

# Oxidising and reducing agents

- It can be hard to remember which ones are oxidising agents and which ones are reducing agents.
- The top of this table are elements that are keen to lose electrons.

	Reaction	Standard Electrode Potential (V)
P	potassium cation + electron $\rightarrow$ potassium	-2.93
S	sodium cation + electron $\rightarrow$ sodium	-2.71
L	lithium cation + electron $\rightarrow$ lithium	-3.04
C	calcium cation + electrons $\rightarrow$ calcium	-3.02
M	magnesium cation + electrons $\rightarrow$ magnesium	-2.37
A	aluminium cation + electrons $\rightarrow$ aluminium	-1.66
Z	zinc cation + electrons $\rightarrow$ zinc	-0.76
I	iron cation + electrons $\rightarrow$ iron	-0.04
H	proton + electron $\rightarrow$ hydrogen	0.00
C	copper cation + electrons $\rightarrow$ copper	+0.34
S	silver cation + electron $\rightarrow$ silver	+0.79
G	gold cation + electron $\rightarrow$ gold	+1.69

- If something is keen to lose electrons, like lithium, something else will have to gain them.

Lithium  $\rightarrow$  Lithium cation + electron

Bromine + electron  $\rightarrow$  Bromide

In this reaction, bromine has gained electrons to give bromide. It has been reduced. Lithium has acted as a reducing agent.

Lithium though, as a chemical that *reduces* other things has itself been *oxidised*.

- 1) Will an oxidising agent have a positive or negative standard electrode potential?
- 2) Would the reduction of fluorine have a positive or negative electrode potential? Would fluorine gas be a good oxidising agent or reducing agent?