

INSPIRING GASES

BOC EDUCATION

HYDROGEN THE COMMONEST GAS ... in the universe

Properties of Hydrogen

Hydrogen is a colourless and odourless gas. It reacts readily with oxygen and is highly flammable. It is useful as a fuel and in a wide range of industrial applications.

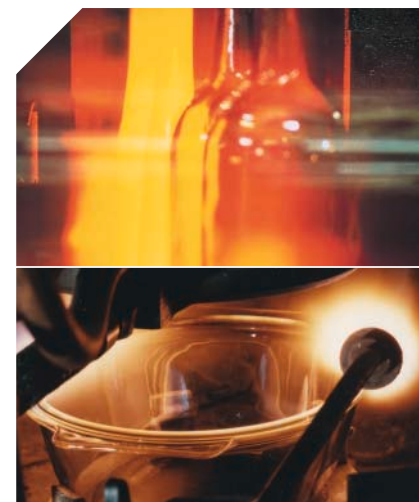
Symbol of element	H
Molecular formula	H ₂
Relative atomic mass	1
Relative molecular mass	2
Boiling point	20 K



Feedstock for chemical production

Hydrogen is an important industrial chemical

- It is used to remove sulphur during petroleum refining and in the manufacture of ammonia and methanol.
- Hydrogen is also used to 'harden' vegetable oils for use in margarine.
- These three areas account for around 95 per cent of all hydrogen consumption.



Glass-making

Hydrogen is used to provide an oxygen-free atmosphere for glass-making

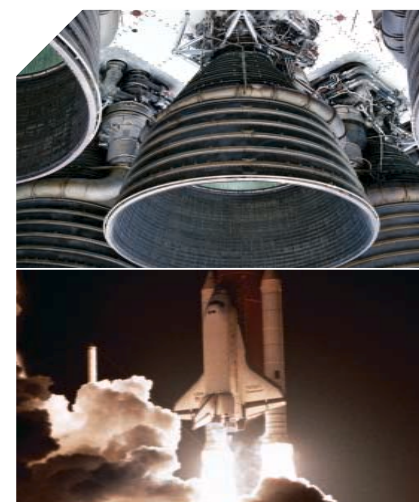
- Flat "float glass" for windows is made by floating molten glass on molten tin.
- Hydrogen removes oxygen and stops the molten tin oxidising.
- It also removes oxygen that would cause hazy residues on the glass surface.



Fuel Cells

Fuel cells produce electricity using liquid or gaseous fuels

- When fuelled by hydrogen, the only by-product of a fuel cell is water.
- Hydrogen can be used to power vehicles such as cars and buses.



Space Exploration

Liquid hydrogen powers the main engines of the space shuttle

- The huge external tank attached to the shuttle at lift-off contains one and half million litres of liquid hydrogen
- Hydrogen was used to power NASA's Saturn V rockets which took men to the Moon.