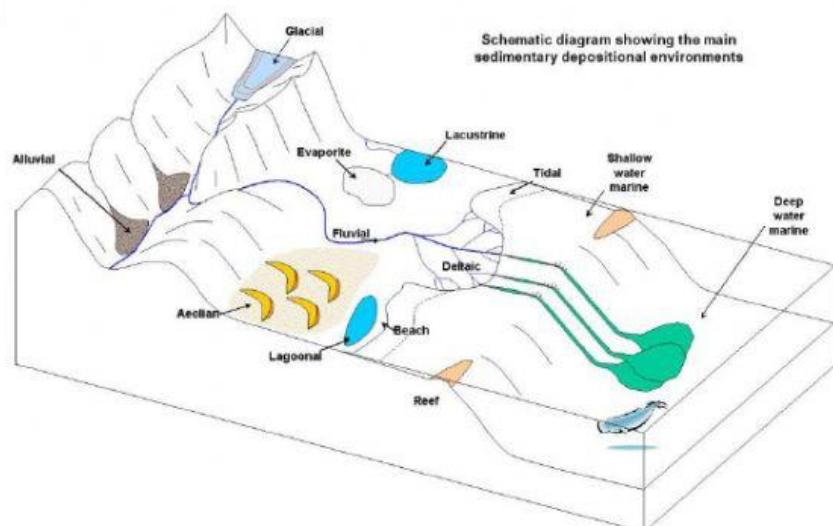


4.12 Sedimentary Rock Classification

predominantly coarse-grained: 2 mm and larger	
Conglomerate <i>Rounded clasts</i>	Breccia <i>Angular clasts</i>
	
Photo: James St. John CC BY 2.0	Photo: R. Weller/ Cochise College
predominantly medium-grained: 63 µm to 2 mm	
Sandstone	
<i>Arenite: mostly sand grains and cement</i>	<i>Wacke: more than 15% fine-grained matrix (silt, clay)</i>
	
Quartz arenite (quartz sandstone) more than 90% quartz	Feldspathic arenite (arkose) more than 10% feldspar
Photos: R. Weller/ Cochise College	Photo: R. Weller/ Cochise College
fine-grained: less than 63 µm	
Shale <i>Fine layering, fissile (breaks into thin layers)</i>	Mudstone <i>No layering (breaks into blocks)</i>
	
Photo: R. Weller/ Cochise College	



		Composition	Texture and Properties	
Detrital Sedimentary Rocks				
	Shale	Fine rock fragments smaller than 1/16 mm	Clay-sized particles that cannot be differentiated by the naked eye. May be fissile, splits into distinctive layers	
	Sandstone	Medium rock fragments between 1/16 mm and 2 mm	Composed of sand-sized rock fragments. The fragments can vary in mineralogy, including mainly quartz, along with feldspar, and clay	
	Breccia	Coarse, angular rock fragments ranging in size, with the largest >2 mm	Poorly sorted mixture of rock fragments, including angular or sub-angular pebbles	
	Conglomerate	Coarse, rounded rock fragments ranging in size, with the largest >2 mm	Poorly sorted mixture of rock fragments, including rounded or sub-rounded pebbles	
Chemical and Biochemical Rocks				
	Limestone	Calcite crystals or microcrystalline calcite	Masses of large, interlocking calcite crystals or microscopic crystals not visible with the naked eye	
	Fossiliferous Limestone	Calcareous skeletal fragments of coral or shells	Consisting of fossils or fossil fragments	
	Oolitic Limestone	Calcite concretions, formed around sand or shell fragments	Aggregates of oolites, small spherical calcite concretions	
	Chert	Cryptocrystalline Quartz	Microcrystalline polymorphs of quartz, formed by the recrystallization of siliceous skeletons. Conchoidal fracturing; scratches glass	
	Rock Salt	Halite and sylvite crystals	Fine- to coarse-grained crystalline structure, with a salty taste and cubic cleavage	

Inorganic Clastic Sedimentary Rocks						
Texture	Grain size	Composition	Comments	Rock name	Map symbol	Picture
Clastic (fragmental)	Pebbles, cobbles, and/or boulders in a matrix of sand, silt and/or clay	Mostly quartz, feldspar, and clay minerals; may contain fragments of other rocks and minerals	Rounded fragments	Conglomerate		
	Sand (0.063 to 2 mm)		Angular fragments	Breccia		
	Silt (0.039 to 0.063 mm)		Fine to coarse in a variety of colors	Sandstone		
	Clay (<0.0039 mm)		Very fine grained, massive, usually dark	Siltstone		
			Compact, brittle, usually dark	Shale		
Chemically and/or Organically Formed Sedimentary Rocks						
Texture	Grain size	Composition	Comments	Rock name	Map symbol	Picture
Crystalline	Fine to coarse grains	Quartz	Chemical precipitates and evaporites	Chert		
		Halite		Rock salt		
		Gypsum		Rock gypsum		
		Dolomite		Dolostone*		
Crystalline or bioclastic	Microscopic to very coarse	Calcite	Biologic precipitates or cemented shell fragments	Limestone*		
Bioclastic	Clay (< 0.0039 mm)	Carbon	Black, compacted plant remains	Coal		
Bioclastic	Clay (< 0.0039 mm)	Clay and kerogen	Dark, may have oily smell or burn	Oil shale		

Other types of sandstone are arkose and graywacke. Varieties of limestone include chalk, coquina, micrite, travertine, oolite, tufa, and fossiliferous limestone.

* These react with dilute acid.

1. Describe the three main types of sedimentary rocks.
2. How can different types of limestone be bio clastic, chemical and organic?

3. List sedimentary rock types by grain size, from small to large

1. List the three types of sedimentary rocks.

2. Where and how are clastic rocks found?

3. How do clastic rocks form?
4. Contrast conglomerates and breccia rocks.
5. What can be found in clastic rocks?
6. Explain the difference between layers and bands.

7. What can we learn from sedimentary rocks?

8. How do chemical rocks form?

9. What are bio clastic rocks?

10. List the two types of biolistic rocks.