

4 Rocks

4.1 Igneous Rocks

Igneous rocks form when melted material, magma, cools and crystalizes. The rate at which it cools affects its texture (crystal size). Magma that cools quickly has small crystals —fine texture. Quick cooling occurs whe magma is ejected onto the surface of continents or under the oceans, forming *extrusive* rocks. Magma that crystallizes more slowly inside the earth—an *intrusive* rock—has time for larger crystals to grow into a coarse-grained rock.

To classify an igneous rock, follow these steps:

1. Determine its texture. Is it coarse-grained or fine-grained? (Rocks are called *porphyritic* if they have some coarse grains surrounded by fine grains.) We'll also look at a glassy rock and a vesicular (foamy) rock.
2. Determine if it's felsic, intermediate, or mafic, based mainly on light-to-dark color.
3. We will construct a chart together as we learn the rock names.

Igneous Rock Identification Sheet			
Item Number Number	Texture Texture	Color Index	Name Name
18			
22			
27			
28			
29			
30			
32			
53			

4.2 Metamorphic Rocks

Metamorphic rocks are formed by high temperature and pressure but no melting. The previous rock that is transformed affects the composition, as does the conversion of clays to micas. We will construct a table together in class.

Item Number	Description	Distinctive Features	Rock Name
20			
23			
24			
26			
51			

4.3 Sedimentary Rocks

Sedimentary rocks reflect the distance these sediments forming them have travelled plus the sediment size, itself a reflection of the water velocity transporting the sediments. Fast-moving water transports larger sediments.

Carbonate rocks (limestone) is a special case, because much of it is formed in place from once-living creatures.

Item Number	Composition	Texture/ Distinctive properties	Rock Name
19			
21			
25			
30			
31			

Out-of-Class Assignment

In class, I referred to rocks as the words that we use to construct the story of the Earth. What are three things we can learn from a rock that tell us about the past?

1.

2.

3.