**Blue Marble NGMEGAEARTH**

# NATIONAL GEOGRAPHIC Earth Science Kit Instruction Manual

Model: NGMEGAEARTH

## 1. Introduction

The NATIONAL GEOGRAPHIC Earth Science Kit provides a hands-on learning experience for exploring various geological phenomena. This kit is designed for young scientists aged 8 years and up, offering a range of experiments from crystal growth to volcanic eruptions and mineral excavation. This manual provides detailed instructions for setting up, operating, and maintaining your kit to ensure a safe and educational experience.

### Kit Overview

This kit includes materials for over 15 distinct earth science experiments, allowing users to:

- Grow a real crystal.
- Create and erupt a reusable volcano.
- Excavate genuine mineral specimens.
- Generate and observe water tornadoes.
- Start a personal rock and mineral collection.


**Figure 1.1:** All components included in the Earth Science Kit.

## 2. Safety Information

Please read and understand all safety instructions before beginning any experiment. Adult supervision is recommended for all activities.

- **Chemical Safety:** Some experiments involve powders or liquids. Do not ingest any materials. Wash hands thoroughly before and after handling.
- **Eye Protection:** Wear appropriate eye protection when conducting experiments that may involve splashes or small particles.
- **Ventilation:** Perform experiments in a well-ventilated area.
- **Choking Hazard:** Small parts are included. Keep away from young children and pets.
- **Disposal:** Dispose of waste materials according to local regulations. Do not pour chemicals down drains unless specified.
- **Supervision:** This kit is intended for use under the direct supervision of an adult.

## 3. Kit Contents

Verify that all components listed below are present in your kit:

- Volcano mold and plaster
- Eruption powders (various types)
- Crystal growing powder and seed rock
- Dig brick containing Rose Quartz and Pyrite specimens
- Digging tools (chisel, brush)
- Magnifying glass
- Paint set and brush
- Water vortex connector
- Rock collection case
- 10 unique rock and mineral specimens (e.g., snowflake obsidian, tiger's eye, green fluorite, pumice, desert rose, blue calcite, geode, agate)
- Learning Guide
- Bonus Experiment Book

## 4. Setup

Before starting any experiment, ensure your workspace is prepared.

1. **Clear Workspace:** Choose a clean, flat, and stable surface for your experiments.
2. **Protect Surfaces:** Cover your workspace with newspaper, a plastic sheet, or a tray to protect against spills and messes, especially for volcano and digging activities.
3. **Gather Supplies:** Have additional common household items ready, such as water, paper towels, and a small bowl for mixing, as needed for specific experiments.
4. **Read Instructions:** Always read the specific instructions for each experiment in the included Learning Guide before you begin.

## 5. Operating Instructions (Experiments)

This section outlines the primary experiments you can conduct with your Earth Science Kit. Refer to the detailed Learning Guide for step-by-step instructions and scientific explanations.

### 5.1. Crystal Growing

Discover the fascinating process of crystal formation. This experiment allows you to grow a real crystal in as little as three days.

1. Prepare the crystal growing solution according to the Learning Guide.
2. Place the seed rock into the solution.
3. Observe the crystal growth over several days.


**Figure 5.1:** Growing a crystal and excavating a specimen.

## 5.2. Volcano Creation and Eruptions

Build and customize your own volcano, then simulate various types of eruptions.

1. Assemble the volcano mold and mix the plaster to create your reusable volcano structure. Allow it to dry completely.
2. Use the included paints to decorate your volcano.
3. Perform eruptions using the provided eruption powders. Experiment with different powders (e.g., chewable mint candy, popping candy) to observe varied eruption effects.


**Figure 5.2:** Volcano eruption and water tornado experiment.

## 5.3. Excavation Experiments

Become a paleontologist and dig for hidden treasures.

1. Place the dig brick on a protected surface.
2. Carefully use the digging tools (chisel and brush) to excavate the Rose Quartz and Pyrite ('Fool's Gold') specimens.
3. Clean your unearthed specimens and examine them with the magnifying glass.

## 5.4. Tornado and Vortex Experiments

Explore fluid dynamics by creating various types of vortices.

1. Use the water vortex connector to join two plastic bottles.
2. Generate a whirling water tornado by swirling the bottles.
3. Experiment with different liquids (e.g., vegetable oil, dish soap) to observe various vortex effects, including a glow-in-the-dark vortex.

## 5.5. Rock and Mineral Study

Learn about different types of rocks and minerals and start your own collection.

1. Examine the 10 included rock and mineral specimens.
2. Use the Learning Guide to identify and understand the properties of each specimen, such as Selenite (which you can 'read through').
3. Store your collection in the provided case.


**Figure 5.3:** A selection of rock and mineral specimens included in the kit.

## 5.6. Bonus Experiments

The kit includes a 'Big Book of Bonus Experiments' with over 85 additional science activities to explore.

1. Consult the Bonus Experiment Book for new and exciting activities.
2. Follow the instructions carefully for each bonus experiment.

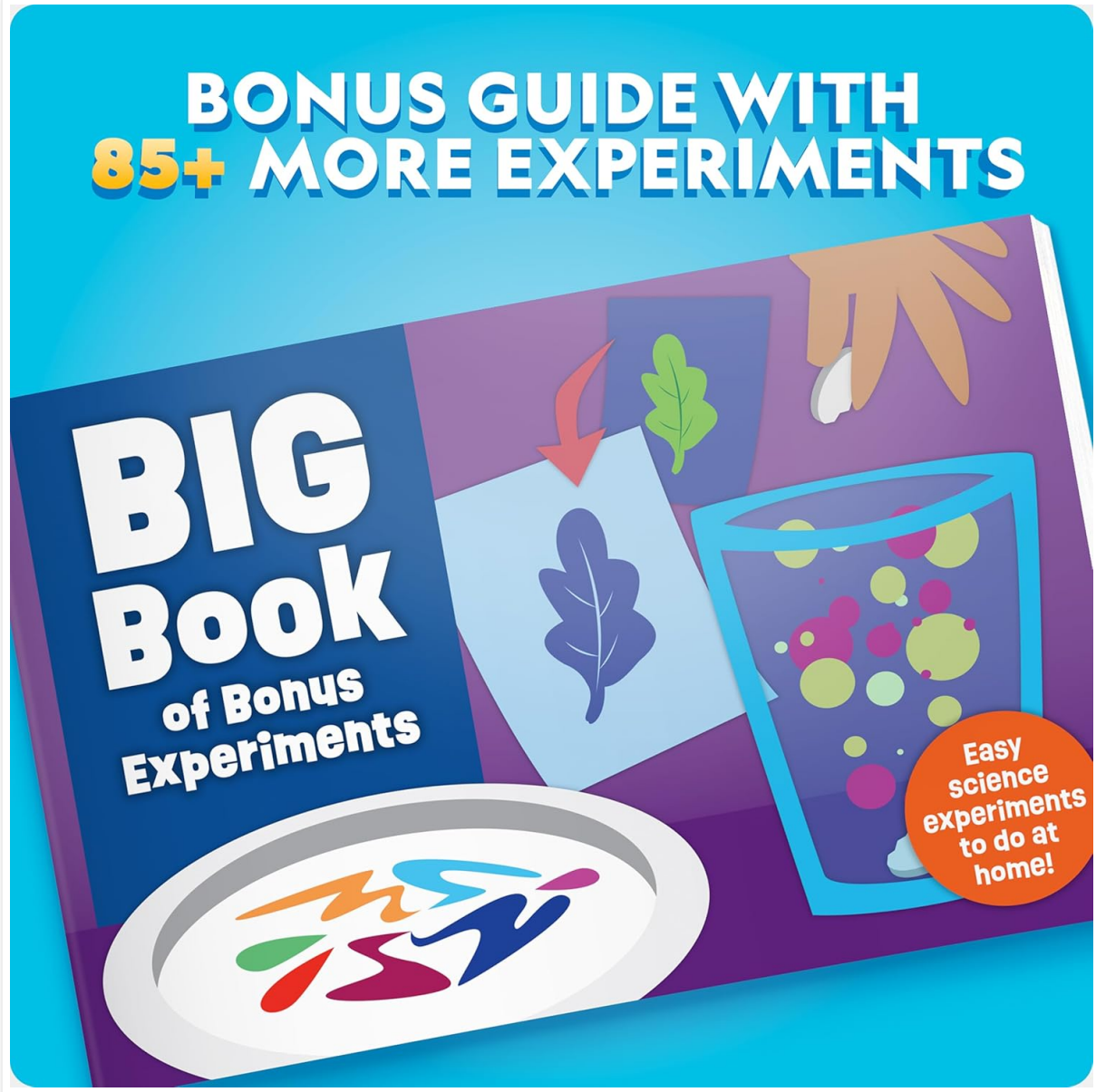


**Figure 5.4:** The 'Big Book of Bonus Experiments' for extended learning.

## 6. Maintenance

Proper care and maintenance will extend the life of your Earth Science Kit components.

- **Cleaning:** After each experiment, clean all reusable components (e.g., volcano mold, digging tools, paintbrushes) with water and mild soap. Ensure they are completely dry before storage.
- **Storage:** Store all kit components in their original packaging or a designated storage container in a cool, dry place, away from direct sunlight.
- **Specimen Care:** Keep rock and mineral specimens clean and dry in the provided collection case to prevent damage or loss.

## 7. Troubleshooting

If you encounter issues during your experiments, consider the following common solutions:

- **Crystal Not Growing:** Ensure the water temperature was correct when mixing the solution. Verify that the seed rock was properly placed and the solution was undisturbed during the growth period.
- **Volcano Eruption Weak:** Check the quantities of eruption powders and water used. Ensure the

mixture is correct as per the instructions.

- **Difficulty Excavating:** If the dig brick is too hard, lightly dampen it with a few drops of water to soften the material, but avoid oversaturating.
- **Water Tornado Not Forming:** Ensure the bottles are securely connected and that a strong, circular motion is applied when initiating the vortex.
- **Missing Components:** Double-check the kit contents against the list in Section 3. If items are genuinely missing, contact customer support.

## 8. Specifications

| Feature | Detail |
|---|---|
| Model Number | NGMEGAEARTH |
| Educational Objective | Geoscientific Exploration |
| Recommended Age | 8 years and up |
| Product Dimensions (L x W x H) | 22 x 8 x 30.5 cm |
| Item Weight | 1.18 kg |
| Assembly Required | No |
| Batteries Required | No |
| Material Type(s) | Multiple |
| Color | Multicolor |

## 9. Support and Warranty

Blue Marble, the brand behind NATIONAL GEOGRAPHIC Toys, is committed to providing high-quality products and exceptional service. While specific warranty details are not provided in this manual, for any questions, concerns, or support regarding your Earth Science Kit, please refer to the contact information provided on the product packaging or the official NATIONAL GEOGRAPHIC Toys website.
Your purchase also supports the global nonprofit National Geographic Society in its work to protect and illuminate our world through exploration, research, and education.