

Railway cables

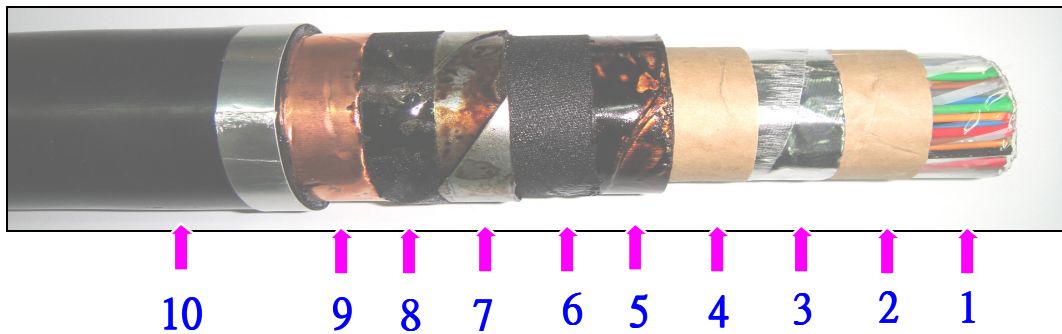
Application :

High shielded cable : Applied communications along the electrified wire, can be distinguished to filled jelly type and air type.

Wayside cable : Used in high speed railway along the track and next to the machine room of the wire .

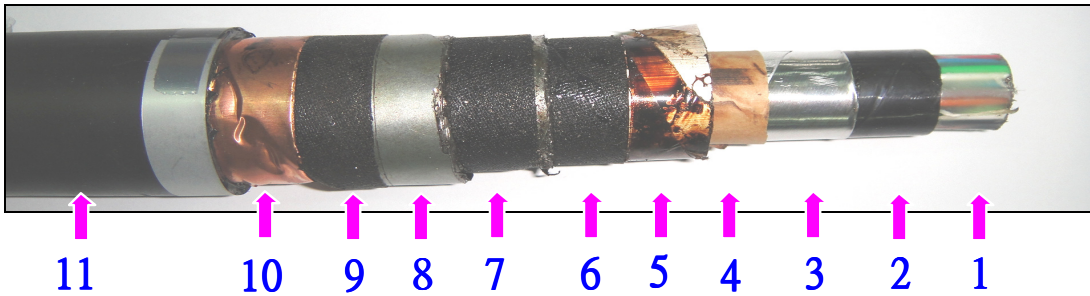
Construction :

Air type :



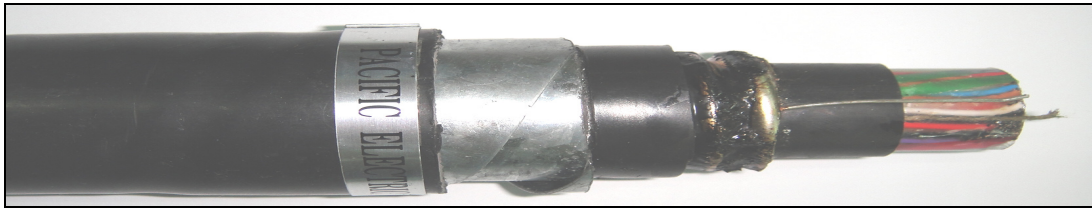
- ❶ Cable core
Conductor: Solid annealed copper
Insulation: Polyethylene
Quadding: Color polyester tape
- ❷ Covering: Paper tape
- ❸ Shield: Aluminum tape
- ❹ Covering: Paper tape
- ❺ Aluminum sheath: Aluminum tube
- ❻ Covering: Cotton tape
- ❼ Armour: Galvanized steel tape
- ❽ Covering: Cotton tape
- ❾ Shield: Copper tape.
- ❿ Sheath: Polyethylene

Jelly type :



- ❶ Cable core
Conductor: Solid annealed copper
Insulation: Polyethylene
Quadding: Color polyester tape
Filled jelly: Petroleum jelly
Covering: Mylar tape
- ❷ Inner sheath: Polyethylene
- ❸ Shield: Aluminum tape
- ❹ Covering: Paper tape
- ❺ Aluminum sheath: Aluminum tube
- ❻ Covering: Cotton tape
- ❼ Armour: Galvanized steel tape
- ❽ Armour: Galvanized steel tape
- ❾ Covering: Cotton tape.
- ❿ Shield: Copper tape
- 11 Sheath: Ployethylene

Wayside cable



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- ❶ Cable core
 - Conductor: Solid annealed copper
 - Insulation: Polyethylene
 - Wrapping: Fire proofing tape (Suitable for Fire resistance cable)
 - Ouadding
 - Covering: Mylar tape
- ❷ Inner shetah: Low smoke free halogen PE
- ❸ Earth wire: Tinned copper wire
- ❹ Armour: Corrugated aluminum tape
- ❺ Medium sheath: Low smoke free halogen PE
- ❻ Armour and covering: Galvanized steel tape and cotton tape
- ❼ Outer sheath: Low smoke free halogen PE

Characteristic :

High shielded cable.

- ◆ Aluminum sheath, high magnetic permeability metal band covered structure, with low induced voltage
- ◆ Through the European DEMKO certification.
- ◆ Prevent communication line interference from electromagnetic induction.
- ◆ Air type high shielded cable, better air sealing of cable.
- ◆ Filled jelly type high shielded cable, better water penetration properties.

Wayside cable

- ◆ Conform to REA PE-89 electrical properties and water penetration properties.
- ◆ Sheath use low smoke free, cable by IEC 61034 、 IEC60754 、 NES 713 requirements
- ◆ Flame resistance cable by IEEE 383 or IEC 60332-3 flame resistance test requirements.
- ◆ To prevent high voltage line of electromagnetic interference.
- ◆ Fire resistance cable by IEC60331 fire resistance test requirements.

Construction :

Air type high shielded cable :

Conductor diameter and pairs	Conductor diameter (mm)	Cable core diameter (mm)	Aluminum sheath thickness (mm)	steel tape thickness (mm)	Outer sheath thickness (mm)	Overall diameter approx. (mm)
0.9×68P + 1.2×34P	0.9	38.6	2.5	0.5	2.5	54.8
	1.2					

Filled jelly type high shielded cable :

Conductor diameter and pairs	Conductor diameter (mm)	Cable core diameter (mm)	Aluminum sheath thickness (mm)	steel tape thickness (mm)	Outer sheath thickness (mm)	Overall diameter approx. (mm)
0.9×28P	0.9	18.0	2.5	0.5	2.5	40.1
0.9×54P	0.9	24.5	2.5	0.5	2.5	46.4

◆ ELECTRICAL PROPERTIES

❶ Conductor resistance :

Conductor diameter (mm)	0.9	1.2
Max. ave. (Ω /km)	27.4	15.4
Max. (Ω /km)	29.0	16.3

❷ Conductor resistance unbalance : max. 1% °

❸ High volatge test : 500V(R.M.S) for 1 min.

❹ Insulation resistance : min. 20,000 M Ω -km

❺ Mutual capacitance (nF/km) :

Norminal	Minimum		Maximum	
	All cables	90% of cables	90% of cables	All cables
38.5	35.2	36.5	40.5	41.8

❻ Capacitance unbalance (pF/500m) :

Item	Limits for 90% of lengths		Limits for remaining 10% of length	
	Ave.	Max.	Ave.	Max.
Between pairs in quad	40	160	55	240
Between pairs in adjacent quads	20	110	20	110
Between any pair and earth	160	650	220	950

❼ Screening factor : According to VDE 0472 1983

Field strength (V/km)	Screening factor	
	60Hz	800Hz
50	≤ 0.15	≤ 0.0025
100	≤ 0.08	≤ 0.0025
300	≤ 0.06	≤ 0.0025
500	≤ 0.08	≤ 0.0025
1000	≤ 0.10	≤ 0.0025

Wayside cable :

Conductor diameter & pairs	Conductor diameter	Cable diameter approx.	Inner sheath thickness nom.	Steel tape thickness nom.	Outer sheath thickness nom.	Overall diameter approx.
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
0.9×60P	0.9	26.4	1.9	0.5	2.5	45.5
0.9×70P	0.9	28.0	1.8	0.5	2.5	47.6

◆ Electrical Properties

- ❶ Conductor resistance : max. 29.0Ω/km
- ❷ Insulation resistance : min.. 5000MΩ-km
- ❸ Dielectric strength : D.C. 500V/1 min. (core-core)
D.C. 10KV/1min. (core-shield)
- ❹ Mutual capacitance : max. 60nF/km
- ❺ Screening factor : max. 0.6 (50V/km · 60Hz)