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POWERING PROGRESS

**Medium
Voltage
Covered
Conductors**





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Contents

MVCC

- What Is MVCC? 01
- Application OF MVCC 02
- Advantages of MVCC 03
- Dimensions of MVCC 05



What Is MVCC?

A Medium Voltage Covered Conductor (MVCC) is an electrical power transmission line used in medium-voltage distribution systems, typically operating within the voltage range of 1.1 kV to 33 kV. Unlike traditional bare conductors, which are exposed to the environment, an MVCC features an insulating layer that covers the conductive wire. This insulation layer helps ensure safety by preventing accidental contact with the energized conductor, reducing the risk of electrical shocks, and minimizing the chance of short circuits caused by contact with other conductors, trees, or external objects.

The core of the MVCC is typically made of Aluminum or copper, both materials being excellent conductors of electricity. Surrounding the conductor is a protective insulation layer made from cross-linked polyethylene (XLPE) or ethylene propylene rubber (EPR). This insulation not only protects against electrical faults but also increases the overall durability of the conductor, making it resistant to environmental stresses like moisture, UV radiation, and mechanical damage.

Applicable Standards

These Cables are generally offered as per IEC: 61089, IS: 398 -2, IEC: 61089, BS EN: 50182/50397.

Construction OF MVCC

Conductor:

Longitudinally watertight stranded all Aluminium alloy (AAAC), AL-7, AL-59 or AL-59 Aluminium Clad Steel (ACS).

Shielding:

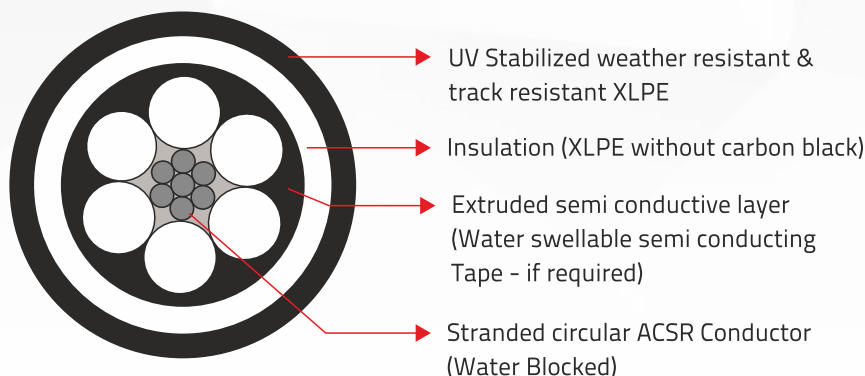
Semi Conducting Cross-Linked Polymer.

Inner Covering:

Low-Density track resistance cross-linked Polyethylene (Without Carbon Black)

Outer Covering:

High-density UV & track resistance Cross-linked Polyethylene





Application OF MVCC

> Overhead Power Distribution Lines:

Medium-voltage electricity is delivered from substations to residential, commercial, and industrial areas via overhead power distribution lines, which frequently use covered conductors.

By shielding the conductors from the elements, the insulation lowers the possibility of electrical failures brought on by exposure to pollutants, moisture, or other impurities.

> Urban and Suburban Areas:

Covered conductors can be used to increase the visual impact of power lines and reduce the possibility of unintentional contact with live parts in urban and suburban settings where aesthetics and safety are valued.

> Coastal and Harsh Environments:

Covered conductors offer an extra layer of defense against corrosion and environmental damage in coastal areas and other harsh environmental regions where exposure to salt, humidity, and extreme weather is a concern.

> Railway Electrification:

In electrified railway systems, where trains are powered by medium voltage, covered conductors may be used. Insulation improves safety by reducing electrical interference.



Advantages of MVCC

> 1. Enhanced Safety

The insulation layer surrounding the MVCC conductor improves safety by reducing the risk of accidental contact with the conductor. This is especially important in areas with high human activity or harsh environmental conditions where exposure to live wires could cause serious accidents.

> 2. Reduced Electrical Losses

MVCC conductors have a higher conductivity and reduced electrical losses compared to traditional insulated conductors, as they are designed to minimize energy dissipation over long distances, which is beneficial in high-voltage power systems.

> 3. Increased Durability

The insulation on MVCC conductors provides extra protection against mechanical damage, corrosion, and harsh environmental factors like rain, UV radiation, and temperature fluctuations. This makes them more durable and reliable over time, extending their operational life.

> 4. Compact Design

MVCC conductors have a smaller overall cross-section than many traditional conductors, making them suitable for high-density installations. They are especially useful in urban areas where space for overhead power lines is limited, allowing for more compact, efficient installations.

> 5. Reduced Electromagnetic Interference (EMI)

The insulation layer helps in reducing electromagnetic interference, which is especially critical in sensitive areas like telecommunication lines, hospitals, and high-tech industries, where minimal interference is required to ensure optimal performance.

> 6. Corrosion Resistance

The metallic conductor, often made of Aluminum or copper, along with its protective insulation, resists corrosion better than traditional conductors, especially in environments with high moisture or salt content (e.g., coastal areas).

> 7. Environmentally Friendly

The use of non-toxic and recyclable insulation materials in MVCC conductors ensures they are more environmentally friendly compared to some other insulation types. This aligns with the global shift toward sustainable infrastructure.

Advantages of MVCC

> 8. Faster Installation

The integrated insulation eliminates the need for additional protective coatings or separate insulation layers, which can reduce installation time and labor costs, making MVCC conductors more cost-effective for installation in both rural and urban areas.

> 9. Minimal Maintenance

Due to their protective insulation and resistance to environmental stressors, MVCC conductors generally require less maintenance than traditional power cables, which results in long-term cost savings and improved operational efficiency.

> 10. Reduced Risk of Short Circuits

The insulation also prevents short circuits by preventing contact between conductors in the case of mechanical wear or damage, further enhancing the reliability and safety of the system.

Phase Street Lighting Conductor The conductor shall be of Hor H4 grade aluminium complying with the Requirements of 581301964.

Description	Construction	Type
50	7 Strands	AAAC / AL-7 / AL -59
55	7 Strands	AAAC / AL-7 / AL -59
70	7 Strands	AAAC / AL-7 / AL -59
80	7 Strands	AAAC / AL-7 / AL -59
90	7 Strands	AAAC / AL-7 / AL -59
100	7 Strands	AAAC / AL-7 / AL -59
120	19 Strands	AAAC / AL-7 / AL -59
125	19 Strands	AAAC / AL-7 / AL -59
148	19 Strands	AAAC / AL-7 / AL -59
159	19 Strands	AAAC / AL-7 / AL -59
160	19 Strands	AAAC / AL-7 / AL -59
232	19 Strands	AAAC / AL-7 / AL -59
241	19 Strands	AAAC / AL-7 / AL -59

Description	Construction		Type
	ACS	AL-59	
31.6	1 Strands	6 Strands	AL-59 ACS
52.88	1 Strands	6 Strands	AL-59 ACS
78.82	1 Strands	6 Strands	AL-59 ACS
104.98	1 Strands	6 Strands	AL-59 ACS
120	7 Strands	26 Strands	AL-59 ACS
160	7 Strands	30 Strands	AL-59 ACS
241	7 Strands	30 Strands	AL-59 ACS

Sr. No.	Cable Attributes	UOM	Nominal Thickness		
			11 KV	22 KV	33 KV
1	Aluminium Alloy Wire	Sq.mm		As Per Requirement	
2	Extruded Longitudinal Water Blocking Layer	mm	As Required to make Water Blocked arrangements		
3	Extruded Semi Conductive Layer	mm	0.3	0.3	0.4
4	Inner Insulation of XLPE Without Carbon Black	mm	1.2	1.32	2.43
5	Outer Insulation with UV & Track Resistant XLPE	mm	1.1	1.1	1.2

CERTIFICATE OF REGISTRATION



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