

Activity series of elements

elements	
Lithium	$\text{Li} \rightarrow \text{Li}^+ + e^-$
Potassium	$\text{K} \rightarrow \text{K}^+ + e^-$
Barium	$\text{Ba} \rightarrow \text{Ba}^{+2} + 2e^-$
Calcium	$\text{Ca} \rightarrow \text{Ca}^{+2} + 2e^-$
Sodium	$\text{Na} \rightarrow \text{Na}^+ + e^-$
Magnesium	$\text{Mg} \rightarrow \text{Mg}^{+2} + 2e^-$
Aluminum	$\text{Al} \rightarrow \text{Al}^{+3} + 3e^-$
Manganese	$\text{Mn} \rightarrow \text{Mn}^{+2} + 2e^-$
Zinc	$\text{Zn} \rightarrow \text{Zn}^{+2} + 2e^-$
Chromium	$\text{Cr} \rightarrow \text{Cr}^{+3} + 3e^-$
Iron	$\text{Fe} \rightarrow \text{Fe}^{+2} + 2e^-$
Cobalt	$\text{Co} \rightarrow \text{Co}^{+2} + 2e^-$
Nickel	$\text{Ni} \rightarrow \text{Ni}^{+2} + 2e^-$
Tin	$\text{Sn} \rightarrow \text{Sn}^{+2} + 2e^-$
Lead	$\text{Pb} \rightarrow \text{Pb}^{+2} + 2e^-$
HYDROGEN	$\text{H}_2 \rightarrow 2\text{H}^+ + 2e^-$
Copper	$\text{Cu} \rightarrow \text{Cu}^{+2} + 2e^-$
Mercury	$2\text{Hg} \rightarrow \text{Hg}_2^{+2} + 2e^-$
Silver	$\text{Ag} \rightarrow \text{Ag}^+ + e^-$
Mercury	$\text{Hg} \rightarrow \text{Hg}^{+2} + 2e^-$
Platinum	$\text{Pt} \rightarrow \text{Pt}^{+2} + 2e^-$
Gold	$\text{Au} \rightarrow \text{Au}^{+3} + 3e^-$

- Elements that lie near the top of the list are referred to as active metals.
- Elements that lie near the bottom of the activity series are very stable and form compounds less readily. Notice, also, that the transition elements from groups 8B to 1B are near the bottom of the list. The alkali and alkaline earth metals are at the top. They are most easily oxidized.
- Any metal on the list can be oxidized by the ions of elements below it. Example: Copper is above silver in the series. Cu metal can be oxidized by Ag<sup>+</sup> to give silver metal and copper ions.
- The following react vigorously with acidic solutions to give hydrogen gas and cations of the metals, and hydroxide: Li, K, Ba, Ca, Na.
- The following react vigorously with water to give hydrogen gas and cations of the metals, and hydroxide: Li, K, Ba, Ca, Na.
- The following react with acid to give hydrogen gas and cations of the metal, but not vigorously: Mg, Al, Zn, Cr, Fe, Cd, Co, Ni, Sn, Pb.
- The following react slowly with water but readily with steam to give hydrogen gas and cations: Mg, Al, Zn, Cr, Fe, Cd.
- The following do not react with acids (HCl, HBr, HI) to give hydrogen: Cu, Hg, Ag, Au, Pt.