

Generalized Rock Identification Chart For Common IGNEOUS ROCKS

TEXTURE		COMPOSITION				COMMENTS	INTERPRETATIONS
		<i>Felsic</i> < 15% dark minerals	<i>Intermediate</i> 15-40% dark minerals	<i>Mafic</i> 40-90% dark minerals	<i>Ultramafic</i> > 90% dark minerals		
PLUTONIC / INTRUSIVE	Pegmatitic <i>(crystal size >3.0 cm)</i>	GRANITIC PEGMATITE	-	-	-	<i>pegmatite crystals can grow very large (meters) pegmatites form important ore deposits (rare earth elements)</i>	hydrous crystallization at DEPTH <i>slow cooling, high crystal growth rate, very low nucleation density, water-rich crystallization</i>
	Coarse-grained (phaneritic) <i>(crystal size 5 mm to 3.0 cm)</i>	GRANITE SYENITE GRANODIORITE TONALITE	DIORITE	GABBRO	PERIDOTITE PYROXENITE	<i>many felsic varieties peridotite and pyroxenite - common mantle xenoliths in mafic volcanic rocks</i>	crystallization at DEPTH <i>slow cooling, high crystal growth rate, low-moderate nucleation density</i>
	Porphyritic <i>(at least two sizes of crystals) Porphyritic-Phaneritic (all large) Porphyritic-Aphanitic (large & small)</i>	<div style="text-align: center; font-weight: bold; font-size: small;">PORPHYRY</div> PORPHYRITIC RHYOLITE	PORPHYRITIC ANDESITE	PORPHYRITIC BASALT	KOMATIITE KIMBERLITE <i>(not common)</i>	<i>larger crystals (phenocrysts) are surrounded by microscopic crystals (matrix or groundmass)</i>	crystallization at DEPTH (porphyritic-phaneritic) crystallization at DEPTH & on SURFACE (porphyritic-aphanitic) <i>multiple crystallization factors</i>
	Fine-grained (aphanitic) <i>(crystal size <1.0 mm) (crystals too small to see by eye)</i>	RHYOLITE TRACHYTE DACITE	ANDESITE	BASALT	-	<i>detailed description & classification may require a microscope or chemical analysis</i>	eruption & crystallization on SURFACE <i>fast cooling, low crystal growth rate, high nucleation density</i>
	Vesicular <i>(possesses holes) Amygdaloidal (vesicles filled)</i>	PUMICE		SCORIA VESICULAR BASALT	-	<i>pumice floats in water, scoria does not scoria (>30% vesicles) vesicular basalt (<30% vesicles)</i>	eruption & crystallization on SURFACE <i>fast cooling, volatile-rich (gas-rich) magma</i>
	Glassy <i>(no crystals to very few crystals)</i>	VOLCANIC GLASS			-	<i>amount of glass variable obsidian - felsic in composition, but tiny crystals & impurities give it a dark color</i>	eruption on SURFACE <i>extremely fast cooling, minimal crystal growth, very low nucleation density</i>
	Pyroclastic <i>(made of pieces)</i>	CLAST SIZE			COMMENTS	INTERPRETATIONS	
	<i>> 64 mm (bombs & blocks)</i>	<i>2 - 64 mm (lapilli)</i>	<i>< 2 mm (ash)</i>				
	AGGLOMERATE & PYROCLASTIC BRECCIA	LAPILLI TUFF	ASH TUFF	<i>welded tuff pyroclastic deposits may be welded (very hard)</i>	explosive eruption on SURFACE <i>volatile-rich (gas-rich) magma</i>		
VOLCANIC / EXTRUSIVE							