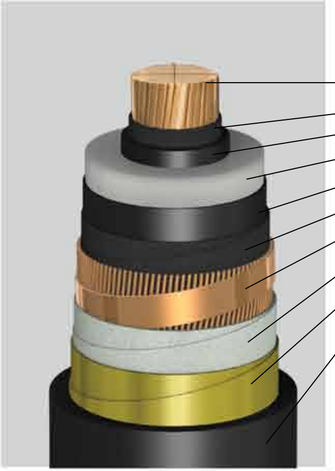


N2XCBr2Y/NA2XCBr2Y

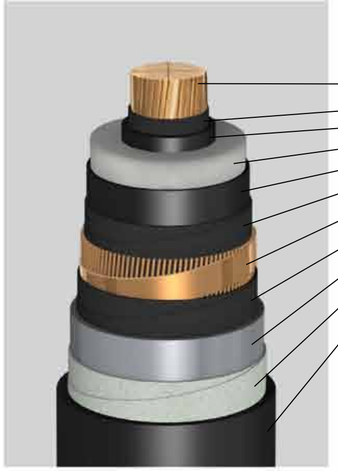
87/150(170) kV

IEC 60840

Copper/Aluminium conductor, XLPE insulated, Copper wire screened, Water sealing, Anti termite brass tape and PE sheathed cable

DIMENSIONAL AND ELECTRICAL DATA — 1 CORE

Nominal cross-sectional area		mm²	300	400	500	630	800	1,000	1,200
Conductor shape		-	cm	cm	cm	cm	cm	rs	rs
Conductor diameter (approx)		mm	20.90	23.70	26.60	30.30	35.20	39.30	43.1
Nominal conductor shielding thickness		mm	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Nominal insulation thickness		mm	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Insulation diameter (approx)		mm	64	67	70	73	77	83	86
Nominal insulation shielding thickness		mm	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Nominal area of copper wire screen		mm²	283	283	283	283	283	283	283
Nominal brass tape thickness		mm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nominal outer sheath thickness		mm	3.4	3.5	3.6	3.7	3.8	3.9	4.0
Overall cable diameter (approx)		mm	82	85	88	92	96	102	104
Cable net weight (approx)	CU	Kg/Km	10,200	11,260	12,560	14,260	16,160	18,420	-
	AL		8,180	8,670	9,280	10,000	10,870	11,920	12,860
Max. DC conductor resistance at 20 oC	CU	Ω/Km	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176	-
	AL		0.100	0.0778	0.0605	0.0490	0.0367	0.0291	0.0247
Min. insulation resistance at 20 oC		MΩ.Km	14,600	15,200	14,200	13,100	11,900	11,100	10,400
Max. Capacitance per phase		μF/Km	0.150	0.159	0.170	0.184	0.202	0.217	0.232
Max.short circuit current of conductor	CU	kA/sec	43.44	57.83	72.21	90.89	115.31	144.03	-
	AL		28.82	38.34	47.85	60.21	76.4	95.3	114.3
Max.short circuit current of screen			40	40	40	40	40	40	40
Maximum current carrying capacity in Ground (0 0 0) at 30 °C	CU	A	563	640	725	822	921	1,017	-
	AL		438	502	573	655	742	831	899



N2XCK2Y/NA2XCK2Y

87/150(170) kV

IEC 60840

Copper/Aluminium conductor, XLPE insulated, Copper wire screened, Water sealing, Lead sheathed, PE sheathed cable

DIMENSIONAL AND ELECTRICAL DATA — 1 CORE

Nominal cross-sectional area		mm²	300	400	500	630	800	1,000	1,200
Conductor shape		-	cm	cm	cm	cm	cm	rs	rs
Conductor diameter (approx)		mm	20.90	23.70	26.60	30.30	35.20	39.30	43.1
Nominal conductor shielding thickness		mm	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Nominal insulation thickness		mm	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Insulation diameter (approx)		mm	64	67	70	74	79	83	86
Nominal insulation shielding thickness		mm	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Nominal area of copper wire screen		mm²	160	160	160	160	160	150.0	150.0
Nominal lead sheath thickness		mm	2.4	2.4	2.4	2.4	2.4	2.5	2.5
Nominal outer sheath thickness		mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Overall cable diameter (approx)		mm	89	92	95	99	104	108	112
Cable net weight (approx)	CU	Kg/Km	15,560	16,837	18,369	20,357	22,704	25,459	-
	AL		14,032	13,909	14,753	15,720	16,866	19,051	20,350
Max. DC conductor resistance at 20 oC	CU	Ω/Km	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176	-
	AL		0.100	0.0778	0.0605	0.0490	0.0367	0.0291	0.0247
Min. insulation resistance at 20 oC		MΩ.Km	14,600	15,200	14,200	13,100	11,900	11,100	10,400
Max. Capacitance per phase		μF/Km	0.150	0.159	0.170	0.184	0.202	0.217	0.232
Max.short circuit current of conductor	CU	kA/sec	43.44	57.83	72.21	90.89	115.31	144.03	-
	AL		28.82	38.34	47.85	60.21	76.4	95.3	114.3
Max.short circuit current of screen			40	40	40	40	40	40	40
Maximum current carrying capacity in Ground (0 0 0) at 30 °C	CU	A	570	649	738	838	945	1,044	-
	AL		443	507	580	664	753	850	921
AC test voltage		kV/30 min				218			

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INTRODUCTION

To meet the demands of high voltage transmission, which recently is showing remarkable development, we have modern facilities for the production of high voltage power cable and have established a complete high voltage laboratory staffed with engineers and technicians of the qualified skill and knowlegde.

Supported by these high quality techniques, the first 150 kV Supreme Cable for a commercial power lines has been produced at 1996. We have support and supply 150 kV Supreme Cable for Suralaya Power Plant Project - West Java - in 2005. Not only populer domestically, our products of high voltage 132 kV single core 1,000 mm^2 has also exported to Japan - in 2005. And now 2009 we are producing more than 120 km totally lengths of 150 kV single core 1,000 mm^2 Supreme Cable for Areva T & D Indonesia as main contractor and PT. PLN (Persero) as user.

DESIGN of PRODUCT

A wide variety of High voltage cable designs is offered by Supreme Cable to provide a most economic solutions.Various types of high voltage cables are available. We are away of the responsibility.Therefore, you as our customer can expect the products supplied to you by Supreme Cable to be optimized to the task of being a reliable part of the power transmission.

SUPPORTING SERVICES

We are focussed on the customer's benefit to provide you with solution just to what is actually needed, to assist in technically most feasible and economic solutions. In this way, Supreme Cable can efficiently contribute to realibility and langevity of your electricity transmission and distribution system, installation and services.

The services of Supreme Cable include various tasks beginning with consultation of the clients. Design and calculation are made for prepare a solid basis for selection of the optimum version. For example, current carrying calculation are performed considering special conditions of the individual case. Options are worked out to allow assessment of special measures which may be taken. Furthermore, calculation are performed of pulling forces and mechanical stresses on the cables during laying.

PRODUCTION TECHNOLOGY

SUCACO has been effort to reduce impurity level during production of high voltage power cable.
The most important measures that we have been taken are as follows :

- Control and Reduction of dust levels in our production plant and insulation compound storage.
- Provision of a closed system from receipt of the compounds untill insulation extrusion.
- Removal of metallic impurities in the compounds, by means of metal detector.
- Establishment of methods for the detection, identification and measurement of impurities in the cable insulation.

• Triple simultanneously extrusion.

Our process technology provides a triple layer simultaneously extrusion that semiconductive (conductor and insulation shield) layers and the insulation are formed simultaneously inside a single cross-head. This has the advantages that it can prevent the moistures and impurities to enter interface between the two shield layers and insulation. We also use bonded super smooth semiconductive and super clean insulation compounds to ensure the realibility of our products.

• Gas curing process.

The extruded cable core is cured in a circulating inert gas environment, provides the following features.

- Enchanced and stable breakdown strength.
- Elimination of micro voids, moisture content in the insulation and give a higher impulse breakdown stress.
- Uniform insulation structure.

• Degassing room.

High voltage cables need to be degassed before the completion of cable manufacturing. The purpose of degassing is to remove decomposition products from the cable insulation. Residual flammable gases would present a fire hazard during cable installation or operation.

QUALITY CONTROL

Quality from beginning to finished is an essential part of Supreme Cable manufacturing philosophy. This is ensured by a combination of certified quality control throughout the production process and the use of raw material from approved suppliers only. This places Supreme Cable in a fine position in competition and secures flexibility to adapt rapidly to changing market requirements.

TESTING FACILITIES

Testing of cables comprises routine and special tests performed in our factory as well as test on site after completion of the installation. These tests are performed in compliance with customer standards and various national and international standards such as IEC 60804, AS 1429-2 and others. Type tests and longterm tests have been made on components and also for qualification of complete cable systems.

• Shielding room

In this room, our 150 kV XPLE cables are subjected to full a real discharge test with high sensitivity and accuracy

• Impulse DC generator

We have a 1,200 kV DC impulse generator and it is entirely capable of performing impulse voltage testing for our 150 kV XLPE cables.The basic impulse level (BIL) of 750 kV is applied to 150 kV cable for testing of for testing 150 kV XLPE cable. In voltage measurement, a spherical gap with diameter of 600 mm is used.

• AC testing transformer

This 300 kV AC transformer, a series resonant type, have the following distinctive features :

- Small power consumption.
- Undistorted waveform of its output and generation of perfect sinus waves.
- Small short circuit current that will not damage of tested cable specimen.
- Absence of abnormal voltage due to high frequency.

• Partial disharge detector

Our hypotronics digital partial discharge detector offer the high accuracy and flexiblity of digital technology plus the real-time display and easy operation of an analog instrument.

The operator has complete central over the pulse display which can be set either an ellipse, straight line, sine wave or sine loop. Calibration of an impulse voltage measuring system by reference measurement. Nowadays, controls and measuring devices such as partial discharge meter, capacitance meter and dissipation factor meter can be integrated into one single computerized system only.

CABLE INSTALLATION WORK

The installation work of high voltage power cable may be divided roughly into 3 types : Civil work, laying and jointing. Of these, civil work (trenches, ducts, etc) and laying are done mostly by contractors or subcontractors, while the jointing operations is usually handed by cable's manufacturer.