

MINERALS OF EARTH'S CRUST

What are minerals?

Minerals are solid elements formed naturally in the Earth's surface. Every mineral has a unique chemical composition – a mix of the chemicals that formed it. Rocks are made up of minerals, sometimes more than one kind of mineral!

Lesson Checkpoint: Can minerals be man-made?

Minerals come in different shapes and sizes

Shapes you most likely have learned about in geometry can be seen in many minerals too.

Different types of minerals grow in different shapes if they form from magma cooling.

Some minerals have smooth, flat planes called crystal faces if they form from magma cooling.



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Examples

Salt crystals are cubic.

Quartz crystals are hexagonal—six-sided.

How are minerals identified?

Minerals can be identified by several physical properties, such as hardness, streak color, luster, and the color of the mineral itself, just to name a few.

Let's take a closer look at these properties:

What exactly is **hardness**? The hardness of a mineral refers to how easily (or not so easily) a mineral can be scratched. This hardness is measured on a scale which ranks the hardness of minerals from 1-10. A measurement of 1 means the mineral is extremely easy to scratch and 10 means it is extremely HARD! This scale is named the **Moh's Hardness Scale**.

Minerals that are extremely easy to scratch, such as talc, are ranked as a 1. The hardest known mineral is given a 10 – that’s a diamond!

MINERAL HARDNESS

Moh's Hardness Scale	Approximate Hardness of Common Objects
Talc	1
Gypsum	2
Calcite	3
Fluorite	4
Apatite	5
Feldspar	6
Quartz	Fingernail (2.5)
Topaz	Copper penny (3.5)
Corundum	Iron nail (4.5)
Diamond	Glass (5.5)
	Steel file (6.5)


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Lesson Checkpoint: What is the hardest ranking on the Moh's Hardness Scale?

Using the above chart as a reference: If you have found a mineral that you can scratch with your fingernail, what ranking would the mineral receive on the Moh's Hardness Scale?

- a) 3.5
- b) 2.5
- c) 5
- d) 1

If you answered **b) 2.5**, you are correct!!

More Mineral Properties

Streak color refers to the color of the streak the mineral leaves when scraped against a white surface. Careful: the color of rock does not determine streak color. Sometimes a red mineral will leave a green streak!

Luster refers to how light is reflected off the surface of a mineral. There are two main types of luster: metallic and nonmetallic.

Color is just that...the color of the mineral. Many minerals come in more than one color. For example, fluorite is not always white...it can be clear, white, yellow, blue, purple, or even green. For this reason, you can't easily tell the type of a mineral just by looking at its color.

Lesson Checkpoint: Does the color of the rock determine its streak color?

Mineral Chart

You can organize the information you know about minerals you are studying by using a chart similar to the one below. This chart includes hardness, streak color, luster, and color...your chart can include the same properties or even more properties.

Mineral					
fluorite					
halite					
quartz					



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Mineral	hardness	Streak Color	luster	color
calcite	3	white	glassy	white
talc	1	white	pearl	white
sulfur	2	white	dull	bright yellow – yellow brown

What mineral has a hardness ranking of 2.5?

Answer: halite

Which mineral has a dull luster and can be yellow in color?

Answer: sulfur

Which mineral is white in color, has a white color streak, and has a hardness ranking of 1?

Answer: talc

Minerals have many uses

Here is a list of some common minerals and where they are used (including some mineral we use every day):

- quartz is used in glass
- graphite is used in pencil lead
- fluorite is used in toothpaste
- hematite is used in coloring
- halite is used in salt
- chromite is used in stainless steel
- diamond is used in engagement rings ☺

Lesson Checkpoint: Name one mineral and its use.



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