TYPES OF ROCK

IGNEOUS ROCK

Igneous rocks are formed when magma cools and solidifies. Igneous rocks are classified according to grain size and silica content. Silica (SiO_2) is a chemical compound most commonly found in nature as sand or quartz. Each rock type is composed of different minerals containing a certain percentage of silica.

There are two main categories of igneous rock:

1. **Intrusive igneous rocks** are formed when magma solidifies underground. It has a visible crystalline structure.
2. **Extrusive igneous rocks** are formed when laval solidifies at or near the surface. Its crystalline structure is very fine and nearly invisible.

SEDIMENTARY ROCK

Sedimentary rocks are formed by the accumulation of sediments.

There are three basic types of sedimentary rocks:

1. **Clastic sedimentary rocks** are formed from mechanical weathering debris. An example is sandstone.
2. **Chemical sedimentary rocks** form when dissolved materials precipitate from solution. An example is limestone.
3. **Organic sedimentary rocks** form from the accumulation of plant or animal debris. An example is coal.

METAMORPHIC ROCK

Metamorphic rocks are sedimentary and igneous rocks that have been modified by heat, pressure and chemical processes usually while being buried deep below the Earth's surface.

There are two basic types of metamorphic rocks:

1. **Foliated metamorphic rocks** have a layered or banded appearance.
2. **Non-foliated metamorphic rocks** do not have a layered or banded appearance.

References

http://en.wikipedia.org/wiki/
http://geology.com/rocks/
http://www.ehow.com/facts_5908477_fossil-limestone-information.html
http://www.thefreedictionary.com/

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IGNEOUS ROCKS

Andesite is a fine-grained rock composed mainly of the mineral plagioclase.

Basalt is a fine-grained, dark-coloured rock composed mainly of plagioclase and pyroxene minerals.

Gabbro is a coarse-grained rock. It is usually black or dark green in colour and is composed mainly of the minerals plagioclase and augite. It is the most abundant rock in the deep oceanic crust.

Diorite is a coarse-grained, intrusive igneous rock that contains a mixture of feldspar, pyroxene, hornblende and sometimes quartz.

Granite is a coarse-grained, light-coloured rock. It is composed mainly of quartz, plagioclase feldspar and potassium felspar minerals, giving it a pinkish colour.

Rhyolite is a fine-grained, light-coloured rock that typically contains quartz and alkali feldspar minerals. It can range from light grey/cream to light pink in colour.

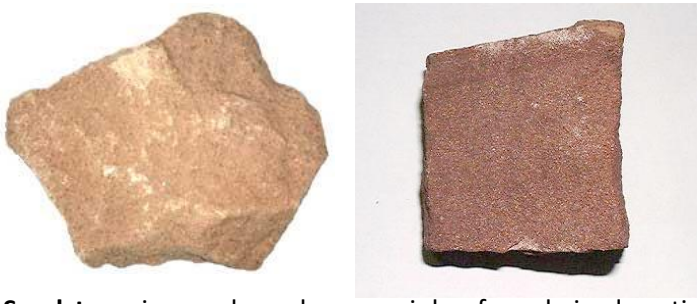
Obsidian is formed when molten rock material cools so rapidly that atoms are unable to arrange themselves into a crystalline structure. The result is a volcanic glass with a smooth uniform texture.

Pumice is a light-coloured rock. It forms when lava is solidified very rapidly. The sponge-like texture is a result of gas trapped in the lava at the time of solidification.

SEDIMENTARY ROCKS

Clastic sedimentary rocks

Breccia is a rock that is composed of large angular fragments (over 2mm in diameter). The spaces between the fragments can be filled with smaller particles and/or mineral cement that binds the rock together. Breccia can be any colour.



Sandstone is a rock made up mainly of sand-sized particles (1/16 to 2mm in diameter). It forms in environments where large amounts of sand accumulate such as beaches, deserts, flood plains and deltas.

Conglomerate is a rock that contains large rounded clasts (over 2mm in diameter.) A clast is a rock fragment resulting from the breakdown of larger rocks. The space between the clasts is generally filled with smaller particles and/or mineral cement that binds the rock together. Conglomerate can be any colour.

Breccia and **conglomerate** are very similar rocks. They are composed of particles larger than 2mm in diameter. In breccia however, the large particles are angular in shape while in conglomerate the particles are rounded.

Shale is a fine-grained rock that forms from the compaction of silt and clay-sized mineral particles that is commonly called "mud". Shale is fissile and laminated. Laminated rocks are made up of many thin layers. A fissile rock readily splits into thin pieces along these laminations.

Oil shale is a dark coloured organic shale and is the source rock for many of the world's most important oil and natural gas deposits.

SEDIMENTARY ROCKS

Chemical sedimentary rocks

Limestone is mainly composed of calcium carbonate ($CaCO_3$) in the form of the mineral calcite. It forms in warm, shallow marine waters. There are many different types of limestone. They vary in both colour and appearance.

Fossil limestone is a limestone that has organic remains embedded in it. These fossil remains can range from being microscopic in size to being large enough to be seen by the naked eye.

Organic sedimentary rocks

Coal forms from the accumulation and preservation of plant materials, usually in a swamp environment. Coal is a combustible rock and is an important fossil fuel.

METAMORPHIC ROCKS

Foliated metamorphic rocks

Gneiss is a foliated rock that has a banded appearance and is mostly made up of granular mineral grains of quartz and various feldspar minerals. It is rock that has metamorphosed from either igneous or sedimentary rock. It can vary in colour, depending on the original mineral content.

Slate is a fine-grained, foliated rock that is created by the metamorphism of the sedimentary rock shale.

Graphite schist is a foliated rock that has formed under heat and pressure from sedimentary rock containing carbon compounds. Its main mineral component graphite is used in lead pencils.

Phyllite is made up mainly of very fine-grained mica and quartz. The surface of phyllite lustrous sheen and sometimes appears wrinkled. Phyllite is formed from the continued metamorphism of slate.

Non-foliated metamorphic rocks

Marble is a non-foliated rock that is produced from the metamorphism of limestone. It is composed of calcium carbonate.

Quartzite is a non-foliated rock that is produced by the metamorphism of the sedimentary rock sandstone. It is mainly composed of quartz.