

# Metals - Reactions and Extraction

## Reaction of metals with water

- Different metals react differently with oxygen, water and dilute acid
- Metals can be placed in order of reactivity based on their reactions with oxygen, water and dilute acid
- Alkali metals react violently with water to produce hydrogen gas and the metal hydroxide
- Hydrogen gas burns with a pop
- When metals react with water, the reaction can be summarised in a word equation
- Metals below calcium in the reactivity series do not react with cold water
- **Ions** are formed during chemical reactions. Ions are **charged particles**. Metal ions are always **positively** charged.
- The charge on a metal ion is related to the group in which the metal is found in the periodic table

## Reaction of metals with dilute acid

- Metals above copper in the reactivity series react with dilute acid to produce hydrogen gas
- Metals higher up in the reactivity series will react more violently with dilute acid

## Reaction of metals with oxygen

- Some metals react with oxygen to form a compound called an **oxide**
- Gold does not react with oxygen
- Reactions of metals with oxygen can be summarised using word equations

## Chemical Formulae and Quantities

- The chemical formula for a compound can be worked out using **SVSDF** method or using **prefixes**

## Metal Ores and Extraction

- Very unreactive metals at the bottom of the reactivity series are found un-combined in nature
- More reactive metals are found as metal compounds called **ores**
- Metals must be **extracted** from their ore in a **reduction** reaction before the metal can be used
- Metals can be extracted from ores using heat alone, heating with carbon and electrolysis
- The most reactive metals must be extracted from their ore using electrolysis

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