Generalized Rock Identification Chart For Common SEDIMENTARY ROCKS

TEXTURE	CLAST / CRYSTAL DESCRIPTION				ROCK NAME		DESCRIPTION	DEPOSITIONAL ENVIRONMENTS
	Composition	Size	Rounding	Sorting				
Clastic (made of pieces) — **Detrital** (made of inorganic pieces)	*mineral grains (quartz, feldspar, mica, etc.)* *lithics (rock fragments)*	*gravel (>2 mm)*	*angular*	*poorly sorted*	**SEDIMENTARY BRECCIA**		*angular clasts represent shorter transport distance*	*mountain streams, glacier, alluvial fan, reefs*
			rounded	*poorly sorted*	**CONGLOMERATE**		*rounded clasts represent longer transport distance or high-energy current*	*alluvial fan, stream channel, beach*
		sand (2 to 1/16 mm)	*well rounded (quartz arenite) to angular (arkose)*	*well sorted (quartz arenite) to poorly sorted (arkose)*	**SANDSTONE** *(>85% sand-sized particles)*		*gritty or "sandpaper" feel, sedimentary structures common (ripple marks, cross beds, graded beds)* ***Quartz Arenite*** *- mostly quartz (>90%), clean, "mature" sandstone, light color* ***Feldspathic Arenite (Arkose)*** *- mostly feldspar (>25%), "immature" sandstone, orange to reddish color* ***Wacke*** *- >15% mud-sized matrix*	***Quartz Arenite*** *desert dune, beach* ***Feldspathic Arenite*** *granitic terrains, alluvial fan, stream channel* ***Wacke*** *deep marine, deep lake*
	clay minerals (illite, smectite, kaolinite, etc.) *iron oxides*	*mud (<1/16 mm)*	-	*well sorted*	**MUDSTONE (SHALE)** *(>50% mud-sized particles)*		*many colors (red, gray, green-gray, black), sedimentary structures common (ripple marks, mud cracks, fossils)* ***Shale*** *= fissile mudstone (splits easily)* ***Siltstone*** *(1/16 to 1/256 mm particles)* ***Claystone*** *(<1/256 mm particles)*	*river channel, river flood plain, river delta, lake, playa lake shallow to deep marine*
Chemical (crystals formed by inorganic precipitation) — **Biochemical** (made of the shells of organisms)	*shells & shell fragments ($CaCO_3$)*	>2 mm	*angular*	*poorly sorted*	*carbonate rock*	**COQUINA**	*weakly cemented shells and shell fragments sometimes termed "bioclastic"*	*beach, reef, shallow to deep marine*
		<1/16 mm	-	*well sorted*		**CHALK**		
	calcite ($CaCO_3$)	*coarse-grained to microcrystalline*	*n / a*	*n / a*		**LIMESTONE**	*H = 3 - easily scratched with a steel nail, reacts readily with HCl , rhombic cleavage* ***Micrite*** ***Travertine***	*shallow to deep marine, lagoon, playa lake, groundwater*
	dolomite ($CaMg(CO_3)_2$)		*n / a*	*n / a*		**DOLOSTONE**	*similar to limestone except only weakly reacts with HCl (when powdered), formed from alteration of limestone*	*shallow to deep marine, lagoon, playa lake, groundwater*
	silica (SiO_2)	*microcrystalline*	*n / a*	*n / a*	**CHERT**		*very hard (H = 7) - not scratched by steel, fractures on curved surfaces, variable color (dark = flint)*	*deep marine (bedded), groundwater (nodular), hot springs*
	gypsum ($CaSO_4 * 2H_2O$)	*extremely variable*	*n / a*	*n / a*	*evaporite*	**ROCK GYPSUM**	*soft (H = 2) - easily scratched with a fingernail, many varieties (e.g., bladed, fibrous, etc.)*	*lagoon, playa lake, sabkha groundwater*
	halite (NaCl)	*variable*	*n / a*	*n / a*		**ROCK SALT**	*soft (H = 2.5) - scratched with a copper penny, salty taste, may form cubic crystals*	*playa lake, sabkha*
Organic	*organic remains (carbon-rich)*	*n / a*	*n / a*	*n / a*	**COAL**		*brown to black, lightweight, brittle, soft (H < 2.5), several varieties (based on %C)* ***Peat*** ***Lignite*** ***Bituminous***	*swamp, flood plain*