10 Energy from gases

When FUELS are heated they give off a gas. The gas mixes with oxygen in the air and catches fire. This is burning.

A gas that can be used for energy is called a fuel. Most people cook or heat their homes using gases. If you have gas cooking, gas or oil central heating, or a coal, wood or oil-fired kitchen oven then you actually cook with gas!

In the past, people have also lit their homes using gas, because a candle works by giving off a gas that burns in air.

Candle power

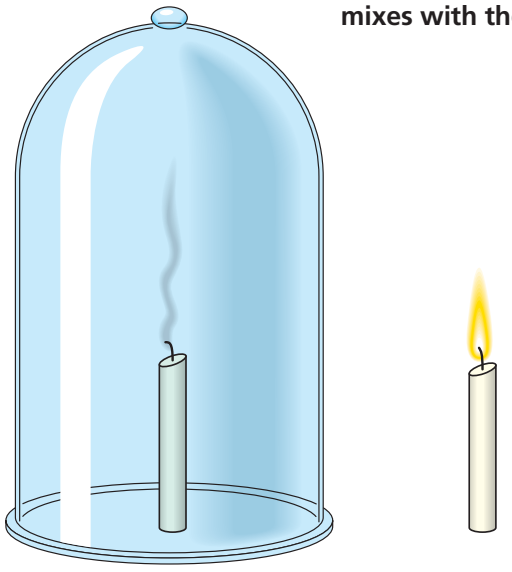
A candle contains a flammable wick (Picture 1). When the wick is lit, the heat from the wick turns the candle wax into a gas. The hot gas mixes with the oxygen in the air and begins to burn, giving out light and heat.

It is easy to show that both oxygen and a gas are needed for burning. If a glass jar is placed over a burning candle, so that no new oxygen can reach the candle, the candle will quickly go out (Picture 2). This shows it is not the wick that keeps the candle burning, but the oxygen in the air.

Heat or light?

Have you noticed how a gas stove burns with a blue flame and a candle burns with a yellow flame? This is not an accident. The candle is used to give out light, whereas the stove is designed to give out heat.

▲ **(Picture 1) A candle burns by turning the wax into a vapour which mixes with the air.**



▲ **(Picture 2) Without air a candle goes out, showing that something in air is vital for burning.**

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▲ **(Picture 3) This is a gas stove in operation. The gas and air mix is designed to give out as much heat as possible.**

A candle burns brightly because the wax vapour doesn't mix very well with the oxygen in the air around it.

A gas stove (Picture 3) burns with a pale blue light (and gives out much more heat) because the many holes in the burners are designed to mix the stove gases and the air much better.

Rocket fuel

Many gases can be used as fuels. One of the most powerful is hydrogen gas. Hydrogen and oxygen are mixed together in rocket engines to give rockets enough power to lift into space (Picture 4).

▼ **(Picture 4) A rocket taking the Space Shuttle into space. Compressed oxygen is carried with the fuel because there is no air in space.**

Summary

- **Gases can be used as fuels.**
- **Oxygen, as well as the fuel gas, is needed before the gas will give out heat or light.**