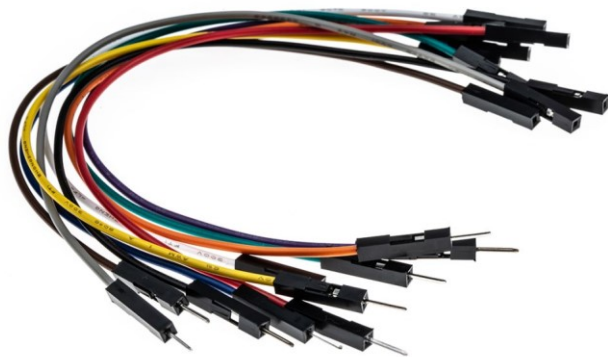
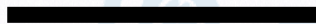
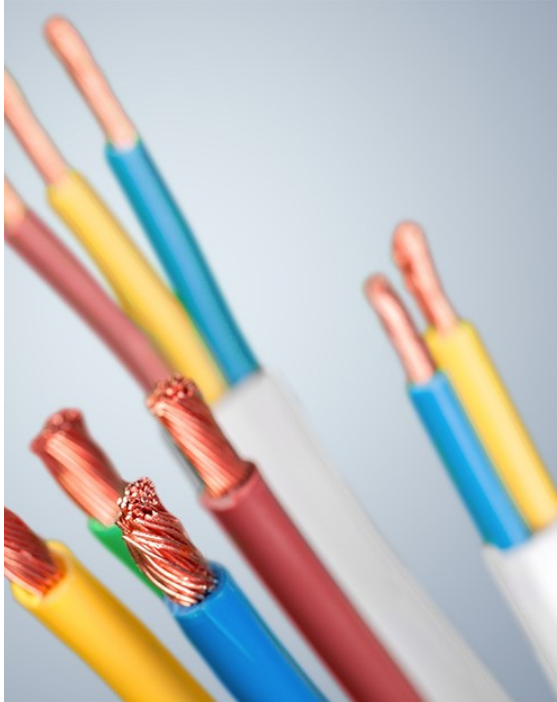


Wires



What is Electrical Wire?

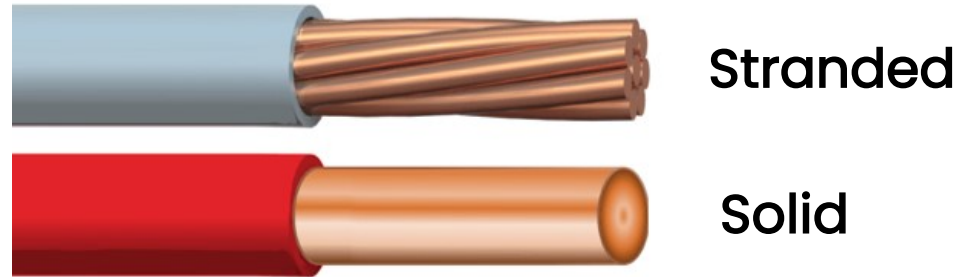
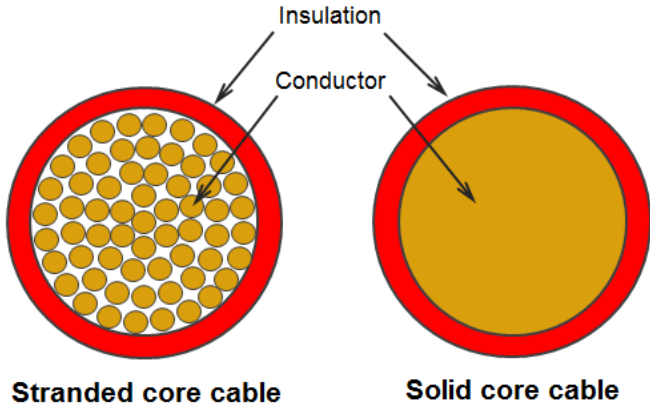


Wire is conductive metal (usually copper or aluminum) that is wrapped in insulated material that brings electricity to various components in the circuit.



What is Electrical Wire?

The wire inside the insulating material can be solid or stranded.



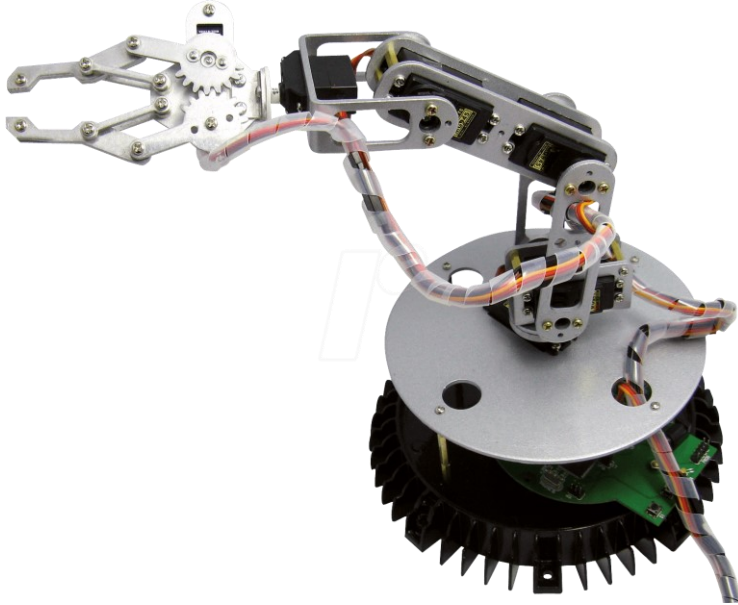
Stranded Electrical Wire



Stranded wire is made of a bundle of numerous solid wires bound together.



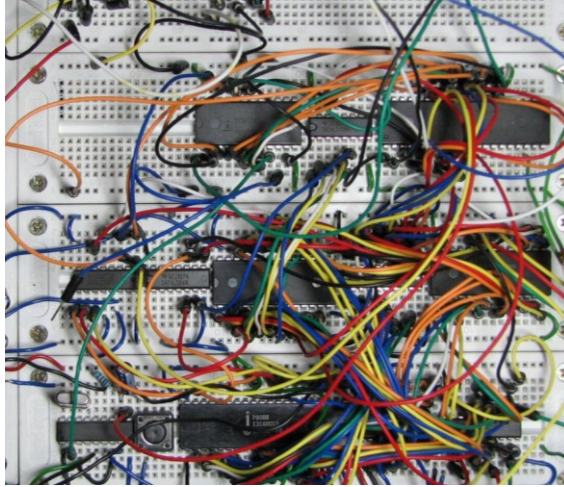
Stranded Electrical Wire



Stranded wire is more *flexible* and *malleable* than solid wire, and it *won't split or sever easily*.



Stranded Electrical Wire



Often used for indoor applications such as electronic devices, circuit boards, and speaker wires.



Solid Electrical Wire

Solid wire is made of one solid piece of metal.



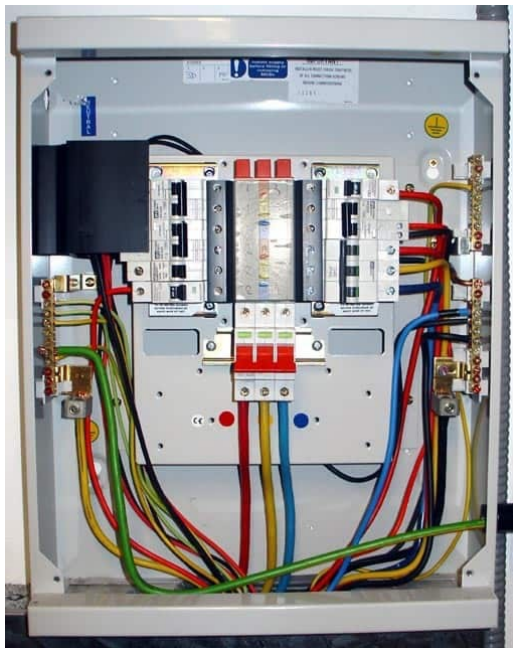
Solid Electrical Wire



The ampacity or current carrying capacity of solid wire is more than the stranded wire of similar diameter.



Solid Electrical Wire Uses



Often used for carrying high currents throughout building infrastructure, vehicle controls, and various outdoor applications.

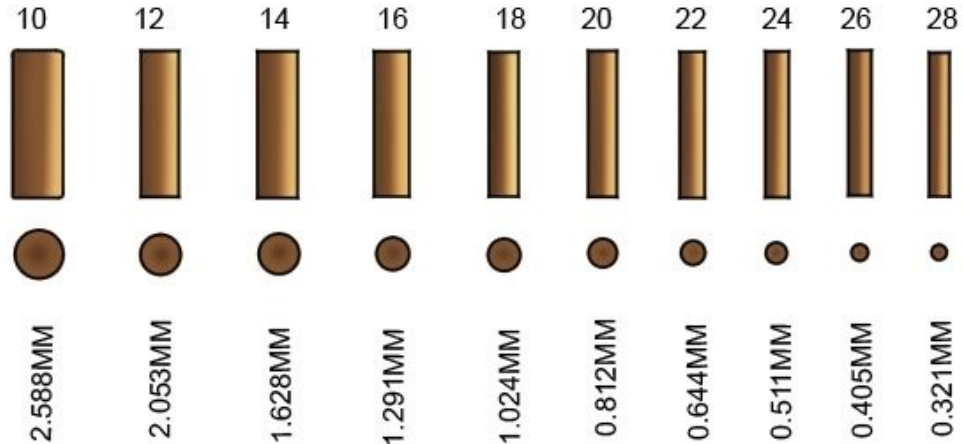


Wire Sizes

American Wire Gauge (AWG)

A system that lets us know the various gauges/sizes of wire and how many amps they can carry safely.

AWG	Diameter (mm)	Copper Ampacity (Amps)
0000 (4/0)	11.684	195
000 (3/0)	10.405	165
00 (2/0)	9.266	145
0 (1/0)	8.251	125
1	7.348	110
2	6.544	95
3	5.827	85
4	5.189	70
6	4.115	55
8	3.264	40
10	2.588	30
12	2.053	20
14	1.628	15
16	1.291	10
18	1.024	7
20	0.812	5
22	0.644	3
24	0.511	2
26	0.405	1
28	0.321	0.5



Wire Resistance

Wires are great conductors! However, there are a few variables that can restrict their ability to conduct electricity optimally.

Length

Thickness

Material

Temperature

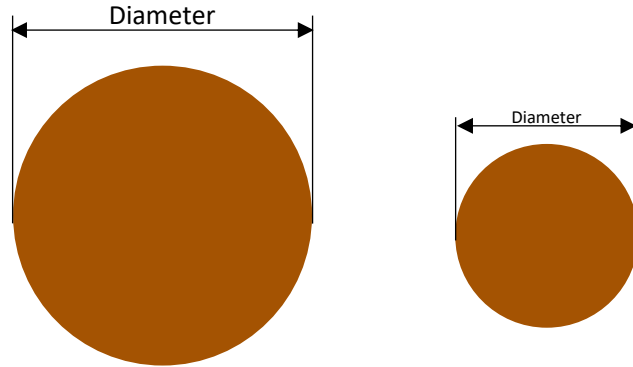


Length and Thickness of Wire

The longer the wire is, the more resistance it has.



The shorter the wire is, the less resistance it has.



The thinner the wire is, the more resistance it has.

The thicker the wire is, the less resistance it has.



Material of Wire

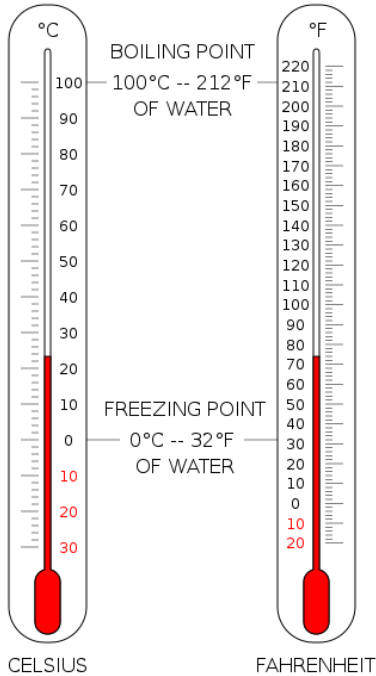


Certain metals are more conductive than other metals because of their molecular structure.

Copper is more conductive than aluminum. Silver is more conductive than copper.

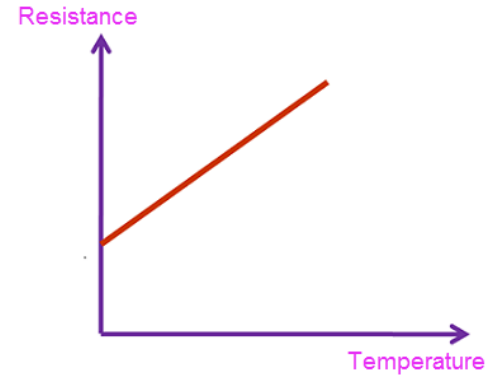


Temperature of Wire



The electrical conductivity of a conductor will decrease with an increase in temperature!

So, the hotter the metal, the more resistance it has to the flow of electricity!



FUN FACT



Today's cars have about a mile of electrical wiring inside of them!



SQUARE BRAIN

Wires

