

## Activity Series of Common Metals

Metal Oxide Reactions		Reactions with water & acids		
Oxides of these metals do not produce the metal when reacted with Hydrogen gas  (ex. $\text{K}_2\text{O} + \text{H}_2 \rightarrow \text{No reaction}$ )	Li	Reacts with cold water to produce $\text{H}_2$  (Replace 1/2 the hydrogen in cold water to produce a metallic hydroxide & hydrogen gas)  (ex. $2 \text{Na} + 2 \text{H}_2\text{O} \rightarrow 2 \text{NaOH} + \text{H}_2$ )		
	K			
	Ba			
	Sr			
	Ca			
	Na			
	Mg	Reacts with steam to produce $\text{H}_2$ .  (ex. $2 \text{Zn} + 2 \text{H}_2\text{O} \rightarrow 2 \text{ZnOH} + \text{H}_2$ )		
	Al			
	Mn			
	Zn			
	Cr			
Oxides of these metals produce the metal when reacted with Hydrogen gas  (ex. $\text{PbO} + \text{H}_2 \rightarrow \text{H}_2\text{O} + \text{Pb}$ )	Fe	Reacts with Acids to produce Hydrogen gas  (ex. $\text{Ni} + 2 \text{HCl} \rightarrow \text{NiCl}_2 + \text{H}_2$ )		
	Cd			
	Co			
	Ni			
	Sn			
	Pb	<i>React with <math>\text{O}_2</math> to produce oxides</i>  (ex. $2\text{Ca} + \text{O}_2 \rightarrow 2\text{CaO}$ )		
	H			
	Sb			
	As			
	Bi			
Oxides of these metals are produced very slowly, if at all. Oxides are decomposed by heat.	Cu	Requires very strong acids to dissolve		
	Hg			
	Ag			
	Pd			
	Pt			
	Au			

**\*\* A more active metal can reduce a less active metal \*\***

### Nonmetal Activity Series

$\text{F}_2 > \text{Cl}_2 > \text{O}_2 > \text{Br}_2 > \text{I}_2 > \text{S} > \text{P (red)}$