

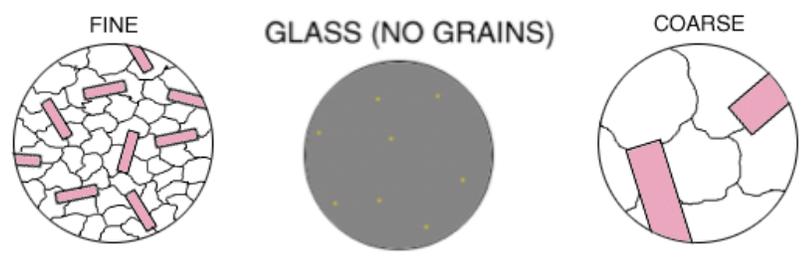
Purpose: Predict the size of crystals in a cooling mixture of molten substances.

Guiding Questions: How is cooling time related to the size of crystals?

Lesson 13 Preview

In this lesson you will observe igneous rocks, rock that is formed from the cooling of magma and lava. You will make general observations about five igneous rock samples. You will classify the rocks on the basis of their observable color, mineral composition, and texture. You will discuss your classification with the class. You will explore the rates of crystallization and hypothesize how three of these rocks investigated in the lesson may have formed.

- Igneous rock forms when molten rock (magma or liquid) freezes and becomes solid. There are several characteristics that affect what type of rock forms from this process: the elements found in the molten rock, the presence of water, the location of where the rock forms, and how long it takes the molten material to cool.
- In this getting started, you will predict a connection between cooling time and crystal size. The crystals, or grains, are the pieces of minerals that make up the igneous rock. Below is a data table of images. Under each image, make a prediction of what type of cooling rate you think will produce them and then justify your choice. For the purpose of this activity, you can make the cooling rates be fast (cools nearly instantly), medium (not fast but not slow), or slow.



Predicted Cooling Rate:			
Justification:			

Results.

3. In the space below, draw a sketch of each of the cooled mixtures. Then, complete the data table below with observations of each mixture.

Freezer Mixture	Countertop Mixture	Incubator Mixture

Location	Cooling Time*	Crystal Size**	General Description
Freezer			
Counter Top			
Incubator			

* Choose: Slow, medium, fast

** Choose: No visible grain, fine grain, coarse grain

Analysis

4. What is the relationship between cooling time and crystal size?
