Answer on Question #73585, Chemistry / General Chemistry :

What is net radox reaction.

Solution.

Fundamentally, redox reactions are a family of reactions that are concerned with the transfer of electrons between species. Like acid-base reactions, redox reactions are a matched set -- you don't have an oxidation reaction without a reduction reaction happening at the same time. Oxidation refers to the loss of electrons, while reduction refers to the gain of electrons.

A good example is the reaction between hydrogen and fluorine in which hydrogen is being oxidized and fluorine is being reduced:

$H_2 + F_2 \rightarrow 2HF$

We can write this overall reaction as two half-reactions:

the oxidation reaction: $H_2 \rightarrow 2\ H^+ + 2\ e^-$

and the reduction reaction: $F_2 + 2\ e^- \rightarrow 2\ F^-$

Analyzing each half-reaction in isolation can often make the overall chemical process clearer. Because there is no net change in charge during a redox reaction, the number of electrons in excess in the oxidation reaction must equal the number consumed by the reduction reaction (as shown above).

Elements, even in molecular form, always have an oxidation state of zero. In the first half-reaction, hydrogen is oxidized from an oxidation state of zero to an oxidation state of +1. In the second half-reaction, fluorine is reduced from an oxidation state of zero to an oxidation state of −1.

When adding the reactions together the electrons are canceled:

$H_2 \rightarrow 2H^+ + 2\ e^-$

$F_2 + 2\ e^- \rightarrow 2\ F^-$

$H_2 + F_2 \rightarrow 2\ H^+ + 2\ F^-$

And the ions combine to form hydrogen fluoride:

$2H^+ + 2F^- \rightarrow 2HF$

The overall reaction is: $H_2 + F_2 \rightarrow 2HF$