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# MINERALS

# Activity # 1 – Finding Minerals

**Recommended for grades 3-6. This activity is passive and long term...takes a week to complete! Can be done inside or outside. Adult supervision is recommended.**

We got the idea from this video: https://www.youtube.com/watch?v=meEiToTMpFs

**Purpose:** Discover hidden minerals and gems within a rock

**Materials:**

- 2-5 small rocks of interest
- A bucket or container (does not need a lid)
- Table vinegar
- Patience!

**How it Works:**

**Step 1:** Choose a couple of rocks that you like. Ideally, the rocks have a couple of different coloured streaks through them indicating a strong presence of multiple minerals. Small samples are ideal for using less vinegar.

**Step 2:** Place the rocks in your bucket or container and fill with vinegar until they are just covered. Any common table vinegar that has a 5% acidity level will work. The vinegar will dissolve the softer elements of the rock, exposing more of the hidden minerals within.

**Step 3:** Copy out the chart below:

| Sample #: | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |

**Step 4:** Check on the rocks once every day or two. How much has dissolved? Can you see any more of a certain mineral compared to what you could see the day before? Are any minerals coming loose? Use the chart you created to record your findings.

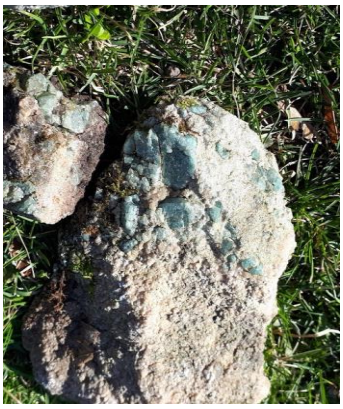
**Step 5:** For best results, replenish the vinegar every two-three days. *(It is recommended to dump the vinegar through a strainer down the drain. Dumping it on the ground will kill plants, dumping it without the strainer could clog the pipes*.)

Note: *Rocks should stay submerged in the vinegar as much as possible so practice patience and don't take them out too often!*

**Step 6:** Check out your minerals! You can stop the experiment at any time when you are happy with the shape and appearance of the rocks, or with the amount of minerals you have exposed.

This is what it looked like when we tried it:

Day 1 Day 3 Day 6



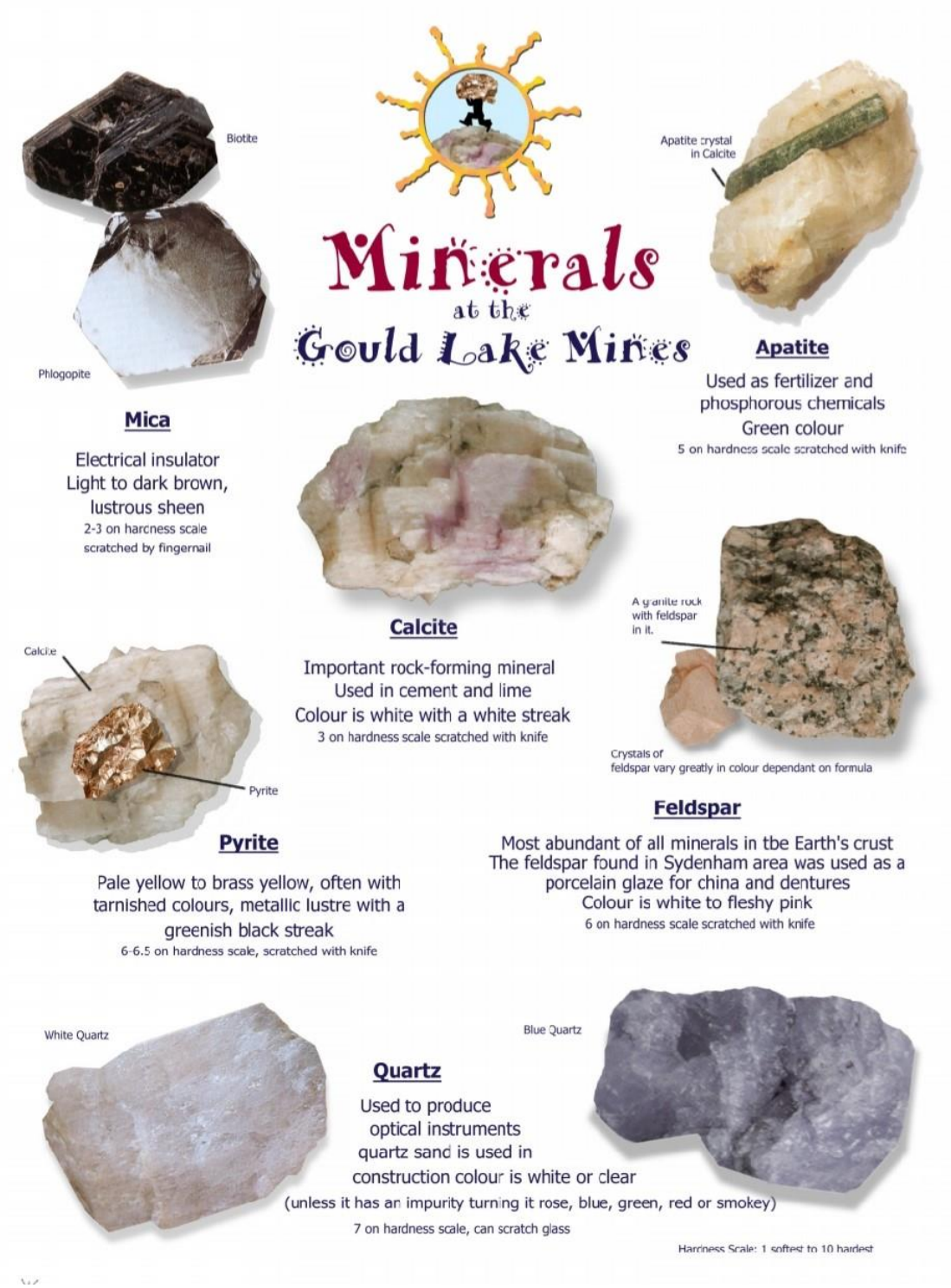
*Note: some samples didn't show much change, others dissolved until bits of mineral were breaking off! It depends on the types of rock you try.

**Conclusion:**

Now that you have exposed different types of minerals that were in the rocks you chose, **try out the other 4 activities** to see if you can identify the type of minerals you have. The other activities are:

- Minerals 2 - Hardness
- Minerals 3 - Luster
- Minerals 4 - Breakage
- Minerals 5 – Streak test

**Resources: Common Local Minerals**



# Some Common Minerals

| Mineral | Hardness | Colour(s) | Lustre | Transparency | Streak | Specific Gravity | Notes |
|---|---|---|---|---|---|---|---|
| Talc | 1.0 | white, gray, pale green | earthy, pearly | translucent to opaque | white | 2.7-2.8 | Feels greasy. Can be cut easily. Used for talcum powder, face powder, and carvings. |
| Gypsum | 2.0 | colourless, white, gray | glassy, silky | opaque | white | 2.3 | Used to make plaster of Paris and as a building material. |
| Biotite Mica | 2.0-2.5 | black, brown, green | glassy to pearly | transparent or translucent | white, gray | 2.7-3.1 | Thin, elastic sheets. |
| Muscovite Mica | 2.0-2.5 | colourless, gray, white, yellow | glassy to pearly | transparent | white | 2.7-3.0 | Thin, elastic sheets. |
| Halite (Rocksalt) | 2.5 | when pure, colourless or white; when impure, red, blue, or purple | glassy | transparent to translucent | white | 2.1-2.6 | Salty taste. Fractures. |
| Gold | 2.5-3.0 | yellow | metallic | opaque | yellow | 16.0-19.0 | Can be hammered flat or pulled out into thin strips. Excellent conductor of electricity. |
| Serpentine | 2.4-4.0 | green, white, brown, red, yellow | silky, waxy, greasy | translucent to opaque | greenish-black | 2.2-2.6 | No crystals. Fractures. |
| Calcite | 3.0 | usually colourless, tinted by impurities | glassy to earthy | transparent, opaque | colourless | 2.7 | Fizzes in acid (e.g. vinegar, lemon juice). Often chalky-white in rocks. Cleaves. |
| Apatite | 5.0 | white to brown, green, yellow, or violet | glassy | translucent to opaque | colourless | 2.7 | Looks like many other minerals. Human bones and teeth are made of apatite. Fractures. |
| Augite | 5.0-6.0 | dark green to black | glassy | opaque | grayish-green | 3.2-3.4 | Cleaves perfectly. Short, stubby crystals. |
| Diopside | 5.0-6.0 | white, light green, dark green, brown | glassy | translucent to transparent | white | 3.0-3.5 | Cleaves perfectly. |
| Hornblende | 5.0-6.0 | green, bluish-green to greenish-black | glassy | opaque, but translucent to transparent on thin edges | colourless, gray, gray-green, brown | 2.0-3.4 | Very common. Cleaves. |
| Orthoclase Feldspar | 6.0 | white, pink, gray, red | glassy to pearly | translucent | white | 2.4-2.7 | Large, hard. When found in rock, appears dull. Cleaves. |
| Pyroxene | 6.0 | olive green, brown, white, black, gray | glassy to pearly | translucent to opaque | grayish-green to white | 3.1-3.5 | Short, stubby crystals. Like Amphibole. |
| Amphibole | 6.0 | dark green, brown, black | glassy | translucent to opaque | dark green, brown | 2.9-3.5 | Long, narrow crystals. Like Pyroxene. |
| Pyrite | 6.0-6.5 | pale brass-yellow | metallic | opaque | greenish- or brownish-black | 4.5-4.6 | Also known as "fool's gold". Fractures. Often found with other metallic minerals (e.g. zinc, lead, gold). |
| Garnet | 6.5-7.5 | shades of red-brown to near black | glassy | transparent | colourless | 3.5-4.3 | Fractures. |
| Quartz | 7.0 | usually colourless, or any colour | glassy, waxy | transparent to opaque | white | 2.7 | Very common. Does not fizz in acid. Fractures. |
| Olivine | 7.0 | yellow-green to green-yellow | glassy | translucent | pale green, white | 3.2-3.6 | Granular, sugary, glassy grains. Weathers easily; leaves rock brown with iron oxide stains. |