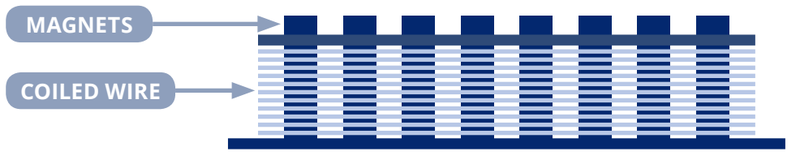
THE CHEMISTRY OF AN ELECTRIC GUITAR

The electric guitar as we know it today owes a lot to the materials that make it up. In this graphic, we take a look at the different magnetic mixtures used in the electric guitar pickups, the alloys used in the frets and strings, and the chemicals used to give the guitar a glossy finish.

GUITAR PICKUPS

Al Ni Co Sm Nd Fe

Guitar pickups are built around permanent magnets. Alnico magnets (made from aluminium, nickel, and cobalt) are most commonly used, but ceramic magnets (based on iron oxide with strontium or barium carbonate), samarium cobalt magnets and neodymium magnets can all also be used.



1. Strings vibrate in magnetic field
2. Flux of magnetic field in coil changes
3. Causes current to flow in coil

GUITAR FRETS

Ni Cu Zn Fe C Cr

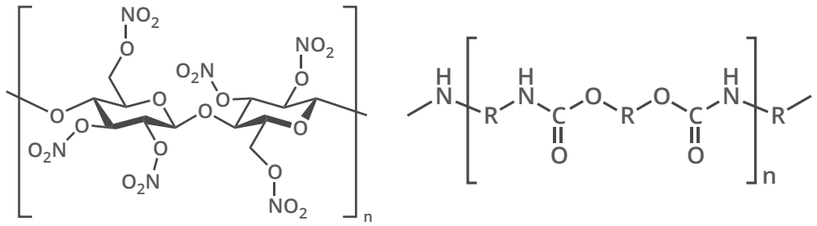
Frets are commonly made from nickel-silver (an alloy of copper, nickel, and zinc), but stainless steel can sometimes be used (an alloy of iron, carbon, and chromium which prevents corrosion).

GUITAR STRINGS

Ni Fe C Mn Cr

Electric guitars require their strings to contain a magnetic metal. Usually, this is in the form of steel. The thicker strings (E, A & D) are usually wound with nickel wire. For some strings, a polymer coating is used to help to prevent corrosion.

GUITAR FINISH



NITROCELLULOSE POLYURETHANE

Some guitars have a nitrocellulose lacquer finish, consisting of nitrocellulose mixed with other compounds and dissolved in a solvent. Polyurethane and polyester finishes are also common. They also tend to be more durable than nitrocellulose lacquer.