

MINI VOLCANO

WARNING — THIS SET CONTAINS CHEMICALS THAT MAY BE HARMFUL IF MISUSED. READ CAUTIONS ON INDIVIDUAL CONTAINERS AND IN MANUAL CAREFULLY. NOT TO BE USED BY CHILDREN EXCEPT UNDER ADULT SUPERVISION.

1ST EDITION 2014

© 2014 THAMES & KOSMOS, LLC, PROVIDENCE, RI, USA

© THAMES & KOSMOS IS A REGISTERED TRADEMARK OF THAMES & KOSMOS, LLC.

PROTECTED BY LAW. ALL RIGHTS RESERVED. WE RESERVE THE RIGHT TO MAKE TECHNICAL CHANGES.

THAMES & KOSMOS, 301 FRIENDSHIP ST., PROVIDENCE, RI, 02903, USA

1-800-587-2872 WWW.THAMESANDKOSMOS.COM

FRANCKH-KOSMOS VERLAGS-GMBH & CO. KG, PFIZERSTR. 5-7, 70184 STUTTGART, GERMANY

+49 (0) 711 2191-0 WWW.KOSMOS.DE

PRINTED IN TAIWAN / IMPRIMÉ EN TAIWAN



SAFETY

Safety Rules

Read these instructions before use, follow them and keep them for reference.

Keep young children, animals and those not wearing eye protection away from the experimental area.

Always wear eye protection.

Store this experimental set out of reach of children under 7 years of age.

Clean all equipment after use.

Make sure that all containers are fully closed and properly stored after use.

Ensure that all empty containers are disposed of properly.

Wash hands after carrying out experiments.

Do not use any equipment which has not been supplied with the set or recommended in the instructions for use.

Do not eat or drink in the experimental area.

Do not allow chemicals to come into contact with the eyes or mouth.

Do not replace foodstuffs in original container. Dispose of immediately.

First Aid

In case of eye contact: Wash out eye with plenty of water, holding eye open if necessary. Seek immediate medical advice.

If swallowed: Wash out mouth with water, drink some fresh water. Do not induce vomiting. Seek immediate medical advice.

In case of inhalation: Remove person to fresh air.

In case of skin contact and burns: Wash affected area with plenty of water for at least 10 minutes.

In case of doubt, seek medical advice without delay. Take the chemical and its container with you.

In case of injury always seek medical advice.

CAUTION!

For potassium dihydrogen phosphate and sodium hydrogen carbonate:

May cause eye and skin irritation.

Avoid breathing dust. Do not get in eyes, on skin, or on clothing.

Wash hands thoroughly after handling.

Do not ingest. Use only as instructed.

WARNING!

Not suitable for children under 3 years.

There is a risk of choking due to small parts that can be swallowed or inhaled.

Keep the packaging and instructions, as they contain important information.

EXPERIMENT: VOLCANO

1. Assemble the volcano as shown. Set it on some newspaper or other surface that can get messy.



2. Mix all three chemical powders — potassium dihydrogen phosphate, sodium hydrogen carbonate, and half of the food coloring powder — in the crater of the volcano.

3. When you are ready for the eruption, quickly pour some water into the crater with a spoon or measuring cup. Very quickly stir the chemicals around a lot using a small tool such as a craft stick.



4. The volcano will erupt! When you are done, clean everything up and wash your hands.

5. You can repeat the eruption with white vinegar, baking soda, and the other half of the food coloring powder.



TYPES OF VOLCANO



Krakatoa type: These are the most dangerous volcanoes. They have thick, sticky lava and are capable of developing powerful gas pressure that can break open the entire mountain with unbelievable force after a long period of dormancy.



Vesuvius type: In this type, the vent is blocked. It may lie dormant for centuries, but sooner or later, pressure will accumulate inside the volcano, pushing out the blockage and shooting out vast quantities of volcanic ash, pumice, and glowing-hot rocks.



Stromboli type: These volcanoes, such as Stromboli north of Sicily, have fairly sticky lava. Stromboli erupts about every 30 seconds, shooting a few shreds of lava, sparks, and glowing rocks several meters into the air.



Hawaiian type: These are the most harmless types of volcano, thanks to their thin lava that is low in gas content. While their lava often flows in large quantities, it does so quietly, creating shield volcanoes such as Hawaii's Mauna Loa.



Pelée type: These fire-spewers are quite dangerous. They are named after Mont Pelée on the island of Martinique. They emit hot gas and clouds of ash over 800 °C in an unpredictable manner, and send glowing-hot avalanches racing down their slopes.

INSIDE A VOLCANO

Volcanoes form in areas where glowing-hot liquid rock rises up from Earth's inner **core** and breaks through Earth's **crust**. The name for this molten rock is **magma**. The magma melts the solid rock of Earth's crust beneath a volcano to form a hollow space called a **magma chamber**. A new volcano typically starts out as a crack in the ground that magma is pushed up out of. The magma is pushed up by the pressure of dissolved gases trying to expand, like when you open a bottle of soda. In time, the molten rock cools and forms a cone-shaped mountain — the actual volcano. Inside the volcano is a **vent** that forms a bowl-shaped opening — the **crater** — at the volcano's top.

Out of the crater rise gases, steam, smoke, fine rocks called **ash**, burning-hot rock debris, and glowing magma. As soon as the magma gets to the surface, its name changes: now it's called **lava**.

The hotter and thinner the lava is, the farther it can flow before it hardens. Volcanoes that expel more liquid lava have flatter shapes. Stickier lava, on the other hand, forms volcanoes with steeper sides.

