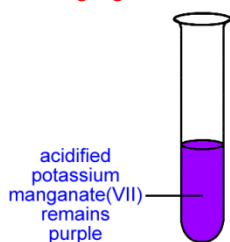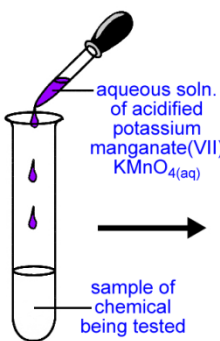# Testing for Reducing Agents and Oxidising Agents

Test for reducing agents using acidified potassium manganate(VII):

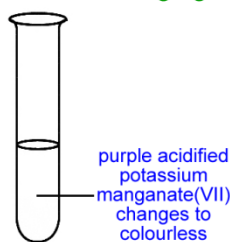Result if the chemical being tested is not a reducing agent:

aqueous soln. of acidified potassium manganate(VII) $KMnO_{4(aq)}$

Result if the chemical being tested is a reducing agent:
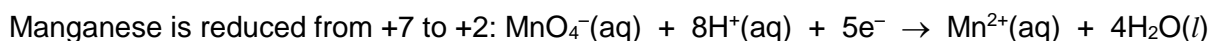
acidified potassium manganate(VII) remains purple

sample of chemical being tested

purple acidified potassium manganate(VII) changes to colourless

Manganese is reduced from +7 to +2: $MnO_4^-(aq) + 8H^+(aq) + 5e^- \rightarrow Mn^{2+}(aq) + 4H_2O(l)$

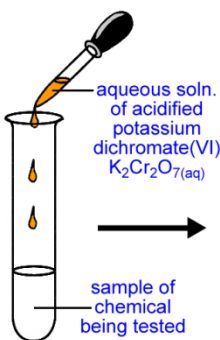## Test for reducing agents using acidified potassium dichromate(VI):

Result if the chemical being tested is not a reducing agent:

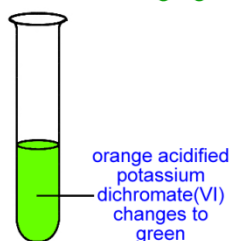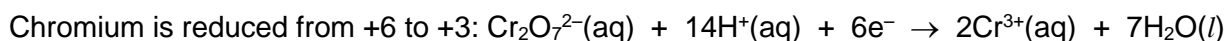aqueous soln. of acidified potassium dichromate(VI) $K_2Cr_2O_{7(aq)}$

Result if the chemical being tested is a reducing agent:
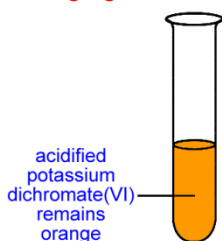
acidified potassium dichromate(VI) remains orange

sample of chemical being tested

orange acidified potassium dichromate(VI) changes to green

Chromium is reduced from +6 to +3: $Cr_2O_7^{2-}(aq) + 14H^+(aq) + 6e^- \rightarrow 2Cr^{3+}(aq) + 7H_2O(l)$
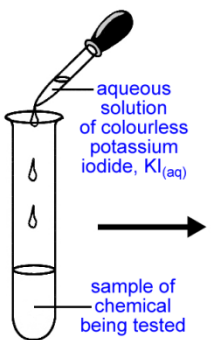
Test for oxidising agents using potassium iodide:

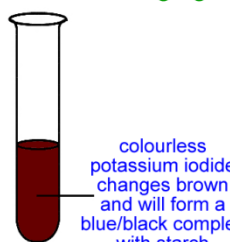Result if the chemical being tested is not an oxidising agent:

aqueous solution of colourless potassium iodide, $KI_{(aq)}$

Result if the chemical being tested is an oxidising agent:

potassium iodide remains colourless

sample of chemical being tested

colourless potassium iodide changes brown and will form a blue/black complex with starch

Iodine is oxidised from –1 to 0: $2I^-(aq) \rightarrow I_2(aq) + 2e^-$

1