

Hydroxide Precipitates

Before you answer the puzzles below fill in the table of hydroxide precipitates of aqueous metal ions:

Metal ion	Formula	Colour of precipitate with NaOH(aq)	Precipitate (ppt) formed
copper (II)	$\text{Cu}^{2+}(\text{aq})$		$\text{Cu}(\text{OH})_2$
Iron (II)	$\text{Fe}^{2+}(\text{aq})$	green	
Iron (III)	$\text{Fe}^{3+}(\text{aq})$	brown	
Aluminium		white (dissolves in excess NaOH)	$\text{Al}(\text{OH})_3$
calcium		white	$\text{Ca}(\text{OH})_2$
magnesium	$\text{Mg}^{2+}(\text{aq})$	white	$\text{Mg}(\text{OH})_2$

Gridlock 1

Each row, column and 2 x 2 box contains information about the first four metal ions listed above. Use your problem solving skills and the answers in the table above to fill in the blank boxes.

metal ion		colour of ppt with NaOH(aq)	
copper (II)			white (dissolves in excess NaOH)
	Aluminium		
		Iron (II)	Iron (III)
colour of ppt with NaOH(aq)		metal ion	

gridlocks – can you unlock the grid?

Gridlock 2

In puzzle 2 you need to first work out which of the four metal ions are in the puzzle and then solve it.

metal ion		colour of ppt with NaOH(aq)	
calcium			
		white (dissolves in excess NaOH)	
		Cu(OH) ₂	
	Mg ²⁺ (aq)		
formula		ppt formed	

Gridlock 3

In puzzle 3 you need to first work out which of the four metal ions are in the puzzle and then solve it.

metal ion		colour of ppt with NaOH(aq)	
	calcium		white
			white
Fe ²⁺ (aq)			Fe(OH) ₃
formula		ppt formed	