

Metamorphic Rock Characterization and Identification - LECTURE

Texture	Name	Parent rock	Geologic settings	Grade	Description
Foliated	Slate	Shale	B, R, S	Low	Dull; similar to shale, but more dense and breaks into hard flat sheets.
	Phyllite	Shale	B, R, S	Low-med	Similar to slate, but sheets are undulating (wrinkled). Luster is more silky or satiny than slate. Some isolated crystals might be visible.
	Schist	Basalt/gabbro, shale	B, R, S	Med-high	Crystals easily visible throughout rock - usually all micas, giving it a scaly look. Foliation greater than phyllite. Minerals can be garnet + biotite + chlorite + muscovite + quartz + plagioclase + epidote + kyanite. Chlorite disappears and kyanite appears as grade increases.
	Gneiss	Granite/rhyolite, shale	B, R, S	High	Grains medium to coarse; light and dark minerals segregated into bands. Gneissic texture.
	Migmatite	Gneiss	B, R, S	Very high	Contorted layers: gneissic texture that has been folded: some of the layers/bands have melted and crystallized as granite.
Weakly foliated	Greenstone	Basalt/gabbro	B, R, S	Low	Very fine grained (too small to see crystals); light to yellow green (from chlorite, epidote, and/or actinolite).
	Eclogite	Basalt/gabbro	S	High	Red garnets scattered uniformly throughout a finer-grained green groundmass (bright-green pyroxene: omphacite). May have quartz, biotite, or kyanite.
	Serpentinite	Peridotite	H	Med-high	Mostly serpentine. Green, mottled, massive. Smooth, rounded slippery surfaces. Can be black or reddish. Usually displays slickensides
Non foliated	Hornfels	Basalt/gabbro, mudstone	C	All	Smooth (glassy) or sugary microcrystalline, usually dark-colored.
	Marble (CaCO ₃)	Pure limestone (only CaCO ₃)	B, R, S, C	All	Sugary, sandy, or crystalline; calcite or dolomite (form of calcite with Mg) crystals fused together. White to pink. Might have dark streaks.
	Quartzite (SiO ₂)	Chert (only SiO ₂) Quartz Sandstone	B, R, S, C	All	Sugary, sandy, or crystalline; can sometimes see quartz sand grains fused together; grains won't rub off like sandstone.
	Skarn	Impure limestone or chert, arkose, greywacke...	C	All	Crystalline; usually with large crystals, including calcite, quartz, garnet, epidote, pyroxene and other rare minerals.

***Remember: use mineral ID skills to help distinguish among some of these!**

Epidote - Green, striated prisms, similar in shape to hornblende. **Kyanite** - Blue or grey thin, long blade. **Chlorite** - Green sheet silicate, like a green biotite. **Actinolite** - Green chain silicate, like a green, needle-like hornblende.