

Iron in acid		Oxidation State	Identification
Iron(III) ion	Fe^{3+}	+3	dark red with SCN^- indicator
Iron(II) ion	Fe^{2+}	+2	colorless or orange with SCN^- indicator

Iron in base		Oxidation State	Color
Iron (III) hydroxide	$\text{Fe}(\text{OH})_3$	+3	rust ppt
Iron(II) hydroxide	$\text{Fe}(\text{OH})_2$	+2	green ppt

Chromium		Oxidation State	Color
Dichromate ion	$\text{Cr}_2\text{O}_7^{2-}$	+6	orange
Chromate ion	CrO_4^{2-}	+6	yellow
Chromium(III) ion	Cr^{3+}	+3	blue or green
Chromium(III) complex ion	$\text{Cr}(\text{OH})_4^{1-}$	+3	green

Oxygen		Oxidation State	Identification
Oxygen gas	O_2	0	bubbles
Hydrogen peroxide	H_2O_2	-1	-----
Water or hydroxide ion	H_2O , OH^{1-}	-2	inference

Manganese		Oxidation State	Color
Permanganate ion	MnO_4^{1-}	+7	purple
Manganese(IV) oxide	MnO_2	+4	black or brown ppt
Manganese(II) ion	Mn^{2+}	+2	colorless
Manganese(II) hydroxide	$\text{Mn}(\text{OH})_2$	+2	light brown ppt

Sulfur		Oxidation State	Identification
Sulfate ion	SO_4^{2-}	+6	inference
Sulfite ion	SO_3^{2-}	+4	-----
Elemental sulfur	S^0	0	light yellow or white suspension
Sulfide ion	S^{2-}	-2	-----

Nitrogen		Oxidation State	Identification
Nitrate ion	NO_3^{1-}	+5	inference
Nitrite ion	NO_2^{1-}	+3	-----