

SCIENCE  
CHALLENGE

16

# FIRE EXTINGUISHER



THE  
JAMES  
DYSON  
FOUNDATION

# FIRE EXTINGUISHER

Designed by Liam,  
Design engineer at Dyson

## The brief

Create your own invisible fire extinguisher.

## The method

1. With the help of an adult, light the candle.
2. Mix a little bicarbonate of soda and vinegar together in the jar to make a frothing mixture.
3. Tip the jar over the candle so only the gas from the reaction comes out. Be careful not to tip the mixture out.
4. The flame will be extinguished.



## Materials

Matches

(with adult supervision)

Bicarbonate of soda

Vinegar

Candle

A jam jar

## Design icons

Dry chemical extinguishers are filled with powder, which is usually sodium bicarbonate or baking soda. When released over the fire, the powder decomposes at 70°C releasing CO<sub>2</sub>, smothering the fire.



## How does it work?

The mixture of bicarbonate of soda and vinegar creates carbon dioxide. CO<sub>2</sub> is heavier than air so it sits at the bottom of the glass. When you tip up the glass, the CO<sub>2</sub> comes out and suffocates the candle.