

The Activity Series of Metals Handout

The **activity series** is a series of metals, in order of reactivity from highest to lowest. It is used to determine the products of single displacement reactions, whereby metal A will replace another metal B in a solution if A is higher in the series. Activity series of some of the more common metals, listed in descending order of reactivity.

Notes:

Metals	Metal Ion	Reactivity	
K	K ⁺	reacts with water	
Na	Na ⁺		
Li	Li ⁺		
Ba	Ba ²⁺		
Sr	Sr ²⁺		
Ca	Ca ²⁺		
Mg	Mg ²⁺	reacts with acids	
Al	Al ³⁺		
Mn	Mn ²⁺		
Zn	Zn ²⁺		
Cr	Cr ²⁺		
Fe	Fe ²⁺		
Cd	Cd ²⁺		
Co	Co ²⁺		
Ni	Ni ²⁺		
Sn	Sn ²⁺		
Pb	Pb ²⁺	included for comparison	
H ₂	H ⁺		
Sb	Sb ²⁺		highly unreactive
Bi	Bi ²⁺		
Cu	Cu ²⁺		
Hg	Hg ²⁺		
Ag	Ag ⁺		
Au	Au ³⁺		
Pt	Pt ⁺		

When a metal in elemental form is placed in a solution of another metal salt it may be more energetically feasible for this "elemental metal" to exist as an ion and the "ionic metal" to exist as the element. Therefore the elemental metal will "displace" the ionic metal and the two swap places.

Only a metal higher in the reactivity series will displace another metal in a single replacement reaction.