

Igneous Rocks

Basalt



What is Basalt?

Basalt is a dark-colored, fine-grained, [igneous rock](#) composed mainly of plagioclase and pyroxene minerals. It most commonly forms as an extrusive rock, such as a lava flow, but can also form in small intrusive bodies, such as an igneous dike or a thin sill. It has a composition similar to [gabbro](#). The difference between basalt and gabbro is that basalt is a fine-grained rock while gabbro is a coarse-grained rock.

Earth's Most Abundant Bedrock

Basalt underlies more of Earth's surface than any other rock type. Most areas within Earth's ocean basins are underlain by basalt. Although basalt is much less common on continents, lava flows and flood basalts underlie several percent of Earth's land surface. Basalt is a very important rock.

Uses of Basalt

Basalt is used for a wide variety of purposes. It is most commonly crushed for use as an aggregate in construction projects. Crushed basalt is used for road base, concrete aggregate, asphalt pavement aggregate, railroad ballast, filter stone in drain fields and many other purposes. Basalt is also cut into dimension stone. Thin slabs of basalt are cut and sometimes polished for use as floor tiles, building veneer, monuments and other stone objects.

Pumice



What is Pumice?

Pumice is a light-colored, extremely porous [igneous rock](#) that forms during [explosive volcanic eruptions](#). It is used as aggregate in lightweight concrete, as landscaping aggregate, and as an abrasive in a variety of industrial and consumer products. Many specimens have a high enough porosity that they can float on water until they slowly become waterlogged.

How Does Pumice Form?

The pore spaces (known as vesicles) in pumice are a clue to how it forms. The vesicles are actually gas bubbles that were trapped in the rock during the rapid cooling of a gas-rich frothy magma. The material cools so quickly

that atoms in the melt are not able to arrange themselves into a crystalline structure. Thus, pumice is an amorphous volcanic glass known as a "[mineraloid](#)".

Some magmas contain several percent dissolved gas by weight while they are under pressure. Stop for a moment and think about that. Gas weighs very little at Earth's surface, but these magmas under pressure can contain several percent gas by weight held in solution.

This is similar to the large amount of dissolved carbon dioxide in a sealed bottle of carbonated beverage such as beer or soda. If you shake the container, then immediately open the bottle, the sudden release of pressure allows the gas to come out of solution, and the beverage erupts from the container in a frothy mess.

A rising body of magma, supercharged with dissolved gas under pressure, behaves in a similar way. As the magma breaks through Earth's surface, the sudden pressure drop causes the gas to come out of solution. This is what produces the enormous rush of high-pressure gas from the vent.

This rush of gas from the vent shreds the magma and blows it out as a molten froth. The froth rapidly solidifies as it flies

through the air and falls back to Earth as pieces of pumice. The largest [volcanic eruptions](#) can eject many cubic kilometers of material. This material can range in size from tiny dust particles to large blocks of pumice the size of a house.

Large eruptions can blanket the landscape around the volcano with over 100 meters of pumice and launch dust and ash high into the atmosphere.

The sections below give quotations from United States Geological Survey reports describing the production of pumice at two major eruptions.

Uses of Pumice

The largest use of pumice in the United States is the production of lightweight concrete blocks and other lightweight concrete products. When this concrete is mixed, the vesicles remain partially filled with air. That reduces the weight of the block. Lighter blocks can reduce the structural steel requirements of a building or reduce the foundation requirements. The trapped air also gives the blocks a greater insulating value.

The second most common use of pumice is in landscaping and horticulture. The pumice is used as a decorative ground cover in landscaping and planters. It is used as drainage rock and soil conditioner in plantings. Pumice and [scoria](#) are also popular rocks for use as substrates in hydroponic gardening.

Pumice has many other uses. Together these account for less than a few percent of consumption in the United States, but these are the products that most people think of when they hear the word "pumice."

Lots of people have found small pumice pebbles in the pockets of brand new "stone washed jeans," and almost everyone has seen the famous "Lava Soap" that uses pumice as an abrasive. Below we list these and some of the other minor uses of pumice (in no particular order). [5]

- an abrasive in conditioning "stone washed" denim
- an abrasive in bar and liquid soaps such as "Lava Soap"
- an abrasive in pencil erasers
- an abrasive in skin exfoliating products
- a fine abrasive used for polishing
- a traction material on snow-covered roads
- a traction enhancer in tire rubber
- an absorbent in cat litter
- a fine-grained filter media
- a lightweight filler for pottery clay

Granite



What is Granite?

Granite is a light-colored [igneous rock](#) with grains large enough to be visible with the unaided eye. It forms from the slow crystallization of magma below Earth's surface. Granite is composed mainly of quartz and feldspar with minor amounts of mica, amphiboles and other minerals. This mineral composition usually gives granite a red, pink, gray or white color with dark mineral grains visible throughout the rock.

The Best-Known Igneous Rock

Granite is the best-known igneous rock. Many people recognize granite because it is the most common igneous rock found at Earth's surface and because granite is used to make many objects that we encounter in daily life. These include counter tops, floor tiles, paving stone, curbing, stair treads, building veneer and cemetery monuments. Granite is used all around us - especially if you live in a city. Granite is also well-known from its many world-famous natural exposures. These include: Stone Mountain, Georgia; [Yosemite Valley](#), California, Mount Rushmore, South Dakota; Pike's Peak, Colorado; and White Mountains, New Hampshire.

Uses of Granite

Granite is the rock most often quarried as a "dimension stone" (a natural rock material that has been cut into blocks or slabs of specific length, width and thickness). Granite is hard enough to resist most abrasion, strong enough to bear significant weight, inert enough to resist weathering and it accepts a brilliant polish. These characteristics make it a very desirable and useful dimension stone.

Most of the granite dimension stone produced in the United States comes from high quality deposits in five states: Massachusetts, Georgia, New Hampshire, South Dakota and Idaho.

Granite has been used for thousands of years in both interior and exterior applications. Rough-cut and polished granite is used in buildings, bridges, paving, monuments and many other exterior projects. Indoors, polished granite slabs and tiles are used in countertops, tile floors, stair treads and many other practical and decorative features. High price often reduces the popularity of a construction material and granite often costs significantly more than man-made materials in most projects. However, granite is frequently selected because it is a prestige material, used in projects to produce impressions of elegance, durability and lasting quality.

Granite is also used as a [crushed stone](#) or aggregate. In this form it is used as a base material at construction sites, as an aggregate in road construction, railroad ballast, foundations and anywhere that a crushed stone is useful as fill.