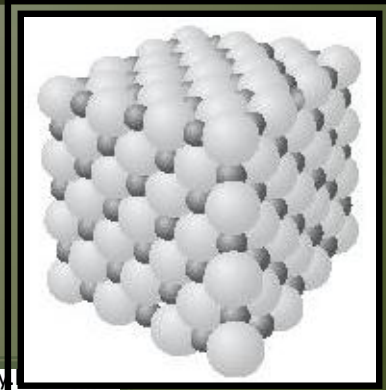


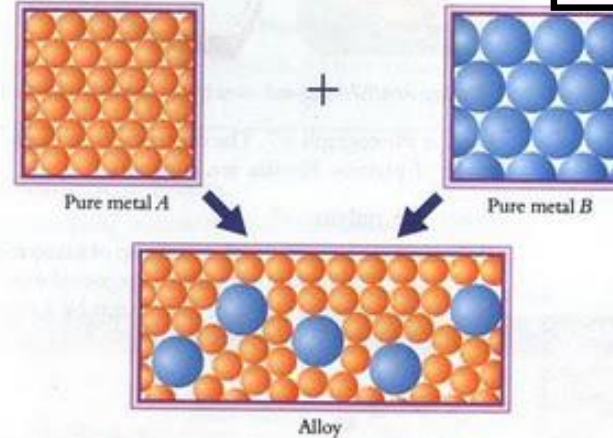
Metal ALLOYS

To make an alloy, you melt each metal you are wanting to mix and homogenize. This then gives you a stronger metal mixture than you started out with. This is due to the properties of the metals. Some metal atoms are larger than others, by mixing them the larger atoms push up next to the smaller ones and the smaller ones hold that tension without compressing.

*Silver -Copper
Alloys are in
face-centered
cubic
arrangement.*



<http://chem2u.blogspot.com/2009/06/pure-metal-vs-alloy>



The instrument shown above is a Euphonium made out of sterling silver (92.5% silver and 7.5% copper). This is a common for silver brass instruments because silver does not tarnish easily, but is very malleable and soft. By adding copper it makes the metal stronger, thus creating an alloy.

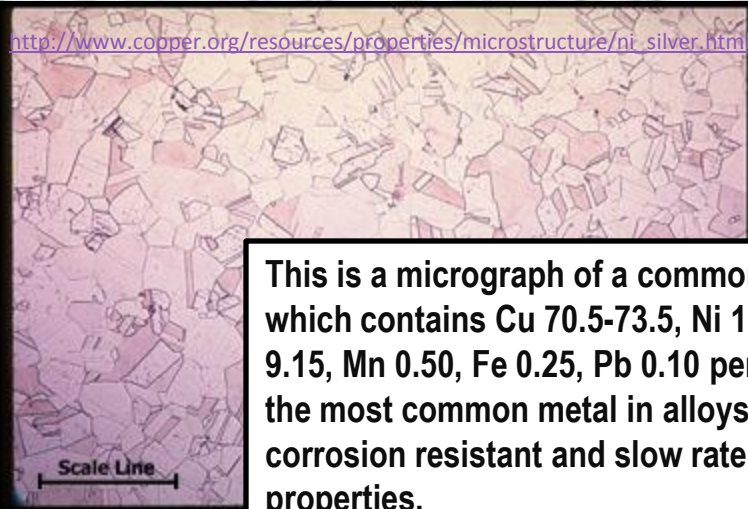
http://topics.info.com/What-is-German-silver_2806



Forks made of nickel silver alloys.

Nickel Silver or Nickel brass is made of 3 different metals: 60% copper, 20% nickel and 20% zinc. This alloy has the name silver in it but doesn't actually contain any silver, it is named for the common silver color it produces.

http://www.copper.org/resources/properties/microstructure/ni_silver.html



This is a micrograph of a common nickel-silver alloy which contains Cu 70.5-73.5, Ni 16.5-19.5, Zn 6.15-9.15, Mn 0.50, Fe 0.25, Pb 0.10 percentages. Nickel is the most common metal in alloys because of its corrosion resistant and slow rate oxidation properties.



The keys on a clarinet are made out of a nickel-silver alloy which then plates copper. If you look closely you can see the nickel alloy degrading from the oils of the player and the copper showing through (clarinet is 11 years old).

K. Primm, 2011