

Lava Rocks

Chapter 8

Magma, molten rock underground, flowing onto the Earth's surface becomes lava. Basalt, andesite, dacite and rhyolite magmas all produce lava rocks. Lava is also a generic term used to describe all rocks that formed in a lava flow. Lava rocks are glassy or have microscopic crystals.

Pahoehoe and aa are two terms used by Hawaiians to describe basalt lava rocks on the islands of Hawaii. Pahoehoe lava is a smooth ropy rock while aa lava is rough and jagged.



Aa lava flowing slowly across the land on Kilauea volcano. USGS

Pillow basalt

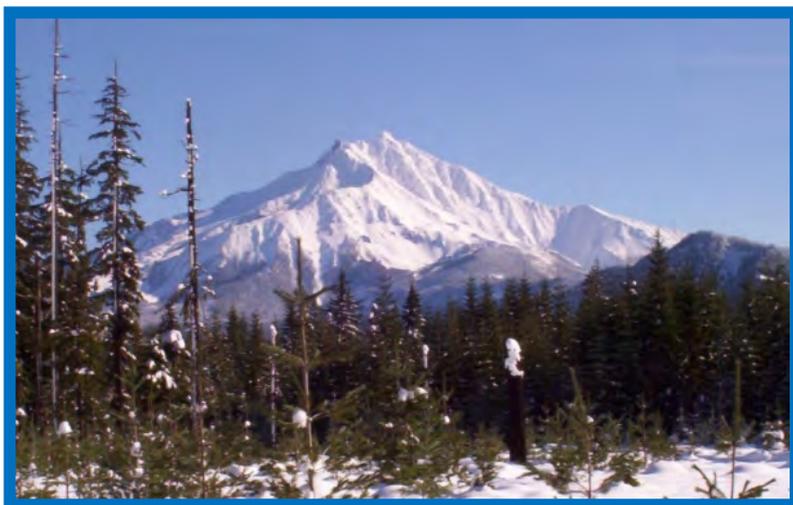
When two oceanic plates are separating, they form rift valleys on the ocean floor between the two crustal plates. Molten rock collects in the upper mantle in magma chambers that lie beneath the rift valleys.

Basalt lava oozing out of the cracks on the ocean floor forms pillow basalt. The basalt lava has created great underwater mountain chains that are a total of 80,000 km long. These great underwater mountain chains are the global mid-ocean ridge system found in all the oceans on Earth.

Stratovolcanoes on the Ring of Fire

Great stratovolcanoes like Trident Volcano in Alaska, Mount Mayon in the Philippines and Mt. Fuji in Japan dot the landscape around the Pacific Ocean. These stratovolcanoes are composed of andesitic lavas or a combination of andesitic and dacite lavas.

Andesite forms in subduction zones where a subducting oceanic plate, saturated with seawater, begins to melt. Andesite contains less quartz than rhyolite and less ferromagnesian (iron and magnesium) minerals than basalt. This type of lava typically begins with an explosive eruption followed by lava flows. Stratovolcanoes contain layers of pyroclastic materials mixed with lava flows. Inside the volcanoes, a series of dikes and sills provide a skeleton-like structure, so they can grow to great heights.



Mount Jefferson in the Cascade Mountains of Oregon MLM

Andesitic volcanoes on the Ring of Fire

Andesite is a light gray to medium gray rock. Andesite lava rocks often have a porphyritic texture with a mixture of large and small crystals. The rocks contain between 54% and 62% quartz, creating thick lava flows on the flanks of volcanoes.

Around the Ring of Fire stratovolcanoes are found on the landward side of subduction zones. The Cascade Range stretches

Weighty Rocks

Activity 8

Introduction

Scientists use specific gravity to study rocks or minerals. They compare solids and liquids to a cubic centimeter of water at 4°C, which weighs exactly 1 gram. Since one cubic centimeter of water weighs one gram, they use this information to determine the density of minerals by weighing a cubic centimeter of rocks and minerals. In general, you can use specific gravity and density interchangeably.



Igneous
rocks

Materials

- 12 igneous rocks
- Pencil or pen

Directions

1. Set up the rocks from your set in a line in front of you on a table.
2. You are going to line up your rocks from lightest to heaviest. The lightest rock should be on the far left and the heaviest rock on the far right.

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