39	3.30	650	1.30
10	3.9	2.5	8.5	10.0	160	1.95	1.91	540	1.00
16	5.0	2.5	9.6	11.2	210	1.24	1.21	460	0.90
25	6.4	2.5	10.9	12.7	290	0.795	0.780	380	0.70
35	7.7	2.5	12.1	14.1	380	0.565	0.554	330	0.60
50	9.2	2.5	13.5	15.8	520	0.393	0.386	290	0.50
70	11.0	2.5	15.2	17.8	720	0.277	0.272	250	0.50
95	12.5	2.7	17.0	19.9	930	0.210	0.206	230	0.40
120	14.2	2.7	18.6	21.7	1140	0.164	0.161	210	0.40
150	15.8	2.7	20.1	23.5	1430	0.132	0.129	190	0.30
185	17.5	2.7	21.7	25.4	1720	0.108	0.106	170	0.30
240	20.1	2.7	24.1	28.2	2270	0.0817	0.0801	150	0.30
300	22.5	2.7	26.4	30.9	2750	0.0654	0.0641	140	0.20
400	25.8	2.9	29.9	34.9	3730	0.0495	0.0486	130	0.20

## FRL-HT-6SU 3.6/6 kV

Nominal Cross-Sectional Area mm <sup>2</sup>	Conductor Diameter (a) mm	Min. Mean Thickness of Insulation mm	Overall Diameter		Weight kg/km	Max. Conductor Resistance		Min. Insulation Resistance	
			Min. mm	Max. mm		Tinned Conductor	Plain Conductor	20 °C MΩ x km	150 °C MΩ x km
						20 °C Ω/km	20 °C Ω/km		
2.5	1.95	3.0	7.6	8.9	80	8.21	7.98	920	1.80
4	2.5	3.0	8.1	9.5	100	5.09	4.95	800	1.60
6	3.0	3.0	9.0	10.6	120	3.39	3.30	750	1.50
10	3.9	3.0	9.5	11.1	180	1.95	1.91	610	1.20
16	5.0	3.0	10.5	12.3	230	1.24	1.21	520	1.00
25	6.4	3.0	11.8	13.8	310	0.795	0.780	430	0.80
35	7.7	3.0	13.0	15.2	410	0.565	0.554	380	0.70
50	9.2	3.0	14.4	16.9	550	0.393	0.386	330	0.60
70	11.0	3.0	16.1	18.9	740	0.277	0.272	280	0.50
95	12.5	3.0	17.5	20.5	940	0.210	0.206	260	0.50
120	14.2	3.1	19.3	22.6	1170	0.164	0.161	240	0.40
150	15.8	3.1	20.8	24.4	1460	0.132	0.129	220	0.40
185	17.5	3.2	22.6	26.5	1760	0.108	0.106	200	0.40
240	20.1	3.4	25.4	29.8	2340	0.0817	0.0801	190	0.30
300	22.5	3.4	27.7	32.4	2820	0.0654	0.0641	170	0.30
400	25.8	3.4	30.8	36.0	3780	0.0495	0.0486	150	0.30

(a)= For information, indicative only



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



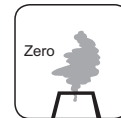
Low Toxicity  
EN 50305: NF X70-100/NF  
F63 800/1M1-04/BS 6855



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