



DIY Mineral Identification Kit

What you need

- Magnifying glass (replicates a geologist's hand lens)
- Piece of copper pipe or a penny
- Iron nail
- Your own fingernail
- Blank piece of 8.5x11 paper & a pencil
- Moh's Scale of Relative Hardness (see next page)
- Mineral ID Key (see next page)
- Small mirror (like a makeup compact mirror) OR glass from an unused picture frame
- Unglazed underside of a white porcelain bowl/vase (replicates a geologist's streak plate)
- 1 teaspoon of white distilled vinegar (alternative to dilute hydrochloric acid)
- Mystery mineral samples

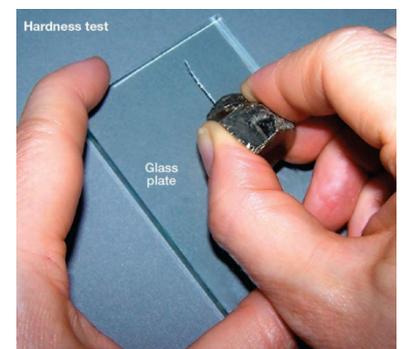
Follow along to make your own kit & learn how to identify different minerals, which are the building blocks of rocks!

Preparation

1. Gather the mineral samples to be identified: You can either get different samples from the area around your home, or you can order a "mystery mineral grab bag" online.
2. Lay your samples out on a flat surface and assign each one a specimen number.
3. On the piece of paper, create a chart that has six columns. The first column is for specimen numbers. The second column is for color. The third column is for luster. The fourth is for streak color. The fifth is for relative hardness. The sixth is for noting any reaction to acid (the vinegar).

What to do

1. Minerals are different *colors*. In the color column of your chart, write down the color of each specimen.
2. Minerals reflect light in various ways. A mineral's *luster* is the way light interacts with its surface. Using the magnifying glass, observe each specimen under a lamp and note its luster – does the mineral look metallic or non-metallic (glassy, earthy, pearly, oily, or silky)?
3. A mineral's *streak* is its color in powder form. To create a streak, rub each mineral against the underside of a white porcelain bowl or vase and see what color is produced. Remember that lighter minerals might produce a white streak that will be difficult to see on the white porcelain. Write down the color of the streak in your chart.
4. One useful characteristic for identifying minerals is their *relative hardness*, which is the ability to scratch or be scratched by an object of known hardness. Refer to Moh's Scale to learn the hardness of your test items (piece of copper or penny, iron nail, mirror or glass, as well as your own fingernail). Being careful to do this on a table or other flat surface, see which minerals can be scratched by your fingernail. Then see if any minerals can scratch the copper/penny. Next, see if the iron nail scratches any minerals. Then try pressing minerals hard against the mirror or glass to make a scratch. Record your observations.
5. Using the iron nail, make a scratch in any non-metallic minerals and then drip a little vinegar into the scratch mark. The magnifying glass will help you see if the *mineral reacts to acid*: the reaction is fizzing bubbles. Note the presence or absence of reaction on your chart. (Note: We do not recommend putting acid on metallic minerals... it will make a nasty smell!!)
6. Compare your chart against the Mineral ID Key. Use the process of elimination to determine which minerals you have!





MOH'S SCALE OF RELATIVE HARDNESS

Mineral	Hardness	Common object
Diamond	10	
Corundum	9	
Topaz	8	
Quartz	7	
Feldspar	6	Steel file (6.5)
Apatite	5	Glass (5.5)
Fluorite	4	Iron nail (4.5)
Calcite	3	Copper penny (3)
Gypsum	2	Fingernail (2.5)
Talc	1	

MINERAL IDENTIFICATION KEY*

Color	Luster	Streak	Hardness	Other Notes (✓ = Reacts to Acid)	Mineral Name
Light green, light blue, yellow, purple	Glassy	White	4	Often fluorescent under black light	Fluorite
White, cream, tan, salmon pink	Glassy	White	6		Potassium Feldspar
Red, brown, rusty yellow	Earthy non-metallic	Dark red (rusty)	5.5-6		Hematite
Silvery brown	Metallic	Dark red (rusty)	5.5-6	Silvery dust is magnetic	Magnetic Hematite
Brass yellow, brown	Metallic	Dark brown	6-6.5	Brittle (breaks into many pieces if dropped)	Pyrite
Colorless, white, pink, purple, yellow	Glassy	None	7	Prismatic crystal shape	Quartz (milky, rose, amethyst, citrine)
White, yellow, light blue	Glassy or pearly	White	3	Sometimes fluorescent ✓ reacts to acid	Calcite
Colorless, yellow, light brown	Glassy or pearly	Light brown	2.5	Occurs in thin, plastic-like sheets	Muscovite mica
Black, rusty black	Can be metallic, or earthy non-metallic if weathered	Black	6	Magnetic	Magnetite
White, gray, yellow	Pearly	White	2	Can be powdery	Gypsum: Alabaster
White, gray	Silky or oily	White	2	Fibrous crystal shape	Gypsum: Selenite
Dark green, black	Can be glassy, or earthy if weathered	Greenish white	6	Prismatic crystal shape	Pyroxene
White, gray, light green	Pearly or oily	White	1	Greasy to touch	Talc
Brown, black	Pearly	Light brown	2.5	Occurs in thin, plastic-like sheets	Biotite mica
Black, gray	Can be metallic, or earthy non-metallic if weathered	Dark gray	1	Greasy to touch	Graphite

*Key is not comprehensive as more than 5,400 different minerals have been identified on Earth! However, only about 30 are considered common.