

Activity Series of Metals

The Activity Series of the metals is an invaluable aid to predicting the products of replacement reactions. It also can be used as an aid in predicting products of some other reactions. Pay attention to the notes below as they are provided to help you make better use of the activity series than just the list of metals by themselves.

1. Each element on the list replaces from a compound any of the elements below it. The larger the interval between elements, the more vigorous the reaction.
2. The first five elements (lithium - sodium) are known as very active metals and they react with cold water to produce the hydroxide and hydrogen gas.
3. The next four metals (magnesium - chromium) are considered active metals and they will react with very hot water or steam to form the oxide and hydrogen gas.
4. The oxides of all of these first metals resist reduction by H_2 .
5. The next six metals (iron - lead) replace hydrogen from HCl and dil. sulfuric and nitric acids. Their oxides undergo reduction by heating with H_2 , carbon, and carbon monoxide.
6. The metals lithium - copper, can combine directly with oxygen to form the oxide.
7. The last five metals (mercury - gold) are often found free in nature, their oxides decompose with mild heating, and they form oxides only indirectly.

lithium
potassium
strontium
calcium
sodium

magnesium
aluminum
zinc
chromium

iron
cadmium
cobalt
nickel
tin
lead

Hydrogen
antimony
arsenic
bismuth
copper

mercury
silver
palladium
platinum
gold