



# Minerals

Properties of Minerals  
How Minerals Form  
Using Mineral Resources



# Properties of Minerals

How is a mineral?

- A mineral is a naturally occurring, inorganic solid that has a crystal structure and a definite chemical composition.
  - Inorganic: not formed from living things or the remains of living things
  - Crystal: a solid in which the atoms are arranged in a pattern that repeats again and again



# Properties of Minerals

How are minerals identified?

- Each mineral has characteristic properties that can be used to identify it
  - Streak: the color of a mineral's powder
  - Luster: the way a mineral reflects light from its surface
  - Mohs hardness scale: a scale ranking ten minerals from softest to hardest
  - Cleavage: a mineral's ability to split easily along flat surfaces



# How Minerals Form

How do minerals form from magma and lava?

- Minerals form as hot magma cools inside the crust, or as lava hardens on the surface.

When these liquids cool to a solid state, they form crystals.

- Geode: a hollow rock inside which mineral crystals have grown
- Crystallization: the process by which atoms are arranged to form a material with a crystal structure



# How Minerals Form

How do minerals form from water solutions?

- When elements and compounds that are dissolved in water leave a solution, crystallization occurs.
  - Solution: a mixture in which one substance is dissolved in another
  - Vein: a narrow deposit of a mineral that is sharply different from the surrounding rock



# Using Mineral Resources

How are minerals used?

- Minerals are the source of gemstones, metals, and a variety of materials used to make many products.
  - Gemstones: a hard, colorful mineral that has a brilliant or glassy luster and is valued for its appearance



# Using Mineral Resources

How are ores processed to obtain metals?

- To produce metal from a mineral, a rock containing the mineral must be located through prospecting and mined, or removed from the ground. Then the rock must be processed to extract the metal.
  - Smelting: the process by which ore is melted to separate the useful metal from other elements
  - Alloy: a solid mixture of two or more elements, at least one of which is a metal