Igneous, Sedimentary, and Metamorphic Rock ID Charts

Some Common Rock-Forming Minerals

Hardness Relative to Glass	Cleavage? (breaks along planes?)	Color	Other Properties	MINERAL NAME
Harder	No	variable	glassy luster; conchoidal fracture (breaks like glass)	**QUARTZ**
Harder	Yes	peach/pink to white	glassy luster; banding; 2 cleavages at 90° (also called *potassium feldspar*)	**ORTHOCLASE (Pink Feldspar)**
Harder	No	olive green	glassy luster; granular; weathers brown/orange	**OLIVINE**
Harder	No	red to brown	twelve-sided or spherical common; glassy luster	**GARNET**
Harder	(Yes)	pistachio green	surface coatings, or massive	**EPIDOTE**
Similar	Yes	white to gray	glassy luster; 2 cleavages at 90°; striations (grooves) possible on cleavage faces (white= *sodium*-rich, dark= *calcium*-rich)	**PLAGIOCLASE (White to Dark Grey Feldspar)**
Similar	(Yes)	dark green to black	glassy to dull luster; 2 poor cleavages at 90°	**PYROXENE**
Similar	Yes	dark green to black	glassy luster; splintery appearance; 2 cleavages at 120° and 60°	**AMPHIBOLE**
Softer	Yes	clear to light yellow	glassy luster; perfect cleavage in 1 dir.; forms flexible, transparent, thin sheets	**MUSCOVITE (clear mica)**
Softer	Yes	brown to black	glassy luster; perfect cleavage in 1 direction; forms flexible thin sheets	**BIOTITE (black mica)**
Softer	Yes	white to clear (dark if massive)	reacts with hydrochloric acid (HCl); glassy to dull luster; 3 cleavages not at 90° to each other	**CALCITE**
Softer	Yes	white to clear	salty taste; glassy to dull luster; 3 cleavages at 90° to each other (breaks into cubes)	**HALITE**

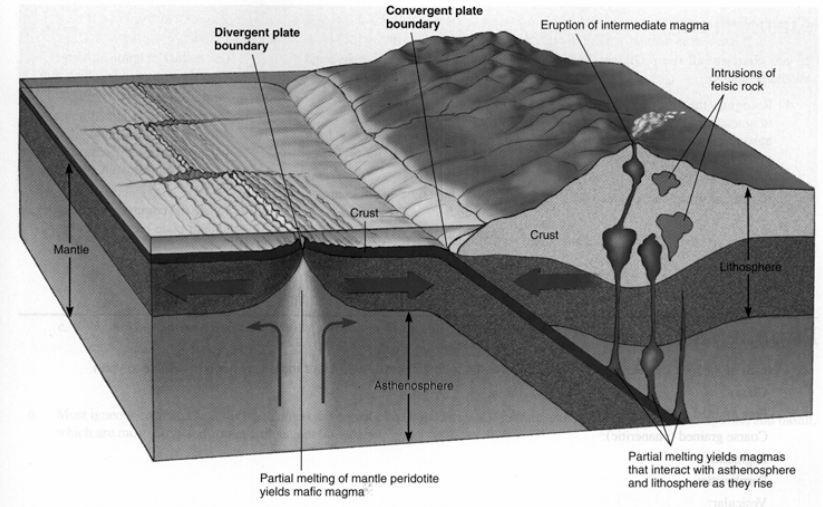

FIGURE 3.18
Most igneous activity takes place at divergent and convergent plate boundaries. Partial melting of peridotite mantle at divergent boundaries yields mafic magmas. Convergent boundaries are more complex; magmas formed by partial melting may interact with a variety of rocks to produce abundant intermediate and felsic magmas. **(From Norris Jones, Laboratory Manual for Physical Geology, 2nd edition, 1998)**

Igneous Rock Names

COMPOSITIONS (minerals present) are in columns **TEXTURES** are in rows:	**Felsic** Quartz Pink feldspar White feldspar Black mica Clear mica	**Intermediate** White feldspar Black amphibole Black mica	**Mafic** Grey feldspar Dark pyroxene Olivine
Coarse-grained	**GRANITE**	**DIORITE**	**GABBRO**
Fine-grained	**RHYOLITE**	**ANDESITE**	**BASALT**

Sedimentary Rock Names

GRAIN SIZE	**OTHER PROPERTIES**	**ROCK NAME**
Coarse-grained (pebble/cobble/boulder)	Rounded grains	**CONGLOMERATE**
	Angular grains	**BRECCIA**
Medium-grained (sand)	"Sand-sized" particles	**SANDSTONE**
Fine-grained (silt)	Feels gritty on teeth or between fingers	**SILTSTONE**
Very fine-grained	Feels smooth, soft, often layered (rock is made of clay)	**SHALE**
	Harder, denser, fizzes in dilute acid (rock is made of calcite)	**LIMESTONE**

Metamorphic Rock Names

FOLIATED (LAYERED)?	**OTHER PROPERTIES**	**PROTOLITH (i.e., used to be this kind of rock)**	**ROCK NAME**
Yes—slaty cleavage (breaks into flat plates)	Microscopic to very fine-grained; clay minerals common; cleavage surfaces dull to slightly shiny	Shale	**SLATE**
Yes—schistosity (platy foliation of mica grains)	Medium- to coarse-grained; mica minerals common; may also contain garnets	Shale, siltstone	**SCHIST**
Yes—gneissic (light and dark) banding	Medium- to coarse-grained; mostly non-micas; light and dark layers common	Shale, siltstone, granite	**GNEISS**
Yes—aggregate of long amphibole crystals	Dark green to black; also may contain black mica, feldspars, and/or garnets	Basalt, gabbro	**AMPHIBOLITE**
No—made of quartz	Fine- to coarse-grained crystalline texture; light-colored; scratches glass	Quartz-sandstone	**QUARTZITE**
No—made of calcite	Commonly coarsely crystalline; reacts with acid; usually light-colored; does not scratch glass	Limestone	**MARBLE**
No—made of rock fragments	Coarse-grained, sometimes deformed, rock fragments; rock breaks through individual clasts	Conglomerate	**META-CONGLOMERATE**