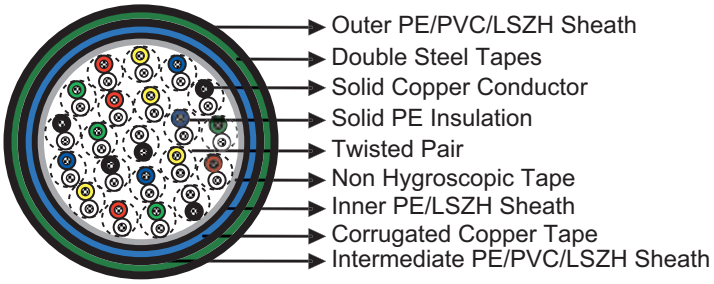
ZPAU & ZPAU-SH Main Signalling Cables (AC Electrified Lines)

Applications

The cables are designed for connection between traffic control centers and equipment shelters along the trackside. The cables are specially designed to give good induction protection (R.F= 0.26 at inductive voltage 100V/km) and are suitable for installation in intercity railways electrified at 25KV ac.

Standards

- SNCF CT 445 / SNCT ST 698G
- NF F 55-698



Construction

- Conductors: Solid annealed copper, 1.0/1.5 mm² nominal cross section area.
- Insulation: Solid polyethylene.
- Cabling Element: Each two conductors are twisted together to form a pair.
- Stranding: Pairs are helically stranded in layers to form the cable core.
- Core Wrapping: Plastic tape(s) with overlapping.
- Inner Sheath: PE sheath. LSZH FR option can be offered upon request to NF C 32 070.2.2 (C1).
- Electrostatic Shield: One corrugated copper tape.
- Intermediate Sheath: PE/PVC sheath. LSZH FR option can be offered upon request to NF C 32 070.2.2 (C1).
- Electromagnetic Shield: Two helically applied steel tapes of 0.5mm.
- Outer Sheath: PE/PVC Sheath. LSZH FR option can be offered upon request to NF C 32 070.2.2 (C1).
- Remarks: ZPAU: PE/PVC Sheath; ZPAU-SH: LSZH Sheath.

Electrical Characteristics at 20℃

Nominal Conductor Diameter	mm	1.13	1.38
Nominal Cross Section Area	mm²	1.0	1.5
Maximum Conductor Resistance (DC)	Ω/km	18.1	12.31
Minimum Insulation Resistance @500 V DC (3mins)	MΩ.km	5000	5000
Maximum Mutual Capacitance @1000Hz (AC)	nF/km	55	55
Maximum Capacitance Unbalance (pair to pair) @800Hz			
100% cases	pF/500 m	400	400
90% cases	pF/500 m	200	200
Attenuation @45KHz	dB/km	2.5	2.5
Characteristic Impedance @45KHz	Ω	120	120
Dielectric Strength, conductor to conductor (DC voltage 3secs)	V	4500	4500
Operating Voltage (AC/DC)	V	450/750	450/750
Peak Value (AC)	V	900	900

Mechanical and Thermal Properties

- Minimum Bending Radius: 8×OD (static); 16×OD (dynamic)
- Temperature Range: -40℃ to +70℃ (during operation); -20℃ to +50℃ (during installation)

Reduction Factor

Inductive Voltage (V/km) Em	28	32	37	42	47	50	70	80	100	120	170	225
Reduction Factor @50Hz Rk	0.75	0.70	0.60	0.50	0.40	0.35	0.30	0.28	0.26	0.25	0.24	0.25

Dimensions and Weight

Cable Code	No. of Pairs	Nominal Sheath Thickness mm			Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Interm.	Outer		
1.13mm Conductor, 2.3mm Insulated Wire						
RS/ZPAU-2Y2Y(K)2YB2Y-1P1S	1	1.0	0.8	1.6	16.2	490
RS/ZPAU-2Y2Y(K)2YB2Y-2P1S	2	1.0	0.8	1.6	17.0	550
RS/ZPAU-2Y2Y(K)2YB2Y-3P1S	3	1.0	0.8	1.6	22.2	820
RS/ZPAU-2Y2Y(K)2YB2Y-4P1S	4	1.0	0.8	1.6	23.8	890
RS/ZPAU-2Y2Y(K)2YB2Y-7P1S	7	1.0	0.8	1.7	26.7	1080
RS/ZPAU-2Y2Y(K)2YB2Y-14P1S	14	1.2	0.8	1.8	32.3	1560
RS/ZPAU-2Y2Y(K)2YB2Y-21P1S	21	1.2	1.1	2.0	37.2	1990
RS/ZPAU-2Y2Y(K)2YB2Y-28P1S	28	1.2	1.1	2.2	41.4	2380
RS/ZPAU-2Y2Y(K)2YB2Y-56P1S	56	1.3	1.3	2.5	52.9	3700
1.38mm Conductor, 2.55mm Insulated Wire						
RS/ZPAU-2Y2Y(K)2YB2Y-14P1.5S	14	1.2	0.8	1.8	35.0	2050
RS/ZPAU-2Y2Y(K)2YB2Y-21P1.5S	21	1.2	1.1	2.0	39.5	2525

Anti Induction


UV Resistant


Mineral Oil Resistant

Rated voltage


Buried in Ciround


Laid In Ducts

PE Sheath

Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1

PVC Sheath


Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1

LSZH Sheath


Flame Retardant
NF C32-070-2.1(C2)
IEC 60332-1/EN 50265-2-1


Fire Retardant
NF C32-070-2.2(C1)
IEC 60332-3/EN50266

Zero Halogen
IEC 60754-1/NF C20-454
EN 50267-2-1


Low Smoke Emission
IEC 61034/NFC20-902
EN 50268/NF C32-073


Low Corrosivity
EN 50267-2-2/NF C32-074
IEC 60754-2/NF C20-453


Low Toxicity