

Explorers Education Programme



Explorers Science Experiments - Rockets

Class: All classes

Strand: Energy and Forces / Materials

Strand Unit: Forces / Sound / Properties and characteristics of materials /
Materials and change

Group size: Demonstration only

Aim

To look at the physical effects of pressure in a confined space.

Students completing the worksheets will also develop writing and literacy skills.

Experiment suitable for teacher demonstration only.

Materials

- Old camera film holders
- Effervescent tablets (e.g. Alka-Seltzer)
- Water

Methods

1. Fill a sealable container (The small tubes that used to hold old films for cameras in them work the best) with water. The less water the higher the rocket will go.
2. Add an effervescent tablet (half is usually enough).
3. Put the lid on the container and ensure it is on tight.
4. Place the container upside down on a flat surface and wait for launch.

❖ **Caution should be applied as the rockets can take off with considerable force. Consideration should be taken to conduct the experiment outside or in a room with a high ceiling. Never hold any part of your body over the rocket when it is about to launch. The launch may also take several minutes to occur. If after 5 minutes the rocket does not launch carefully pick it up and pop the lid off facing away from you and the students.**

What Happens

- When the tablet is mixed with the water it releases a gas called carbon dioxide.
- This gas is trapped in the film canister and when the pressure builds up enough it causes the canister to pop (this usually takes between 30 seconds and 2 minutes).

Discussion Points

- Discuss with the class what they think will happen when the rocket is made ready to launch?

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- After the launch discuss the power of pressure and the potential uses for this energy.
- Rockets can also be made with warm water, but it speeds up the reaction time, so that they pop between 10-20 seconds.
- Discuss the difference in temperature compared to the effect on the reaction time.
- Discuss the effects of pressure on submersibles and deep sea animals.
- Get students to use the web and/or their school library to research these discussion points and the worksheet questions.

Outcome

The children in the class will have developed skills in the following:

- Questioning
- Observing
- Predicting
- Investigating and experimenting
- Analysing
- Recording and communicating
- Exploring
- Planning
- Making
- Evaluating

In addition the following skills in English will be developed:

- Reading for pleasure and information
- Developing competence, confidence and the ability to write independently
- Developing interests, attitudes, information retrieval skills and the ability to think

Useful Links

- <http://www.newton.dep.anl.gov/askasci/eng99/eng99394.htm> - Effects of pressure
- <http://www.howstuffworks.com/rocket.htm> - How rockets work

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Worksheet

What do you think will happen to the container?

My prediction	What happened and the reason why it happened?
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What do you think would happen if the container is filled with warm rather than cold water? Would the rocket take longer or shorter to launch?

What effects would pressure have on submarines and deep sea animals?