

Redox Reaction Prediction

Important Oxidizers

MnO⁴⁻ (acid solution)
MnO⁴⁻ (basic solution)
MnO₂ (acid solution)
Cr₂O₇⁻² (acid)
CrO₄⁻²
HNO₃, conc
HNO₃, dilute
H₂SO₄, hot conc
Metallic Ions
Free Halogens
HClO₄
Na₂O₂
H₂O₂

Formed in reaction

Mn(II)
MnO₂
Mn(II)
Cr(III)
Cr(III)
NO₂
NO
SO₂
Metallous Ions
Halide ions
Cl⁻
OH⁻
O₂

Important Reducers

Halide Ions
Free Metals
Metalous Ions
Nitrite Ions
Sulfite Ions
Free Halogens (dil, basic sol)
Free Halogens (conc, basic sol)
C₂O₄²⁻

Formed in Reaction

Halogens
Metal Ions
Metallic ions
Nitrate Ions
SO₄²⁻
Hypohalite ions
Halate ions
CO₂

Redox reactions involve the transfer of electrons. The oxidation numbers of at least two elements must change. Single replacement, some combination and some decomposition reactions are redox reactions.

To predict the products of a redox reaction, look at the reagents given to see if there is both an oxidizing agent and a reducing agent. When a problem mentions an acidic or basic solution, it is probably a redox reaction.