

# 4.15 What Minerals Would You Use to Build a House?

MINERALS AND ROCKS ARE USED to make many objects around us. Minerals, rocks, and products derived from them compose our homes, cars, streets, buildings, electrical grid, and water-supply system. If something is not grown, it comes from rocks, minerals, or petroleum. In this exercise, you will decide what minerals are used in materials to build the important parts of a house.

## Goals of This Exercise:

- Make some observations about minerals based on their appearance in a photograph or from samples provided by your instructor.
- Identify minerals based on their appearance and diagnostic properties.
- Determine, based on each mineral's characteristics and how it is commonly used, which mineral(s) to use for each part of a house.

## A Describe and Identify These Minerals

Examine each mineral in the photographs below or from samples provided by your instructor. For each mineral, make observations, such as crystal form, luster, color, and cleavage. Write these observations on the accompanying worksheet or a sheet of paper. Then, read the accompanying text blocks that provide additional information about each mineral. If you have access to mineral samples, perform tests, such as determining hardness, on each mineral. For each mineral, the worksheet contains additional important information that will help in identification.

04.15.a1



This six-sided mineral has a hardness of 7 and a conchoidal fracture instead of cleavage. It does not effervesce.

04.15.a2



This mineral is partially transparent, has a hardness of 3, cleaves into rhombs, and effervesces with dilute HCl.

04.15.a3



This mineral is very soft, feels sticky when wet, and does not effervesce. It contains very fine material. It is not talc or graphite.

Each of these spherical masses consists of a number of intergrown crystals of a cream-colored to partially transparent mineral. The mineral can be scratched with a fingernail and does not effervesce. ▶



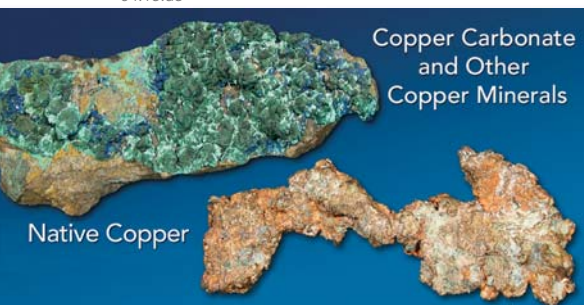
04.15.a4



04.15.a5

◀ This mineral has one direction of cleavage and flakes into thin sheets. It is nonmagnetic and does not effervesce. When held up to the light, thin sheets are partially transparent and have a silvery-gray color.

04.15.a6



Copper Carbonate and Other Copper Minerals

Native Copper

◀ These blue-green and copper-colored minerals contain copper. They include copper-carbonate minerals, such as malachite (green) and azurite (blue). The metallic material is native copper. These minerals were not discussed in detail.

This mineral has a metallic luster and a distinctive red streak. It is nonmagnetic and in some samples has a reddish tint. ▶

04.15.a7



## B Devise Ways to Build a House Using Minerals and Mineral Products

This illustration shows parts of a house for which you need to find a mineral or mineral-derived product. Using the minerals that you identified in part A along with information about the uses of minerals in the chapter and in the worksheet, consider options for which mineral or mineral product you will use to construct different parts of the house. Identify the mineral by name and list the properties this mineral had that were useful for the house.

**Roof**—A roof is a barrier to rain and snow. Some type of mineral product is used to cover the plywood sheets on the roof.

Mineral Name and Useful Mineral Properties:

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**Insulation**—To keep the house at a comfortable temperature, a material that conducts heat slowly is placed outside, inside, or within the exterior walls. Commonly, this material is fiberglass, which is produced by melting a common and inexpensive silicate rock and turning the melt into glass fibers.

Mineral Name and Useful Mineral Properties:

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**Exterior Walls**—The outside walls act as a barrier to rain and snow and support the roof and the rest of the structure.

Mineral Name and Useful Mineral Properties:

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**Windows**—These let in visible light and other solar energy and provide visibility to the outside.

Mineral Name and Useful Mineral Properties:

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**Electrical Wiring**—A material that conducts electricity is used for electrical wiring. Most wire is made from a metal because metals are conductive and ductile (can be shaped easily into wire).

Mineral Name and Useful Mineral Properties:

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**Plumbing**—Metal pipes are commonly used to carry freshwater into the house and from one part of the house to another.

Mineral Name and Useful Mineral Properties:

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**Cement Slab**—Cement is used to make a fairly smooth, stable base for floor tile, wood, or carpet. It is also used as a foundation to support the walls.

Mineral Name and Useful Mineral Properties:

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**Inside of Walls**—Interior walls separate the house into rooms but commonly do not support the structure. They typically have vertical beams (called studs) of a strong material that supports sheets of wallboard that form the actual wall. The covering sheets should be soft enough so that holes can be cut for electrical outlets and switches.

Mineral Name and Useful Mineral Properties:

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04.15.b1