

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) | Cu ²⁺ (aq) | | Cu(OH) ₂ |
| iron(II) | Fe ²⁺ (aq) | green | |
| iron(III) | Fe ³⁺ (aq) | brown | |
| aluminium | | white (dissolves in excess NaOH) | AI(OH) ₃ |
| calcium | | white | Ca(OH) ₂ |
| magnesium | Mg ²⁺ (aq) | white | Mg(OH) ₂ |

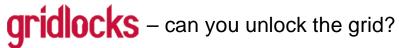
Gridlock 1

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) | | meta | al ion |







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 for | med |

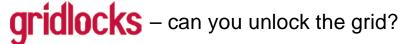
Gridlock 3

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 |
| forn | nula | ppt fo | ormed |







Hydroxide precipitates – answers

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) | Cu ²⁺ (aq) | blue | Cu(OH)₂ |
| iron(II) | Fe ²⁺ (aq) | green | Fe(OH) ₂ |
| iron(III) | Fe ³⁺ (aq) | brown | Fe(OH) ₃ |
| aluminium | Al ³⁺ (aq) | white (dissolves in excess NaOH) | Al(OH)₃ |
| calcium | Ca ²⁺ (aq) | white | Ca(OH) ₂ |
| magnesium | Mg ²⁺ (aq) | white | Mg(OH) ₂ |

Puzzle 1 - answers

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) | iron(II) | brown | white (dissolves in excess NaOH) |
| iron(III) | aluminium | blue | green |
| green | brown | aluminium | copper(II) |
| white (dissolves in excess NaOH) | blue | iron(II) | iron(III) |
| colour of ppt with NaOH(aq) | | metal ion | |





gridlocks – can you unlock the grid?

Puzzle 2 - answers

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 | aluminium | white | blue |
| magnesium | copper(II) | white (dissolves in excess NaOH) | white |
| Al ³⁺ (aq) | Ca ²⁺ (aq) | Cu(OH) ₂ | Mg(OH) ₂ |
| Cu²+(aq) | Mg ²⁺ (aq) | Ca(OH)₂ | Al(OH)₃ |
| formula | | ppt for | med |

Puzzle 3 - answers

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) | |
|-----------------------|-----------------------|-----------------------------|---------|
| iron(III) | calcium | green | white |
| magnesium | iron(II) | brown | white |
| Ca ²⁺ (aq) | Fe³+(aq) | Mg(OH) ₂ | Fe(OH)2 |
| Fe ²⁺ (aq) | Mg ²⁺ (aq) | Ca(OH) ₂ | Fe(OH)₃ |
| formula | | ppt fo | rmed |



