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12.001 Introduction to Geology
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TERMINOLOGY FOR IDENTIFICATION

IGNEOUS GLOSSARY

WHERE THE ROCK COOLED

Intrusive – igneous rock that forced its way in a molten state into the earth's crust but never breached the surface	vs.	Extrusive – igneous rock derived from magma or lava poured out or ejected onto the earth's surface
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MANY MG, FE MINERALS, OR FEW?

Felsic – containing a group of light-colored silicate minerals that are poor in Fe and Mg, such as feldspars and quartz	Intermediate – composition between felsic and mafic	Mafic – containing a group of dark-colored minerals rich in Mg and Fe (such as pyroxene, amphibole, and olivine)	Ultramafic – igneous rock composed entirely of Mg- and Fe-bearing minerals (<i>e.g.</i> dunite)
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TEXTURE: relates to the size of the individual mineral grains in the final, solid rock, usually dependent on how quickly the magma cooled

Groundmass – fine-grained crystalline base of porphyritic rock in which larger crystals are embedded

Phaneritic – individual grains in an igneous rock are large enough to be identified without the aid of a microscope

Aphanitic – individual minerals are present in the igneous rock but in particles so small that they cannot be identified without a microscope

Porphyritic – igneous texture referring to relatively large isolated crystals in a mass of fine texture

Phenocryst – a large, crystal embedded in a finer matrix of an igneous rock

Xenocryst – a crystal foreign to the igneous rock in which it occurs

Pyroclastic – composed chiefly of rock fragments of volcanic origin

Amygdule – a small gas bubble in igneous, especially volcanic, rocks that is subsequently filled with secondary minerals such as zeolite, calcite, or quartz

ROCK NAMES

Defined by lower silica content (see charts)

Basalt – fine-grained, dark, mafic extrusive igneous rock composed of plag, pyroxene and olivine

Gabbro – black, coarse-grained, intrusive igneous rock composed of calcic f-spar and pyroxene

Andesite – fine-grained intermediate extrusive igneous rock, chiefly composed of plag and f-spar

Defined by higher silica content (see charts)

Rhyolite – fine-grained extrusive volcanic rock, similar to granite in composition and usually exhibiting flow lines

Diorite – coarse-grained, dark, intrusive, intermediate igneous rock, rich in plagioclase and having little quartz

Granite – felsic, coarse-grained, intrusive igneous rock composed of quartz, orthoclase f-spar, Na-rich plag and micas

Based on texture, not silica content

Obsidian – usually black or banded, hard volcanic glass that displays shiny, curved surfaces when fractured (conchoidal fracture) and is formed by rapid cooling of lava

Pumice – A form of volcanic glass, usually felsic composition, filled with holes from the escape of gas during quenching and has a very low density

Tuff (welded) – rock composed of compacted volcanic ash varying in size from fine sand to coarse gravel, also called tufa

SEDIMENTARY GLOSSARY

<i>DESCRIPTIVE TERMS</i>	<i>NAMES OF ROCKS</i>
Bedding – characteristic of sedimentary rocks in which parallel planar surfaces separate layers of different grain sizes or compositions deposited at different times	Mudstone – fine-grained, dark gray sedimentary rock, formed from silt and clay and similar to shale but without laminations
Stratification – characteristic layering or bedding of sedimentary rocks	Shale – fissile rock composed of layers of claylike, fine-grained sediments
Crossbedding – inclined beds in a sedimentary rock that were formed at the time of deposition of currents of wind or water in the direction in which the bed slopes downward	Sandstone – a sedimentary rock formed by the consolidation and compaction of sand and held together by a natural cement, such as silica
Matrix – the mass of rock fragments, crystals, or minerals that surrounds the larger clasts	Conglomerate – sedimentary rock, a significant fraction of which is composed of rounded pebbles, cobbles, and boulders (a.k.a clasts)
Clast – a rock fragment or grain resulting from the breakdown of larger rock and can be incorporated into a new rock (ex. Conglomerate)	Limestone – common sedimentary rock consisting mostly of calcium carbonate, CaCO_3 , fizzes in HCl
Sorting – measure of the homogeneity of the sizes of particles in a sedimentary rock	Dolostone – magnesia-rich (primarily dolomite) sedimentary rock resembling limestone, only fizzes in HCl when scratched
	Chert – sedimentary rock made up of chemically or biochemically precipitated silica
	Coal – natural dark brown to black graphite like material formed from the metamorphic product of fossilized plants and consisting of amorphous carbon with various organic and some inorganic compounds
	Breccia – rock composed of sharp-angled fragments embedded in a fine-grained matrix, similar to a conglomerate

METAMORPHIC GLOSSARY

<i>DESCRIPTIVE TERMS</i>	<i>NAMES OF ROCKS</i>
Grade – Term used to designate the extent to which a rock has been metamorphosed	Slate – a fine-grained metamorphic rock that splits into thin, smooth-surfaced layers (a.k.a. slaty cleavage), formed by low grade metamorphism of shale
Protolith – The unmetamorphosed rock from which a metamorphic rock was formed	Phyllite – metamorphic rock intermediate between slate and schist often having a wavy surface and a distinctive micaceous luster, commonly formed from shale or tuff
Pelite – General term for a protolith of sedimentary origins (generally a mudstone or shale; clay-rich bulk composition)	Schist – Metamorphic rock composed of laminated, often flaky parallel layers of chiefly micaceous minerals forming strong foliation
Foliation – Layering of metamorphic rocks caused by the parallel alignment of minerals	Gneiss – A coarse-grained, strongly banded metamorphic rock, usually derived from granite
Porphyroblast – A large crystal in a finer grained matrix in a metamorphic rock	Amphibolite – A mostly nonfoliated metamorphic rock composed chiefly of amphibole with minor plagioclase and little quartz
	Quartzite – A nonfoliated metamorphic rock formed from sandstones rich in quartz sand grains and quartz cement
	Marble – A metamorphic rock formed by alteration of limestone or dolomite, often irregularly colored by impurities