

# JOB ROLE – WIREMAN-CONTROL PANEL

Sector – Electronics  
(Qualification Pack Code: ELE/Q7302)



PSS Central Institute of Vocational Education  
Shyamla Hills, Bhopal – 462013 , Madhya Pradesh, India

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# UNIT 5 : CABLING

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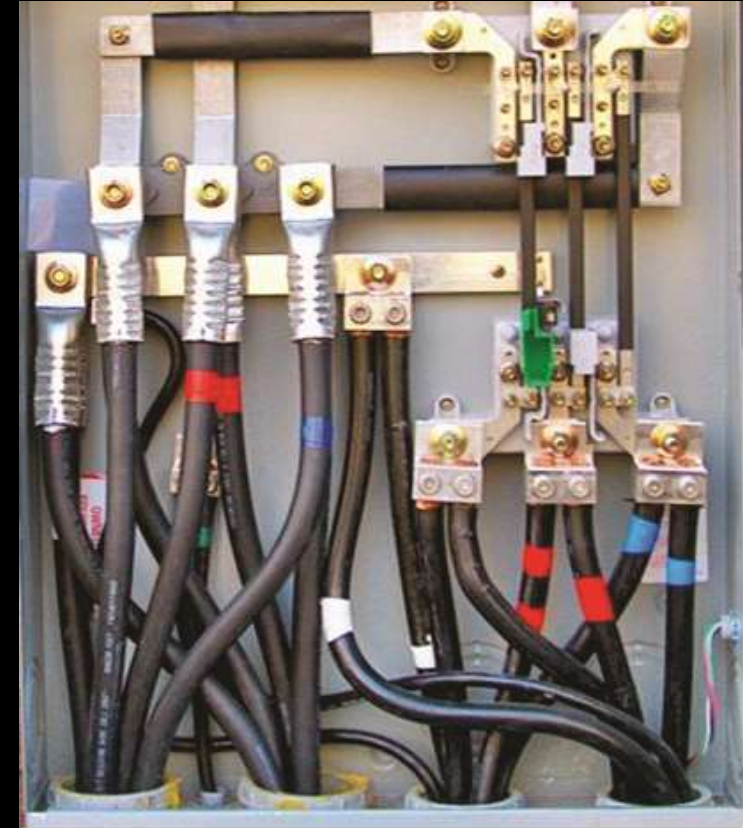
# Unit Objectives

The student will be able to:

- Describe the need of cabling,
- Describe the term cabling,
- Identify different types of cable,
- Describe the cable selection procedure,
- Read the colour coding on the cable.

# Introduction

A cable is an assembly of a number of wires kept side-by-side and twisted together. Cabling is the process of preparing cable and setting up cables for a connection to the panels. These cable distribute the electrical energy to the system.



Cables in Panel

# Need of Cabling

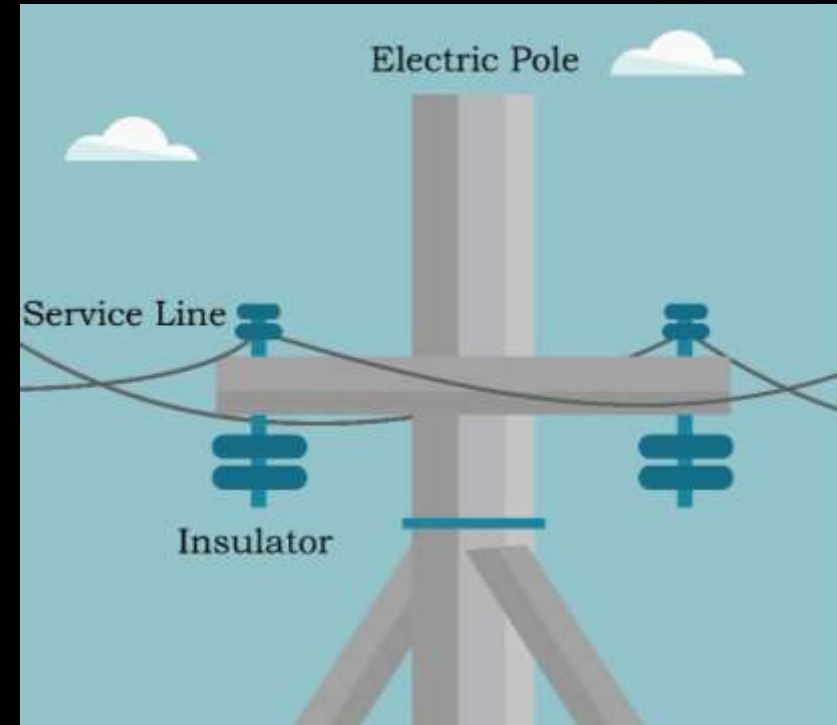
- Why we use insulation on the handle of utensils?



Because they protect us from getting burned.

# Definition of Cabling

- Likewise, in cabling an insulation layer is used on the electric wire. It will protect us from getting an electric shock.
- Cabling is the safe and secure way to transmit data from one place to another place.



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# Type of Cabling

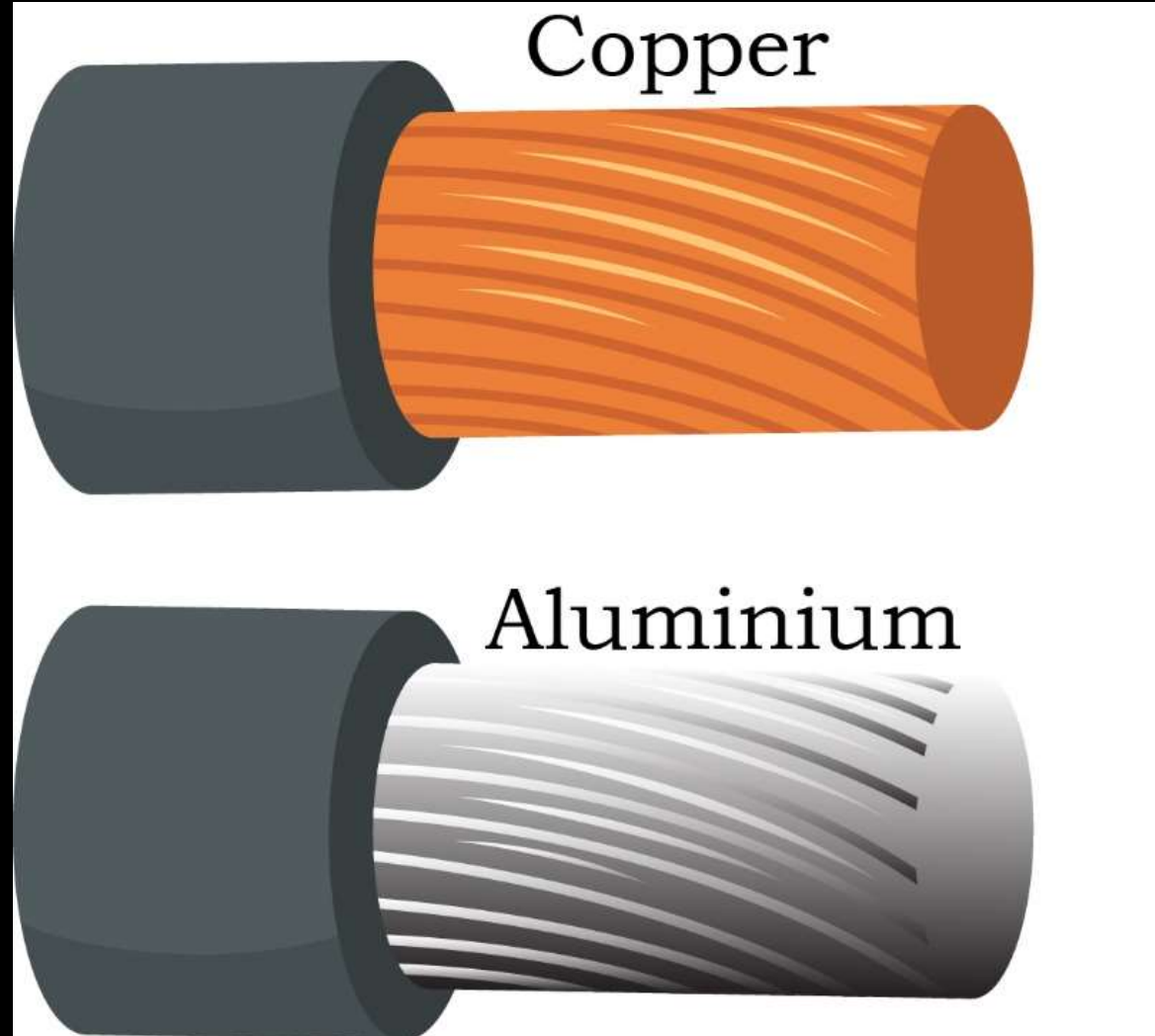
Cable can be classified based on the following:

- Conductors,
- Number of Cores,
- Voltage Rating,
- Cable Insulation type.



# Based on Conductor

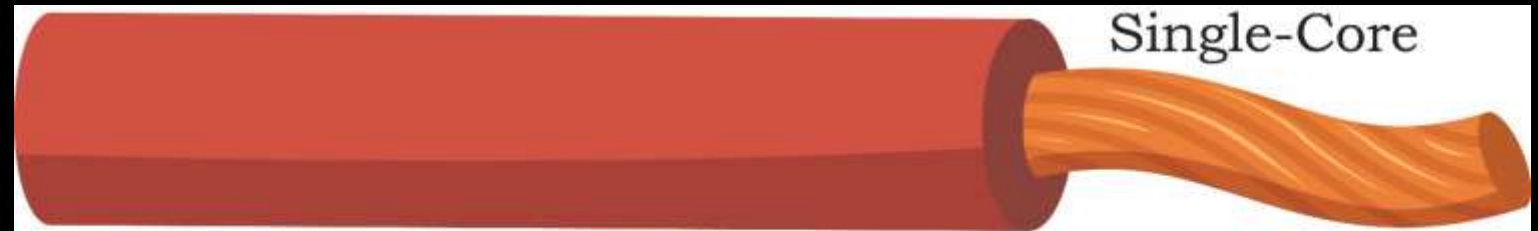
- Copper cable



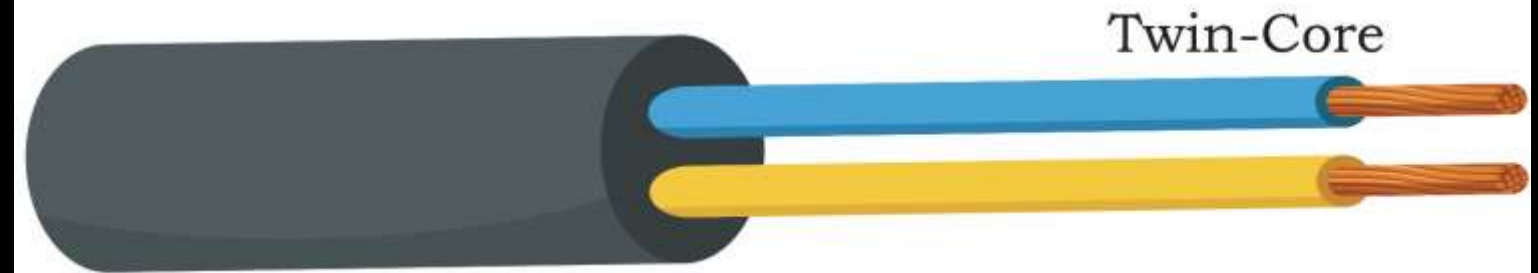
- Aluminium cable

# Based on Number of Cores

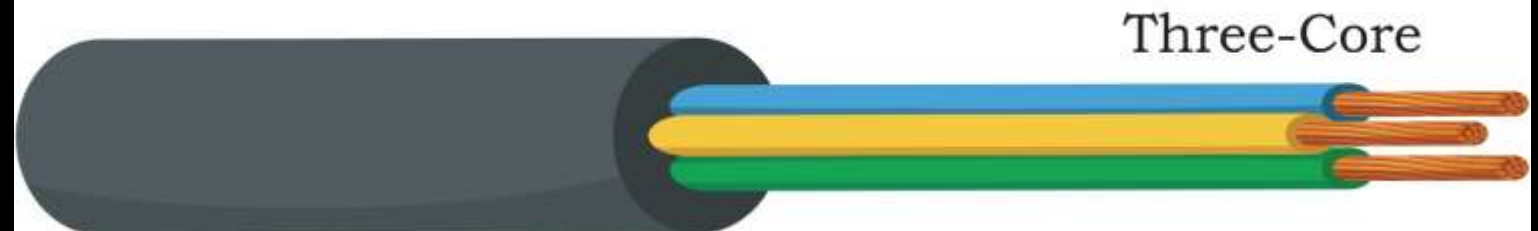
- Single Core



- Twin Core



- Three Core



# Based on Voltage Rating

- Based on the voltage rating of the cable, it can be used for 220V, 440V, 11KV, 33KV and many more.

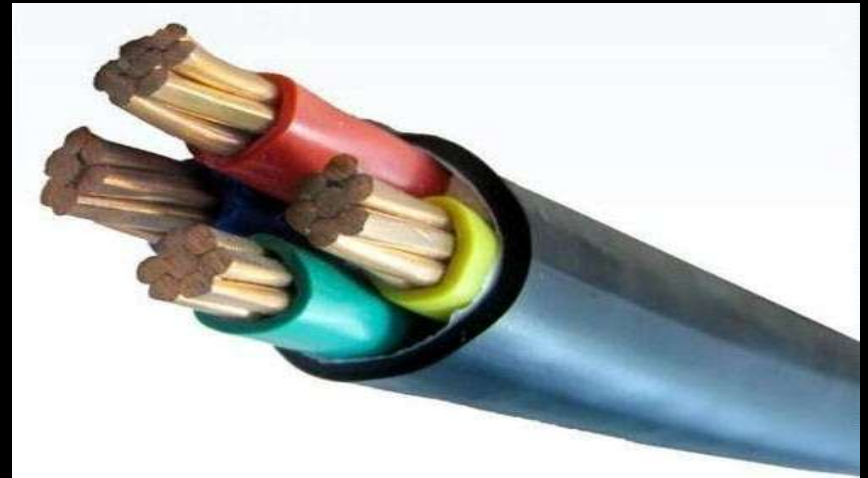


# Based on Cable Insulation

- Vulcanised Indian Rubber (VIR) Insulated Cable

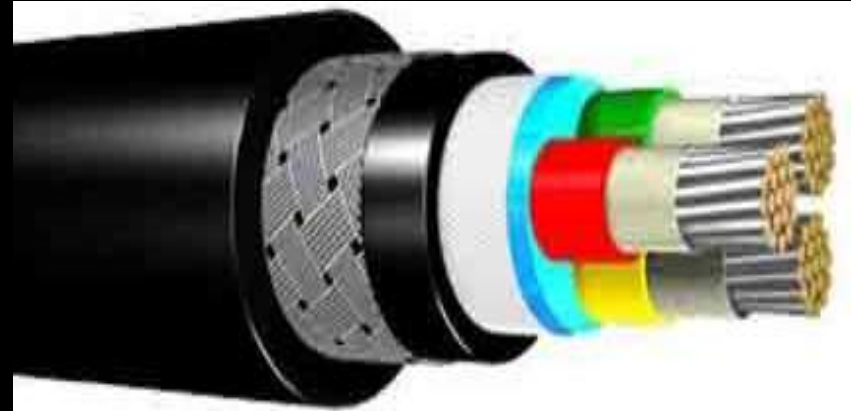


- Polyvinyl Chloride Cable



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- XLPE Cable



- Lead Sheath Cable



# Cable Selection

Key factors for the selection of cable are:

Cable Installation Site

Cable Construction Material









Cable Operating Condition

Cable Size

Shielding

# Colour and Marking of Cable

Wireman must know the colour code of wires.

	Single Phase	Three Phase
Phase Conductor (Line)	 <b>Red</b> or  <b>Yellow</b> or  <b>Blue</b>	 Line 1 <b>Red</b>  Line 2 <b>Yellow</b>  Line 2 <b>Blue</b>
Neutral Conductor	 <b>Black</b>	
Protective Conductor (Earth)	 <b>Green-and- Yellow</b>	

# PVC and XLPE Cable

- They are **low tension** cable used in electrical network.
- Low tension cables are heavy duty cables.
- These cables are used for underground as well as overhead transmission.
- **PVC:** Polyvinyl chloride is a thermoplastic material. It acts as an insulator.
- **XLPE:** Cross-linked polyethylene is the most commonly used thermoset material.



# Construction of LT Power Cable

- **Conductor:** Aluminium / copper
- **Insulation:** PVC / XLPE
- **Inner Sheath:** PVC
- **Amour:** Galvanised steel wire / strip
- **Sheath:** PVC

# Difference between PVC and XLPE

PVC	XLPE
Polyvinyl chloride	Cross-linked polyethylene
Under short circuit condition it can withstand temperatures up to 160 degree Celsius	Under short circuit condition it can withstand temperatures up to 250 degree Celsius
Low moisture resistance	High moisture resistance
Low overloading capacity	High overloading capacity

# Summary

- Cables are used to transfer the electrical energy from one point to another.
- Types of cable based on Conductors, Number of Cores, Voltage Rating, Cable Insulation type.
- Selection of cable depends on installation location, cable size, cable material, shielding.
- Colour coding is used to identify the cable.

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