EXPANDED ROCK COLLECTION

#2220

IGNEOUS ROCKS

Rocks that have formed from the molten state are called ***igneous*** rocks. Igneous rocks that have cooled and crystallized deep beneath the surface of the earth are called ***INTRUSIVE*** or ***PLUTONIC*** rocks. Plutonic rocks usually display ***PHANERITIC*** or ***PORPHYRITIC*** texture. Rocks that were formed when lava reached the surface of the earth through fissures, vents or volcanoes are called ***EXTRUSIVE*** or ***VOLCANIC*** rocks. Volcanic rocks will usually exhibit ***APHANITIC*** texture.

PHANERITIC TEXTURE - Mineral grains of nearly equal size and visible to the naked eye.
1. PEGMATITE is a very coarse-grained plutonic rock with a similar composition to granite**.**
2. GRANITE is a crystalline rock consisting of potassium feldspar and quartz with hornblende and mica as common accessory minerals.
3. SYENITE is a plutonic rock consisting primarily of alkalic feldspar with accessory minerals of hornblende and/or biotite.
4. ANORTHOSITE is a plutonic rock consisting of 90 to 100 percent feldspars and minor amounts of quartz.
5. GABBRO is a crystalline plutonic rock consisting of plagioclase with minor amounts of augite.

PORPHYRITIC TEXTURE - Mineral grains of two distinct sizes.
6. RHYOLITE PORPHYRY is a light colored rock with the same composition of granite, commonly containing larger crystals of orthoclase feldspar.
7. TRACHYTE PORPHYRY is composed of potassium feldspar, minor plagioclase feldspar, and accessory hornblende.

APHANITIC TEXTURE (Microcrystalline) - Mineral grains too small to be seen by the naked eye.
8. BASALT is an extrusive igneous rock composed of calcic plagioclase and pyroxene and occasionally olivine. Accessory minerals are occasionally visible.
9. RHYOLITE is a light-colored rock consisting of microcrystalline potassium feldspar, quartz, and minor accessory minerals.
10. ANDESITE is a light-colored rock consisting of plagioclase feldspar and hornblende, biotite, or augite.

APHANITIC TEXTURE (Glassy)
11. TUFF is formed from compacted volcanic fragments.
12. OBSIDIAN is a glassy volcanic rock formed by the rapid cooling of rhyolitic lavas.
13. PITCHSTONE is formed by the rapid cooling of rhyolitic laves and has a resinous or “pitchy” appearance.
14. PUMICE is a light-colored volcanic rock of rhyolitic composition; the texture results from bubbles formed by escaping gasses.
15. SCORIA is a dark colored volcanic rock of basaltic composition with a porous texture due to escaping gases.

METAMORPHIC ROCKS

Pre-existing rocks that have undergone transformation due to geologic processes are known as ***metamorphic*** rocks. The rocks are generally recrystallized in their solid state by immense pressure and heat, and also may be influenced by the introduction of chemically active solutions. Under the right conditions, igneous, sedimentary, and pre-existing metamorphic rocks can all go through metamorphosis. The change may be partial and some of the rock’s original characteristics retained, or it may be so complete that new minerals are formed, and the texture altered.

FOLIATED ROCKS
16. GNEISS may be formed from granites or sedimentary rocks and typically shows layering of mica, quartz and feldspar.
17. GRAPHITE SCHIST is composed almost completely of the mineral graphite and exhibits a layered texture.

18. BIOTITE SCHIST is composed of small, layered flakes of biotite.
19. CHLORITE SCHIST is composed almost completely of the mineral chlorite and exhibits a layered texture.
20. GARNET MICA SCHIST is composed primarily of small flakes of mica with larger crystals of garnet.
21. SLATE is metamorphosed from shale. It has an extremely fine texture and splits cleanly along its rock planes.
22. AMPHIBOLITE consists of amphiboles and plagioclase feldspar.
23. *~~TALC SCHIST~~ is a rock rich in talc. When layering is apparent, it is called talc schist.
24. PHYLLITE is intermediate between schist and slate. A silky sheen is characteristic of phyllite.

NONFOLIATED ROCKS
25. QUARTZITE is metamorphosed sandstone, which is partially recrystallized.
26. QUARTZITE often is colored by other minerals such as hematite, which gives the rock its red color.
27. MARBLE is re-crystallized limestone (calcite) and typically is white in color.
28. MARBLE can contain other minerals which can color it green, pink, gray, & black.
29. HORNFELS is usually a fine-grained, non-foliated rock, and may retain some of its sedimentary structure.
30. ANTHRACITE is a metamorphosed bituminous coal.

SEDIMENTARY ROCKS

Rocks derived from pre-existing rocks through the processes of erosion, followed by compaction or chemical precipitation are called ***sedimentary*** rocks. Sedimentary rocks are grouped in three categories**: *Clastic*, *Chemical*,** and ***Organic***. Mechanical weathering forms Clastic rocks. Weathering produces gravels, sands, and silts, which are then cemented together by natural cements such as silica, iron oxides, and various carbonates to form clastic rocks. In the process of weathering, rocks or parts of rocks may be dissolved. As the solution cools or evaporates, the solid portion is deposited as a ***precipitate*.** Rocks formed in this way are referred to as Chemical rocks. Rocks which are formed from the compaction of plant remains are called Organic rocks.

CLASTIC ROCKS
31. CONGLOMERATE is composed of reconsolidated gravel and sand particles.
32. ARKOSE is composed essentially of quartz and feldspar particles with smaller amounts of mica.
33. SANDSTONE is essentially sand-size particles cemented together by calcite, silica, or iron oxides.
34. QUARTZ SANDSTONE is a sandstone which is composed of quartz grains cemented together by silica.
35. OIL SHALE contains solid hydrocarbons and plant remains. Petroleum-like products can be distilled from the rock.
36. SHALE is compacted sediment in which the constituent particles are predominantly of clay size.
37. BRECCIA is composed of angular fragments of rocks which are cemented together.

CHEMICAL ROCKS
38. LIMESTONE consists mainly of calcium carbonate, which will yield lime when exposed to high heat.
39. ROCK GYPSUM is composed of calcium sulfate deposited between layers of other sedimentary rocks.
40. FOSSIL LIMESTONE is limestone formed from shell fragments deposited in swamp-like areas.
41. DOLOMITE is composed largely of calcium magnesium carbonate and is often found interlayered with limestone.
42. CHALK is formed by the accumulation of tiny calcite shells of oceanic micro-organisms in moderately deep marine environments.
43. ROCK SALT is crystalline and granular aggregates of sodium chloride deposited from evaporating sea waters.
44. TUFA is a calcium carbonate sedimentary rock resulting from deposits of solutions from percolating ground water.

ORGANIC ROCK
45. BITUMINOUS COAL is known as "soft coal". It is high in carbonaceous matter and contains between 15 to 50 percent volatile matter.

*Talc is no longer available due to safety concerns.