

TABLE 1**Quantifying and defining half redox reactions.**

Example of half redox reaction	Te ⁻	Electrons	Type
$C_2H_6O + H_2O \rightarrow C_2H_4O_2 + 4H^+ + 4e^-$	+4	loss	oxidation
$C_3H_8 + 6H_2O \rightarrow 3CO_2 + 20H^+ + 20e^-$	+20	loss	oxidation
$Cr_2O_7^{2-} + 14H^+ + 6e^- \rightarrow 2Cr^{3+} + 7H_2O$	-6	gain	reduction
$MnO_4^- + 2H_2O + 3e^- \rightarrow MnO_2 + 4OH^-$	-3	gain	reduction

TABLE 2**Quantifying Te⁻, n, and ΔON in half redox reactions.**

Example of half redox reaction	Atom with oxidation numbers change	Te ⁻	n	ΔON
$C_2H_6O + H_2O \rightarrow C_2H_4O_2 + 4H^+ + 4e^-$	C	+4	2	+2
$C_3H_8 + 6H_2O \rightarrow 3CO_2 + 20H^+ + 20e^-$	C	+20	3	$+\frac{20}{3}$
$Cr_2O_7^{2-} + 14H^+ + 6e^- \rightarrow 2Cr^{3+} + 7H_2O$	Cr	-6	2	-3
$MnO_4^- + 2H_2O + 3e^- \rightarrow MnO_2 + 4OH^-$	Mn	-3	1	-3