

14 Understanding Materials



For designers, engineers, manufacturers and anyone that wants to make something physical, something we can touch, it's important to know about material properties.

YOUR CHALLENGE: Using the two lists below, can you place the right material and the right number into each of the six sentences? There is only one right way to place them all, and you'll need to use the internet for this, to do your own research.

The boiling point of _____ is _____ °C

The melting point of _____ is _____ °C

The density of _____ is _____ g/cm³

The thermal conductivity of _____ is _____ W/m · K

The tensile strength of _____ is _____ MPa

The electrical conductivity of _____ is _____ Ms/M

MATERIAL	VALUE
Aluminium	19.32
Copper	40
Gold	62
Rigid PVC	100
Silver	401
Water	660

Understanding how materials behave when they become really hot, or we pile lots of other stuff on top of them, or when we attach them to a source of electricity, is what we call a material's properties. Knowing a material's properties can help make sure designers and engineers use the best material to make the thing they want to make.

Understanding material properties also helps engineers make new materials by mixing two or more others to create a super material, called a composite. The material properties of composites are usually better than the original materials, and make better things for us to use.