

Colours of Common TM Compounds

by Nicholas Koh

Vanadium

VO_2^+	VO^{2+}	V^{3+}	V^{2+}
Yellow aka $[\text{VO}_2(\text{H}_2\text{O})_4]^+$	Blue aka $[\text{VO}(\text{H}_2\text{O})_5]^{2+}$	Green aka $[\text{V}(\text{H}_2\text{O})_6]^{3+}$	Purple aka $[\text{V}(\text{H}_2\text{O})_6]^{2+}$

Chromium

CrO_4^{2-}	$\text{Cr}_2\text{O}_7^{2-}$	
Yellow	Orange	
Cr^{3+}	$\text{Cr}(\text{OH})_3$	$[\text{Cr}(\text{OH})_6]^{3-}$
Green aka $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$	Grey-green ppt aka $[\text{Cr}(\text{OH})_3(\text{H}_2\text{O})_3]$	Deep Green

Manganese

Mn^{2+}	MnO_2	MnO_4^-	MnO_4^{2-}
Pale Pink (or colourless)	Black solid	Deep Purple	Green

Iron

$\text{Fe}(\text{OH})_3$	$\text{Fe}(\text{OH})_2$	Fe_2O_3
Reddish-brown ppt aka $[\text{Fe}(\text{OH})_3(\text{H}_2\text{O})_3]$	Dirty-green ppt aka $[\text{Fe}(\text{OH})_2(\text{H}_2\text{O})_4]$	Reddish-brown aka $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$
Fe^{3+}	Fe^{2+}	$[\text{Fe}(\text{SCN})]^{2+}$
Yellow aka $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$	Pale Green aka $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$	Blood Red aka $[\text{Fe}(\text{SCN})(\text{H}_2\text{O})_5]^{2+}$