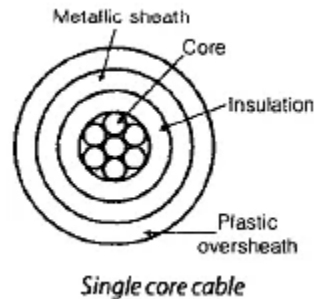


1.4 PAPER INSULATED CABLES



Paper-insulated cables are electrical cables that use paper as the primary insulating material around the conductor. These cables were commonly used in the past for power distribution and electrical transmission, but they have largely been replaced by modern synthetic insulating materials in recent years.

Components of a Paper-Insulated Cable:

Conductor:

The central core of the cable is typically made of copper or aluminum, which carries the electrical current.

Insulation:

The conductor is wrapped with multiple layers of insulating paper. The paper provides electrical insulation between the conductor and the cable's outer components, preventing electrical leakage and ensuring safety.

Insulating Oil:

In some paper-insulated cables, especially in high-voltage applications, the paper is impregnated with insulating oil to enhance the insulation properties and improve heat dissipation.

Protective Sheath:

To protect the insulated core from moisture, chemicals, and mechanical damage, an outer sheath made of materials like lead or lead alloy may be used.

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Advantages of Paper-Insulated Cables:

Low cost:

Paper-insulated cables were economical to manufacture, making them a popular choice in the past when alternatives were limited.

Good electrical insulation:

The paper provides a reasonably good level of electrical insulation for lower voltage applications.

Biodegradable:

Being made of paper, these cables are more environmentally friendly compared to modern synthetic cables.

Disadvantages and Limitations:

Limited temperature resistance:

Paper-insulated cables are not suitable for high-temperature environments, as the paper can deteriorate and lead to a loss of insulation integrity.

Larger size:

Paper insulation requires thicker layers to achieve the same level of insulation as synthetic materials, leading to bulkier and heavier cables.