SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

TRANSMISSION & DISTRIBUTION
UNIT 2 – TRANSMISSION LINE PARAMETERS

TYPES OF CONDUCTORS

- All Aluminum Conductors (AAC)
- Aluminum Conductor, Aluminum Reinforced (ACAR)
- All Aluminum Alloy Conductor (AAAC)
- Aluminum Conductor Steel Reinforced (ACSR)
- International Annealed Copper Stand (IACS)
- High Temperature Low Sag Conductor (HTLS)
- Bundled Conductors

All Aluminum Conductors (AAC)

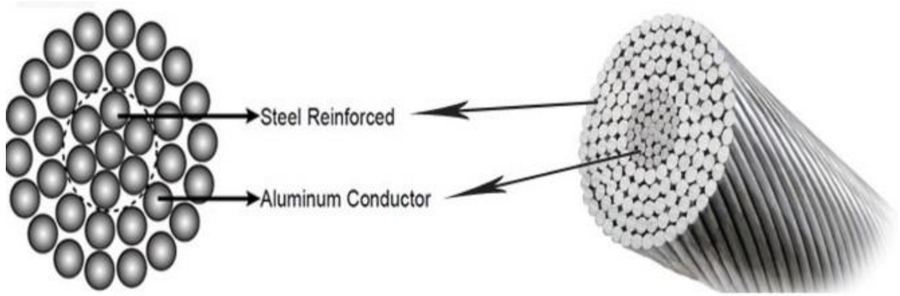
- These are made from electrical grade aluminium.
- Has good conductivity and having poor strength.
- Not used for transmission purpose due to poor mechanical strength.

All Aluminum Conductors (AAC)

- Preferred for distribution purpose where span length is small.
- Since it has only aluminium corrosion is very less
- Used in coastal areas

Aluminum Conductor, Aluminum Reinforced (ACAR)

- Wrapping the concentrically stranded electrical grade aluminium wires on high strength aluminium silicon magnesium alloy core.
- It has better electrical and mechanical properties.

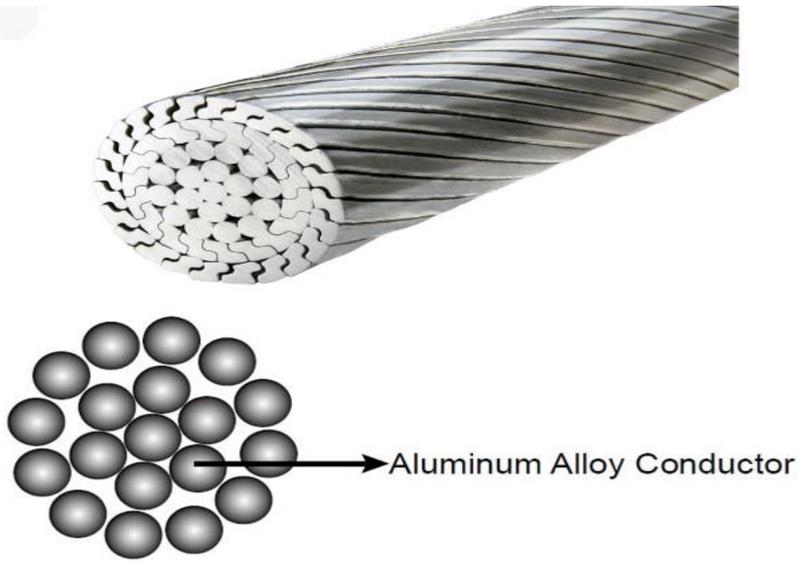


Aluminum Conductor, Aluminum Reinforced (ACAR)

- These conductors are used in overhead transmission line as well distribution lines.
- The corrosion resistance of the ACAR conductor are very poor and these conductors are most expensive conductors.

All Aluminum Alloy Conductor (AAAC)

- Aluminum alloy conductors are made from electrical grade aluminums mixed with the silicon and magnesium.
- These conductors mechanical tension strength is very higher and also having good conductivity.

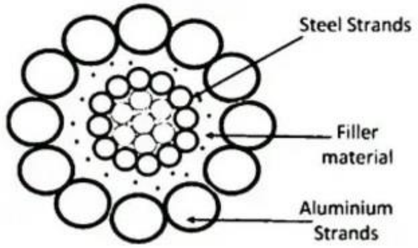


All Aluminum Alloy Conductor (AAAC)

- These conductor are also having good corrosion resistance so its used in coastal areas.
- These conductors are lighter in weight than ACSR, but cost of the AAAC conductor is higher than the ACSR.
- These conductor are used for transmission of high voltage electrical power from long distances.

Aluminum Conductor Steel Reinforced (ACSR)

- Wrapping number of aluminum conductor on the central steel core.
- The central steel core having number of small size steel wire.
- These steel wire coated with Zinc.



Aluminum Conductor Steel Reinforced (ACSR)

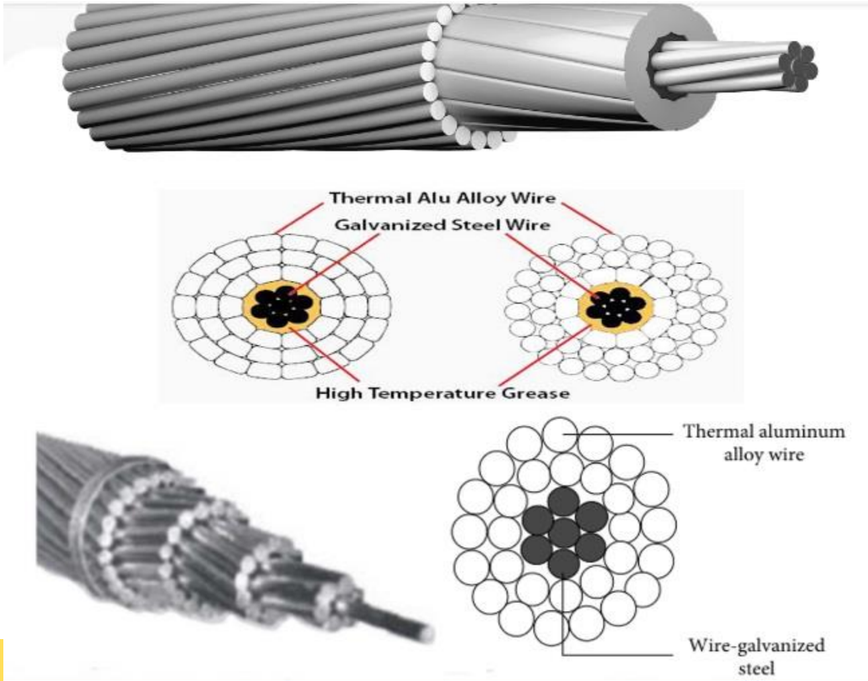
- The Grease also used between the Aluminum conductor and steel core to provide additional protection against corrosion.
- Due to High mechanical tensile strength, these conductor are used for transmission of electrical power at longer distances with larger span with minimum sags.

International Annealed Copper Stand (IACS)

- These conductor is used for reference for making above conductors.
- The IACS conductor are having 100 % conductivity and made from the annealed copper.

High Temperature Low Sag Conductor (HTLS)

- These conductors can withstand the operating temperature up to 210 C.
- So HTLS conductors carry higher current as compared to conventional conductors.
- These conductors also having lower sag in case of the higher temperature.



Bundled Conductors

- The bundled conductors are made bundling the two or more conductors with help of spacers.
- The bundled conductors together carry more current.
- The bundled conductors are made from any of the above conductors.
- The bundle conductor are made from ACSR conductors in modern scenario.

Bundled Conductors

- The bundled conductors reduced the corona formation, so power loss is reduced and transmission line efficiency improved.
- The bundled conductors reduced interference with the nearby communication lines.

Assessment

1. Which of the following is characteristic of ACSR?

a)High corona loss
b) High maintenance
c) **High mechanical strength**
d)High cost

Assessment

1. **Bundled conductors are used in Extra High Voltage transmission lines primarily to**

a)Reduce cost of transmission lines
b)Improve voltage regulation of transmission lines
c)Reduces copper loss
d)Reduce corona loss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