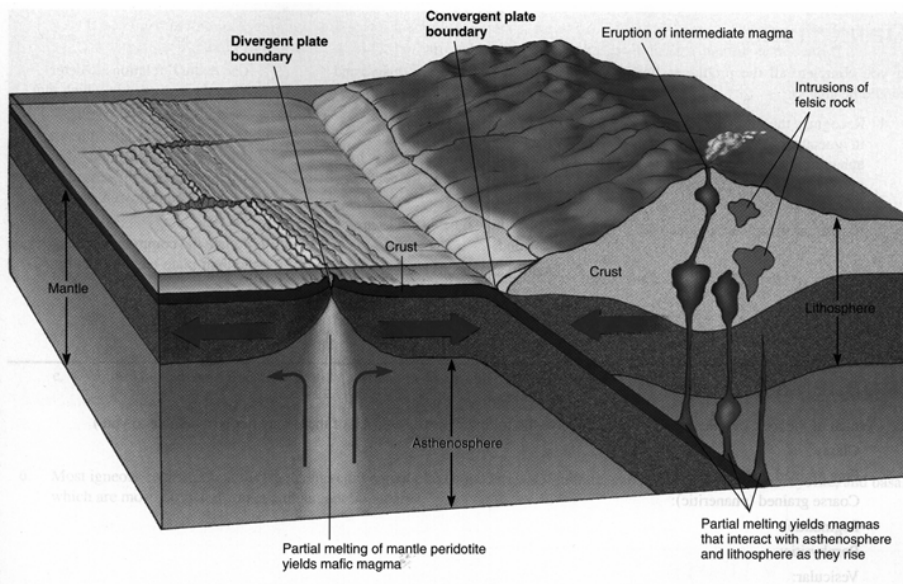


# Igneous, Sedimentary, and Metamorphic Rock ID Charts

## Some Common Rock-Forming Minerals

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



**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

		<b>Felsic</b>	<b>Intermediate</b>	<b>Mafic</b>
<b>COMPOSITIONS</b> (Minerals Present) are in columns		Quartz		
		Pink feldspar	White feldspar	Grey feldspar
<b>TEXTURES</b> are in rows		White feldspar	Black amphibole	Dark pyroxene
		Black mica	Black mica	Olivine
		Clear mica		
	Coarse-grained	<b>GRANITE</b>	<b>DIORITE</b>	<b>GABBRO</b>
	Fine-grained	<b>RHYOLITE</b>	<b>ANDESITE</b>	<b>BASALT</b>

## Sedimentary Rock Names

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

## Metamorphic Rock Names

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