

Lab 04 - Igneous Rock Identification Key

1. melting and crystallization
2. silicates
3. silicon and oxygen
4. Fractional crystallization, heavy minerals crystallize, sink and get left behind by the raising magma body.
5. highest - olivine; lowest - quartz
6. density decreases with decreasing temperature
7. metals - Fe, Mg, Ca, Al, K, Na
8. False; as you drop in Bowen's, the minerals tend to be more nonferromagnesian.
9. below the earth's surface with very slow cooling
10. porphyritic, glassy, vesicular, pyroclastic
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12. loosely compacted volcanic ash
13. because their source magma forms at depths close to the mantle (too deep to make it to the surface)
14. all of the glassy texture igneous rocks
15. dark color = basalt; intermediate color = andesite; light color = rhyolite

Rock Texture	Rock Composition	Characteristic Features	NAME
Phaneritic	olivine	light green, pure olivine	Dunite
Phaneritic	augite + Ca plagioclase	dark gray, large rectangular minerals	Gabbro
Phaneritic	hornblende + Ca-Na plagioclase	salt & pepper appearance	Diorite
Phaneritic	biotite + Na plagioclase + orthoclase + quartz	pink orthoclase & large black biotite	Pink Granite
Phaneritic	biotite + Na plagioclase + muscovite + quartz	no orthoclase & lots of gray smoky looking quartz	Gray Granite
Porphyritic	augite + Ca plagioclase	dense jet black, heavy, no vesicles	Basalt
Porphyritic	augite + Ca plagioclase	black, heavy, with vesicles filled with white impurities	Vesicular Basalt
Porphyritic	hornblende + Ca-Na plagioclase	greenish groundmass with jet black hornblende crystals	Andesite
Porphyritic	biotite + Na plagioclase + orthoclase + quartz	pink, light weight, a few orthoclase phenocrysts	Rhyolite
Glassy	glass	mixed black and red with no vesicles, shiny glass	Obsidian
Glassy	glass	dull red with about half vesicles	Scoria
Glassy	glass	light gray glass foam, will float in water	Pumice
Pyroclastic	glass ash	bits of gray ash loosely compacted together	Tuff