Conductor

IN ELECTROTECHNICS WE ARE DIFFERENTIATING BETWEEN:

- Insulators
- Semiconductors
- Conductors
- Superconductors

The smaller the specific resistance of a conductor material, the less the conductor heats up and the less energy is lost during transportation

THE MOST IMPORTANT CONDUCTOR MATERIALS:

- Copper
- Copper TPC, SPC and NPC
- Aluminium
- Silver

(Fibre optic)
Each of these materials has a specific field of application

COPPER, TPC, SPC, NPC

- Copper: up to 130 °C
- TPC: up to 180 °C
- SPC: up to 260 °C
- NPC: 260 °C upwards

Conductor

PLATING

Protects the core wire from oxidation and provides the barrier between core and wire insulation during high temperature insulating process
Gives excellent conductivity in high frequency circuits

COATING EFFECT

Higher temperatures and no effect at sub-zero temperatures
Very good solderability

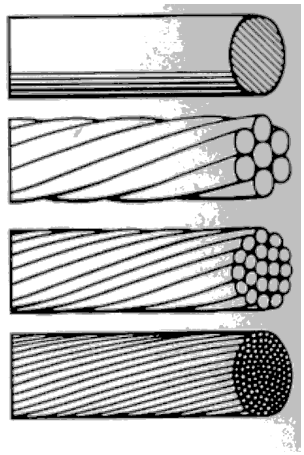
ALLOYS

Contrary to plating, where the outer surface is covered by plating materials, alloys materials are homogeneously mixed with the copper.

- Increase of mechanicals properties
- Properties of basic material, i.e. conductivity are maintained (in case of plating conductivity is increased).

Conductor

CONDUCTOR FLEXIBILITY

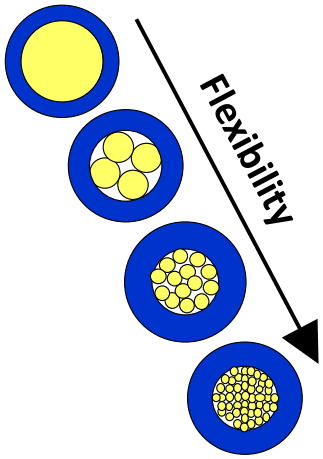


Class 1 : solid
not flexible

Class 2 : multi strand conductor
7 wire strand, Slightly Flexible

Class 5 : fine wire stranding
Very Flexible

Class 6 : superfine stranding
Super Flexible



CONDUCTOR MATERIAL

Copper: for general technical use

Aluminium: in cases where weight must be saved

Silver: if resistance has to be very small and chemical stress is great

Fibre optic: no electrical conductor.
Conducting medium are light waves

Conductor

CONDUCTOR CHARACTERISTICS

Conductor	Continuous Temperature in Operation up to	Electrical Conductivity	Soldering Charateristics	Corrosion Resistance	Bending Capacity	Price Index
Plain Copper	130°C 270°F	Very Good	Good	Good	Very Good	1
Tinned Copper	180°C 360°F	Very Good	Very Good	Very Good	Good	2
Silver Plated Copper	205°C 400°F	Very Good	Very Good	Sufficient	Good	5
Nickel Plated Copper	260°C 500°F	Good	Adequate	Very Good	Sufficient	3
Nickel	500°C 930°F	Sufficient	Soldering not possible	Very Good	Sufficient	4

Property	Dimension	Silver	Copper	Aluminium	Steel
Conductance	m/Ohm x mm²	62	58	36	7
Tensile strength	N/mm2	300	200	150	1000
Melting point	° C	960	1084	658	1500
Price factor		370	32	31	1