

Activity Series of the Elements

METALS

NON-METALS (*halogens*)

A Lithium
Potassium
Calcium
Sodium

Fluorine
Chlorine
Bromine
Iodine

B Magnesium
Aluminum
Zinc
Chromium
Iron

C Nickel
Tin
Lead

“Hydrogen”
Copper
Mercury
Silver
Platinum
Gold

1. Each element in the list displaces from a compound any of the elements *below* it. The larger the interval between the elements in the series, the more vigorous the replacement reaction.
2. All metals, magnesium and above, displace hydrogen from hydrochloric acid or sulfuric acid.
3. Metals, magnesium and above, displace hydrogen from water.
4. Metals, silver and above, combine directly with oxygen; those near the top do so rapidly.
5. Metals below silver form oxides only indirectly. They typically don't react with oxygen.
6. Oxides of metals, mercury and below, decompose with mild heating. Metallic oxides above mercury do not decompose.
7. Oxides of metals *below* chromium *easily* undergo reduction to metals by heating with hydrogen. Oxides of metals *above* iron *resist* reduction by heating with hydrogen.
8. Elements near the *top* of the series are *never* found free in nature. Elements near the *bottom* of the series are *often* found free in nature.
9. All Group A metals when combined with water produce hydrogen gas and a metallic hydroxide.