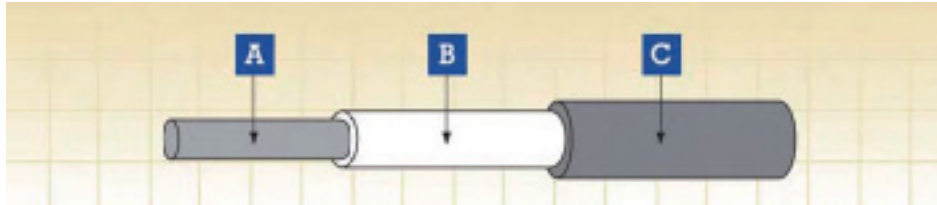


## FIREROL High Temperature Single Core Sheathed Cables

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

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



A. Conductor B. Insulation C. Sheath

### 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 112)

#### Outer Sheath

LSZH elastomeric compound according to EN 50382-1 (EM 105, EM 106 or EM 107)

### 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

EN 50305; EN 60811-2-1

EN 50305

No fluorine

Resistance to mineral oil & fuel oil, acid & alkali

Resistance to ozone

### Fire Performance for Rolling Stock Application

EN 50306-2

DIN 5510-2

BS 6853

NF F 16-101

Hazard levels HL1, HL2/HL3, HL4

Protection level 1/2/3/4

Interior use 1a, 1b, II; Exterior use 1a, 1b, II

F0

### 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



Impact Resistant



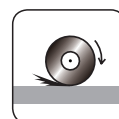
Highly Flexible



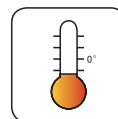
UV Resistant



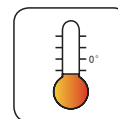
Ozone Resistant



Abrasion Retardant



Cold Resistant



Resistance To Soldering Heat



Acid & Alkaline Resistant

# EN 50382 High Temperature Rolling Stock Cables

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

Nominal Cross-Sectional Area	Conductor Diameter (a)	Min. Mean Thickness of Insulation	Min. Average Sheath Thickness	Overall Diameter		Weight	Max. Conductor Resistance		Min. Insulation Resistance	
				Min.	Max.		Tinned Conductor	Plain Conductor	20 °C	150 °C
							20 °C	20 °C		
mm <sup>2</sup>	mm	mm	mm	mm	mm	kg/km	Ω/km	Ω/km	MΩ x km	MΩ x km
1.5	1.5	1.3	1.4	6.8	7.9	70	13.7	13.3	670	1.30
2.5	1.95	1.3	1.4	7.2	8.4	80	8.21	7.98	570	1.10
4	2.5	1.3	1.4	7.7	9.0	100	5.09	4.95	480	0.90
6	3.0	1.3	1.4	8.2	9.6	120	3.39	3.30	420	0.80
10	3.9	1.5	1.4	9.4	11.0	190	1.95	1.91	380	0.70
16	5.0	1.5	1.4	10.5	12.2	240	1.24	1.21	310	0.60
25	6.4	1.8	1.4	12.3	14.4	340	0.795	0.780	300	0.60
35	7.7	1.8	1.4	13.6	15.9	440	0.565	0.554	250	0.50
50	9.2	1.8	1.4	15.0	17.5	580	0.393	0.386	220	0.40
70	11.0	1.8	1.5	16.8	19.7	780	0.277	0.272	200	0.40
95	12.5	2.2	1.5	19.0	22.2	1020	0.210	0.206	190	0.40
120	14.2	2.2	1.6	20.8	24.3	1270	0.164	0.161	180	0.30
150	15.8	2.2	1.6	22.3	26.1	1560	0.132	0.129	160	0.30
185	17.5	2.4	1.7	24.5	28.6	1890	0.108	0.106	160	0.30
240	20.1	2.4	1.8	27.1	31.7	2480	0.0817	0.0801	140	0.20
300	22.5	2.4	1.9	29.5	34.6	2990	0.0654	0.0641	120	0.20
400	25.8	2.6	2.0	33.2	38.9	4010	0.0495	0.0486	120	0.20

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

Nominal Cross-Sectional Area	Conductor Diameter (a)	Min. Mean Thickness of Insulation	Min. Average Sheath Thickness	Overall Diameter		Weight	Max. Conductor Resistance		Min. Insulation Resistance	
				Min.	Max.		Tinned Conductor	Plain Conductor	20 °C	150 °C
							20 °C	20 °C		
mm <sup>2</sup>	mm	mm	mm	mm	mm	kg/km	Ω/km	Ω/km	MΩ x km	MΩ x km
2.5	1.95	2.6	1.4	9.9	11.6	130	8.21	7.98	870	1.70
4	2.5	2.6	1.4	10.4	12.2	150	5.09	4.95	750	1.50
6	3.0	2.6	1.4	10.9	12.8	180	3.39	3.30	670	1.30
10	3.9	2.6	1.4	11.8	13.8	240	1.95	1.91	570	1.10
16	5.0	2.6	1.4	12.8	15.0	300	1.24	1.21	480	0.90
25	6.4	2.9	1.4	14.7	17.2	410	0.795	0.780	430	0.80
35	7.7	2.9	1.4	15.9	18.6	510	0.565	0.554	380	0.70
50	9.2	2.9	1.5	17.5	20.5	660	0.393	0.386	330	0.60
70	11.0	2.9	1.5	19.2	22.4	870	0.277	0.272	280	0.50
95	12.5	2.9	1.6	20.8	24.3	1100	0.210	0.206	250	0.50
120	14.2	2.9	1.6	22.4	26.2	1330	0.164	0.161	230	0.40
150	15.8	2.9	1.7	24.1	28.2	1640	0.132	0.129	210	0.40
185	17.5	3.2	1.8	26.4	30.9	1990	0.108	0.106	210	0.40
240	20.1	3.4	1.9	29.4	34.4	2620	0.0817	0.0801	190	0.30
300	22.5	3.4	1.9	31.7	37.1	3120	0.0654	0.0641	170	0.30
400	25.8	3.4	2.0	35.0	40.9	4150	0.0495	0.0486	150	0.30



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/EN50266-2-1



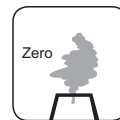
Low Toxicity  
EN 50305; NF X70-100/NF  
F63 809/TM1-04/BS 6853



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