

Objective: Know the characteristics of minerals and what minerals are

Minerals have four characteristics

Minerals are the _____ of our world. They are a major component in most _____ and are used in our everyday lives. In order for a substance to be a mineral, it must:

1. Form in _____
2. Be a _____
3. Have a definite _____ and
4. Have a _____.

There is a fifth characteristic that is often mentioned: minerals must be _____. That is, they cannot come from a living organism. Rocks are not considered minerals because rocks only meet two of these characteristics: rocks are _____ and are _____.

All minerals are solid

A substance must be solid to be a mineral. A solid is anything that has a _____ and rigid _____. This means its volume stays the same and its shape is not easily changed (unlike liquids and gasses which take the shape of the container they are in).

All minerals are formed in nature

A substance must be formed by _____. These process do not involve _____. There are several ways minerals form in nature, but we will talk about those later!

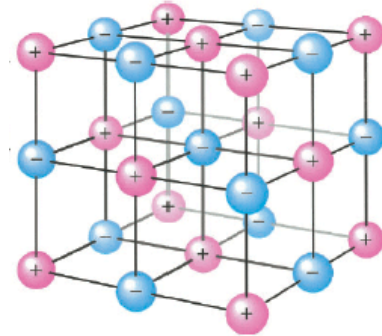
Definite chemical composition

A substance must have a definite chemical composition to be a mineral. This means it is made of specific _____ in specific _____. Most minerals are _____ consisting of several elements. For

example, the mineral halite is made of two elements: sodium and chlorine. For every atom of chlorine there is one atom of sodium. The proportion is _____. We will also learn that the way the atoms are _____, or joined together, is important. Many properties of minerals are related to how _____ or _____ the bonds are.

Crystal Structure

If you look closely at a grain of halite, you'll notice that it is very cubic in shape. This is the result of how the _____ are arranged. A crystal is a _____ in which atoms are arranged in an _____, _____, _____ pattern. To the right is a picture of the atomic structure of halite.



It is possible for a mineral to have the same chemical composition as another mineral. However, it is the _____ that makes them different minerals. For example, both diamond and graphite have the same chemical composition but have different crystal structures. This difference results in two very different minerals!

Try it out

Answer the following questions using what you learned in the notes.

1. How are rocks different from minerals? _____

2. What is a solid? _____

3. What is a definite chemical composition? _____
