

Single Core, Copper, XLPE Insulated, MDPE. (Type A) Armoured. Longitudinally water blocked cable.

SIZE CODE: XLWB 1x(conductor size)MDPE 33kV

### Application

For use in power circuits of 19/33kV systems. Installed in cable trays and ducts.

### Construction

Single core, circular Copper stranded conductor (water blocked), XLPE insulated, copper tape screened, flame retardant PVC bedded, Aluminium wire armoured, medium density polyethylene sheathed.

Specification: SANS 1339

Voltage Rating: 19/33kV

### Physical properties and dimensions

Conductor size	Conductor diameter	Insulation diameter	Insulation thickness	Bedding diameter	Armour			Cable diameter	Cable mass	Gross mass (300m)	Bending radius	Current rating						Resistance Ω/km max	Reactance (X) Ω/km	Impedance (Z) Ω/km	Capacitance (C) μF/km	Zero sequence				Short circuit ratings			
					diameter	wire diameter	total area					A										Resistance (R <sub>0</sub> ) Ω/km	Reactance (X <sub>0</sub> ) Ω/km	Impedance (Z <sub>0</sub> ) Ω/km	Capacitance (C <sub>0</sub> ) μF/km	Symmetrical		Earth fault 70°C-180°C	
												air		ground		ducts										70°C-250°C	90°C-250°C		
					mm <sup>2</sup> Nom.	mm Nom.	mm Nom.					mm Nom.	mm Nom.	mm Nom.	mm Nom.	mm <sup>2</sup> Min.	mm Nom.					kg/m Nom.	kg Nom.	mm min.	70 °C	90 °C	70 °C	90 °C	70 °C
50	8.2	27.8	8.0	32.5	37.1	2.00	163.4	42.8	2.0	910	855	209	248	184	214	155	184	0.387	0.494	0.170	0.522	0.142	0.550	0.138	0.567	0.892	7.0	6.5	13.6
95	11.8	31.4	8.0	36.0	40.6	2.00	179.1	46.5	2.7	1 195	931	309	367	265	309	223	266	0.193	0.247	0.150	0.288	0.174	0.341	0.151	0.373	0.940	14.1	13.1	14.9
185	16.3	35.9	8.0	40.8	46.4	2.50	255.3	52.7	4.0	1 627	1054	446	531	368	430	312	372	0.0991	0.127	0.137	0.187	0.214	0.204	0.176	0.269	0.999	27.4	25.5	21.2
300	21.2	40.8	8.0	45.8	51.4	2.50	284.7	58.0	5.4	2 209	1159	577	689	465	544	395	472	0.0601	0.078	0.126	0.149	0.257	0.154	0.198	0.251	1.069	45.2	42.0	23.6

### Electrical Properties

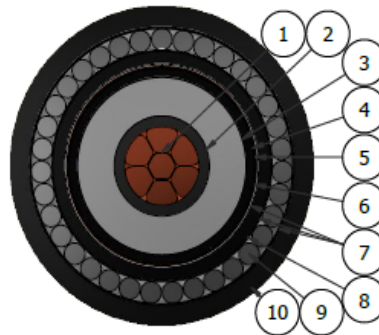
### Calculated thermal time constant

Conductor size	Cable thermal time constant Seconds					
	Air		Ground		Ducts	
	70°C	90°C	70°C	90°C	70°C	90°C
mm <sup>2</sup> Nom.						
50	449	478	579	695	816	941
95	741	788	1 007	1 204	1 423	1 625
185	1 349	1 427	1 981	2 358	2 756	3 151
300	2 119	2 229	3 263	3 874	4 522	5 146

### Determine the minimum cable conductor size from short circuit temperature rise

$$\text{Thermal time constant (k)} = \frac{(i^2 x t) / k}{\text{Area}}$$

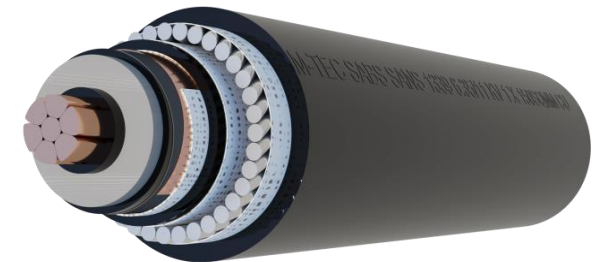
Cu + XLPE 143 i = Symmetrical kA x 1000  
Al + XLPE 94.5 t = time of short 1 second



Item	Description
1	Annealed Copper conductor water blocked
2	Semi-conductive conductor screen
3	TR XLPE Insulation
4	Semi-conductive core screen
5	Semi-conductive water blocking bedding tape
6	Copper tape screen
7	Non-conductive water blocking tape
8	FRPVC Bedding
9	Aluminium wire armouring
10	MDPE Sheath

### Standard installation conditions

Depth of Burial (mm)	800
Thermal Resistivity of Soil (K.m/W)	1.2
Soil Temperature (°C) (Cables in Ground)	25
Ambient Temperature (°C) (Cables in Air)	30
Solid bonded earth system	



Note: Refer to the Power cable manual for more information.

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