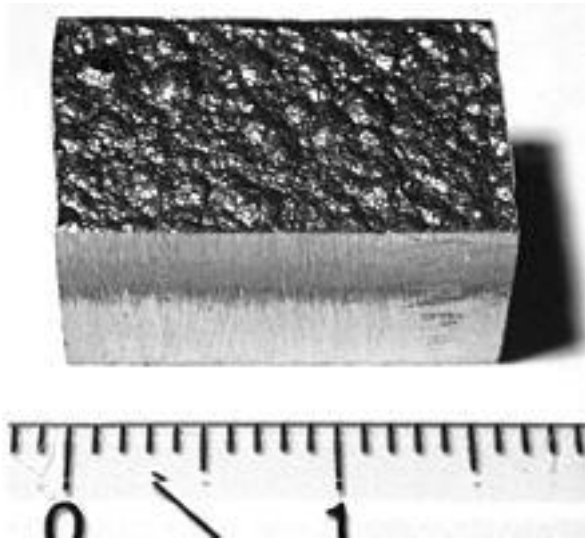


## Cobalt

### Composition:

Cobalt is a ferromagnetic metal with a Curie temperature of 1,115 degrees Celsius. Cobalt's permeability is only two thirds that of iron. And it has two crystallographic structures: HCP and FCC. HCP stands for hexagonal close packed which are when the atoms are organized in a pyramid structure where every other layer is the same. FCC stands for face centered cubic where the atoms are arranged so every third layer is the same. Cobalt also has oxidation states, the most common being Cobalt +2.



### How it is made:

Even though free cobalt is not available on earth because of the oxygen in the atmosphere and chlorine in the ocean, the natural compounds of cobalt are found abundantly on earth. Most of the world's cobalt is produced by smelting of nickel and copper in the regions of the Katanga province of the Democratic Republic of the Congo. Other methods include froth flotation where surfactants bind to different ore components, or leaching with water. The result is cobalt oxide, which is then reduced further by the aluminothermy reaction or reduction with carbon in a blast furnace.

### Its uses:

Most of the cobalt is turned into super alloys because their temperature stability makes them good for turbine blades and aircraft engines. They are also wear and corrosion resistant so they are useful in orthopedic implants. Also, they are used in batteries and catalysts.

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