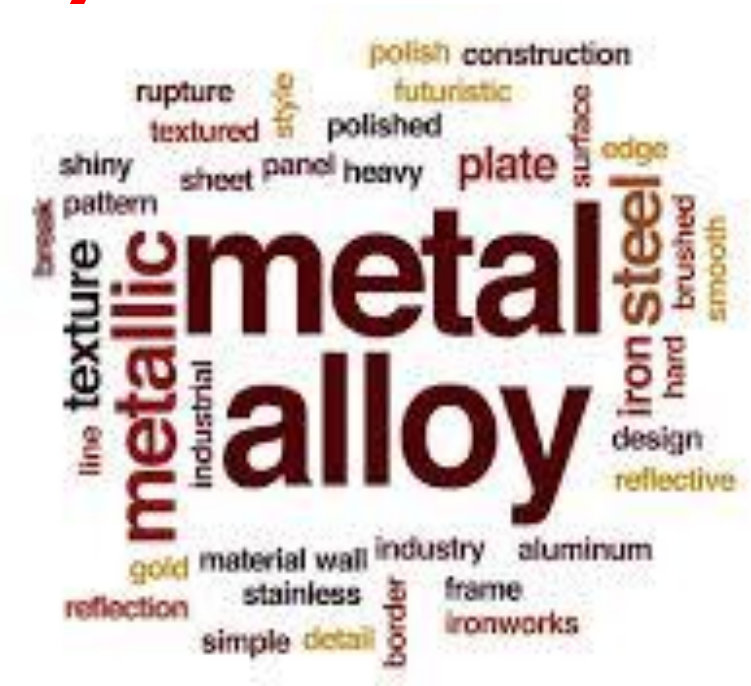
WORD OF THE WEEK
5th November 2018

Alloys



Langtree SCHOOL

Alloys (*plural noun)*

- a metal made by combining two or more metallic elements, especially to give greater strength or resistance to corrosion.

Definition, more precisely

- You might see the word alloy described as a "mixture of metals", but that's a little bit misleading because some alloys contain only one metal and it's mixed in with other substances that are nonmetals (cast iron, for example, is an alloy made of just one metal, iron, mixed with one nonmetal, carbon).
- **The best way to think of an alloy** is as a material that's made up of at least two different chemical elements, one of which is a metal. The most important metallic component of an alloy (often representing 90 percent or more of the material) is called the **main metal**, the **parent metal**, or the **base metal**.
- The other components of an alloy (which are called **alloying agents**) can be either metals or nonmetals and they're present in much smaller quantities (sometimes less than 1 percent of the total).

Better than metal…

Almost every material we could ever want is lurking somewhere in the planet beneath our feet. From the gold we wear as jewellery to the oil that powers our cars, Earth's storehouse of amazing materials can supply virtually every need.

There are 90 or so naturally occurring elements and the majority of them are metals. But, useful though metals are, they're sometimes less than perfect for the jobs we need them to do. Take iron, for example. It's amazingly strong, but it can be quite brittle and it also rusts easily in damp air. Or what about aluminum. It's very light but, in its pure form, it's too soft and weak to be of much use.

That's why most of the "metals" we use are not actually metals at all but **alloys**: metals combined with other substances to make them stronger, harder, lighter, or better in some other way. Alloys are everywhere around us—from the fillings in our teeth and the alloy wheels on our cars to the space satellites whizzing over our heads.

Making alloys

The majority of **alloys** are prepared by mixing metals in the molten state; then the mixture is poured into metal or sand moulds and allowed to solidify. Generally the major ingredient is melted first; then the others are added to it and should completely dissolve.

Well Known Alloys

Steel - Steel is the name given to an alloy of iron with carbon, usually with other elements, such as nickel and cobalt. The other elements add a desired quality to the steel, such as hardness or tensile strength.

Stainless Steel - Stainless steel is another iron alloy, which typically contains chromium, nickel, and other elements to resist rust or corrosion.

18k Gold - 18 karat gold is 75% gold. The other elements typically include copper, nickel, and/or zinc. This alloy retains the colour and lustre of pure gold, yet is harder and stronger, making it better suited for jewellery.

Brass - Brass is a mixture of copper with zinc and sometimes other elements. Brass is hard and durable, making it suitable for plumbing fixtures and machined parts.

Sterling Silver - Sterling silver is 92.5% silver with copper and other metals. Alloying silver makes it harder and more durable, although the copper tends to lead to a greenish-black oxidation (tarnish).