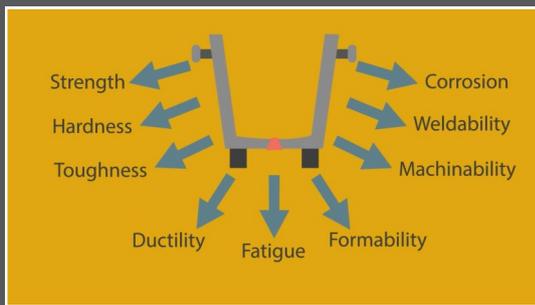


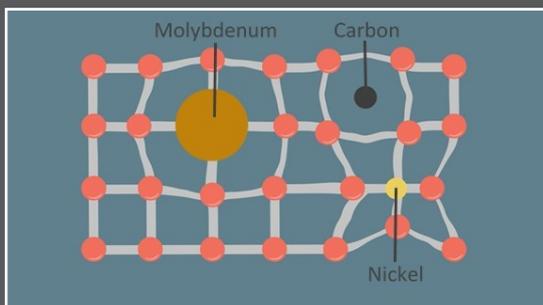
What is Steel?



A steel composition can be thought of as a recipe; different amounts of each ingredient make up your final product. In steel these ingredients are known as alloying additions; each addition affects the properties of the steel in a different way. Depending on the amount and type of alloying additions added we can affect the properties in a different way.



Steel is primarily iron with up to 1% carbon, plus other alloying additions. In the majority of steels this alloying addition generally totals less than 5%, but in some steels this can be as great as 50%.



Metals can be strengthened by adding more than one metal together such as copper and tin to make bronze. In this example the two combined has far greater strength than each of the individual metals (the sum is greater than the parts). We can also change the properties of metals by adding non-metallic elements like carbon.



Steels are produced by the same principle as bronze, we take one element IRON, which is the bulk of all steels and add other chemical elements. Often called alloying elements to it, to name a few we could add Carbon, Silicon, Manganese, Chromium, Molybdenum, Nickel, Aluminium, Niobium (Columbium), Titanium, Vanadium, Copper, Boron, Nitrogen, Cobalt. In this way we can tailor a steel to a specific application.

When we add alloying elements they do not always work in isolation, sometimes the elements work in conjunction and can cause a multiplication effect that would not be expected from the sum off the individual additions. For example, both chromium and molybdenum may be added individually to a steel in order to strengthen it, but a small amount of molybdenum used in conjunction with chromium will result in a much greater strengthening effect than using one of the elements alone.

