



7E).

Plastic cup saucepan

Heating water in a plastic/paper cup using a candle flame.

YOU WILL NEED:

- A plastic cup half full of water.
- A stand for the plastic/paper cup
- A candle.
- Matches or a lighter for the candle
- Bucket of cold water in case of a fire, a burn or a scald
- A heat proof mat.

SAFETY:

- Hot things will burn your skin. Be careful what you touch!
- Candle flames will make materials catch fire. Be careful not to cause a fire!
- If you get a burn or a scald, quickly cool it in the bucket of cold water.

INSTRUCTIONS:

- 1). Half fill the plastic/paper cup with water.
- 2). Place the candle in the middle of the heat proof mat and light the candle.
- 3). Place the metal stand over the candle.
- 4). Place the cup with water onto the metal stand.
- 5). What would you expect to happen if an empty plastic/paper cup is held over a candle flame?
- 6). Why does a plastic/paper cup containing water not do this?

EXPLANATION.

Plastic/paper cups need very little energy to heat up so a candle flame will very quickly raise the temperature of an empty cup to the point where it melts or catches fire.

Water need a lot of energy to increase its temperature by even a small amount.

When a plastic/paper cup contains water, the heat from the candle flame passes through the cup into the water.

The water keeps the cup cool and stops the cup melting or catching fire.

Water boils at 100°C and so this limits the maximum temperature of the cup.