

IGNEOUS ROCKS

Rocks which 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 and cooled very quickly are called **EXTRUSIVE** or **VOLCANIC** rocks. *Volcanic* rocks will usually exhibit **APHANITIC** texture.

PHANERITIC TEXTURE Mineral grains are of nearly equal size and are clearly visible to the naked eye.

1. **PEGMATITE** is a very coarse-grained plutonic rock with a composition similar to granite.
2. **GRANITE** is a crystalline rock consisting of potassium or sodium feldspar and quartz, with hornblende and mica as common accessory minerals.
3. **DIORITE** is a plutonic igneous rock which consists primarily of plagioclase feldspar with accessory mafic minerals like hornblende, biotite, and pyroxene.
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 A mineral structure in which larger crystals, known as *phenocrysts*, are inset in a "groundmass" of finer crystalline structure.

6. **RHYOLITE PORPHYRY** contains larger feldspar crystals in an aphanitic groundmass of alkali feldspar and quartz.
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 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.
11. **TUFF** is formed from compacted volcanic fragments.

APHANITIC TEXTURE (Glassy)

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 lavas, 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 gases.
15. **SCORIA** is a dark colored volcanic rock of basaltic composition with a porous texture caused by escaping gases.