Electrical Engineering XYZ

Whitepaper

v 1.0

Insulators & Their types

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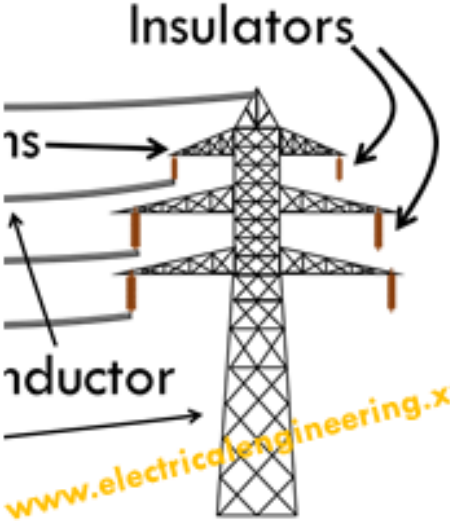
What are Insulators?

The overhead transmission line conductors are supported on the pylons. While pylon itself is a conductor, the individual conductors are electrically separated from it via the insulators. Simply saying the insulators are the components which carry the conductors while electrically isolating them from pole. The image below explains the above paragraph pictorially:



Types of Insulators

Transmission line insulators are classified into four different types. Let's check them:

Pin type Insulator

This insulator is attached above the cross arms and is used for voltages < 33 kV.

Suspension type Insulator

This insulator is suspended below the cross arms and is used for voltages > 33.

Types of Insulators

Transmission line insulators are classified into four different types. Let's check them:

Strain Insulator

When there is a dead end of transmission line (end or corner nodes), the shackle and suspension insulators are Organized in the strain configuration and are named as strain insulators.

Shackle Insulators

This insulator is used in low power distribution systems.

Dielectric strength of Insulators

The dielectric strength of insulator explains that how much voltages a material can withstand under the ideal conditions. Such a table is useful for engineers and technicians who are in the field of insulator design industry.

Dielectric strength in kV/inch	
Material	Dielectric strength
Vacuum	20
Air	20-75
Porcelain	40-200
Paraffin wax	200-300
Transformer oil	400
Bakelite	300-550
Rubber	450-700
Shellac	900
Paper	1250
Teflon	1500
Glass	2000-3000
Mica	5000