

# TWENTY FIRST CENTURY SCIENCE DATA SHEET

## QUALITATIVE ANALYSIS

### TESTS FOR IONS WITH A POSITIVE CHARGE

Ion	Test	Observation
<b>calcium</b> <b>Ca<sup>2+</sup></b>	<b>add dilute sodium hydroxide</b>	<b>a white precipitate forms; the precipitate does not dissolve in excess sodium hydroxide</b>
<b>copper</b> <b>Cu<sup>2+</sup></b>	<b>add dilute sodium hydroxide</b>	<b>a light blue precipitate forms; the precipitate does not dissolve in excess sodium hydroxide</b>
<b>iron(II)</b> <b>Fe<sup>2+</sup></b>	<b>add dilute sodium hydroxide</b>	<b>a green precipitate forms; the precipitate does not dissolve in excess sodium hydroxide</b>
<b>iron(III)</b> <b>Fe<sup>3+</sup></b>	<b>add dilute sodium hydroxide</b>	<b>a red-brown precipitate forms; the precipitate does not dissolve in excess sodium hydroxide</b>
<b>zinc</b> <b>Zn<sup>2+</sup></b>	<b>add dilute sodium hydroxide</b>	<b>a white precipitate forms; the precipitate dissolves in excess sodium hydroxide</b>

## TESTS FOR IONS WITH A NEGATIVE CHARGE

Ion	Test	Observation
carbonate $\text{CO}_3^{2-}$	add dilute acid	the solution effervesces; carbon dioxide gas is produced (the gas turns lime water from colourless to milky)
chloride $\text{Cl}^-$	add dilute nitric acid, then add silver nitrate	a white precipitate forms
bromide $\text{Br}^-$	add dilute nitric acid, then add silver nitrate	a cream precipitate forms
iodide $\text{I}^-$	add dilute nitric acid, then add silver nitrate	a yellow precipitate forms
sulfate $\text{SO}_4^{2-}$	add dilute acid, then add barium chloride or barium nitrate	a white precipitate forms