# List of Minerals for the Online Mineral Labs

Earth Science Extras
by Russ Colson

The online mineral tests will provide a video of minerals showing a variety of tests (e.g. for hardness, effervescence, density, streak, cleavage, color). To identify the minerals, you will need to be very familiar with the characteristic properties of each mineral and particularly the key properties that allow the mineral to be distinguished from other, visually similar minerals.

To prepare for this, I recommend that you look up each of the minerals online and read and think about them. Particularly, read with the intention of figuring out which properties can distinguish between otherwise very similar minerals.

I provide below a short list of some of the characteristic properties of these minerals as a place to start. Another place to start is to search on "mineral identification key" to get charts and characteristics to help you identify minerals according to properties such as luster, streak, hardness, etc.

**Oxides (and hydroxides):**

- Cuprite (characteristic red color, brownish-red streak, limonite association, softer than steel nail)
- Corundum (extreme hardness, often hexagonal prisms, striations on crystal faces, often metamorphic association, colors common black or grey, red ruby, blue sapphire)
- Hematite (Reddish brown streak, harder than glass)
- Ilmenite (weakly magnetic sometimes, blacker streak than hematite, hardness of glass, metallic luster)
- Chromite (submetallic luster, granular, sometimes weathers green with olivine association)
- Cassiterite (high density, adamantine luster, light streak, harder than glass

**Sulfides:**

- Bornite (common purple-blue iridescent "peacock" weathered surface, black streak)
- Galena (high density, cubic cleavage and growth habit, black streak, silver color)
- Sphalerite (submetallic luster, multiple cleavage directions, yellow-brown streak with a rotten egg scent)
- Covellite (softer than fingernail, deep blue color, micaceous appearance, grey-black streak)
- Cinnabar (characteristic red color, scarlet streak)
- Stibnite (bladed growth habit, lead grey color and black streak, softer than fingernail)
- Arsenopyrite (metallic luster, black streak, silver-white color, distinguishing from pyrite, harder than glass)
- Pyrrhotite (brownish-bronze color, black streak, magnetic)

Chalcopyrite (softer than glass, oranger yellow than pyrite often tarnishing to bronze or iridescent, greenish-black streak)
Pyrite (harder than glass, yellow color, green-black streak, common cubic crystals often striated)
Chalcocite (much softer than steel nail, lead grey color, gray-black streak,

**Sulfates:**

Barite (higher density than gypsum or anhydrite, bladed habit, softer than steel nail, usually whitish)
Gypsum (softer than a fingernail, prominent cleavage planes not perpendicular, does not effervesce, often whitish or clear)
Anhydrite (softer than a steel nail but harder than a fingernail, cleavage at right angles, often whitish)

**Carbonates:**

Calcite (rhombohedral cleavage, effervesces in dilute HCl, often whitish or clear, softer than steel nail)
Siderite (rhombohedral cleavage, brown color, denser than other carbonates)
Magnesite (softer than a steel nail, often whitish, effervesces in hot dilute HCl)
Dolomite (often whitish or pinkish, softer than steel nail, effervesces in HCl only when powederized)
Malachite (characteristic green color, often banded/botryoidal habit, effervesces in HCl)
Azurite (characteristic blue color, effervesces in HCl)

**Halides:**

Halite (cubic cleavage and habit, often clear or white, salty taste)
Fluorite (often cubic habit, octahedral cleavage, softer than steel nail, varied colors but often green or purple)

**Phosphates:**

Apatite (often green or brown, softer than a steel nail)
Turquoise (characteristic blue color, harder than glass)

**Silicates:**

**nesosilicates:**
Olivine (green to yellow, conchoidal fracture, granular, harder than glass)
Garnet (harder than glass, isometric crystals, varied but characteristic colors)
Andalucite (squarish-prism habit, harder than glass)
Silliminite (slender-crystal habit, sometimes fibrous, harder than glass)

Kyanite (characteristic blue color, bladed habit, differential hardness in different direction
Staurolite (red to red-brown color, common “cross” twins)

**sorosilicates:**
Epidote (pistachio green color, harder than glass)

**cyclosilicates:**
Beryl (variable but characteristic colors, harder than glass, hexagonal crystals)
Tourmaline (conchoidal fracture, trigonal/hexagonal crystals, often striated prism faces, variable color but often black in common varieties)

**inosilicates:**
Wollastonite (whitish color, 2 cleavage planes yielding a splintery cleavage)
Diopside (a pyroxene) (prismatic cleavage at nearly 90 degrees, greenish, glass hardness)
Augite (a pyroxene) (prismatic cleavage at nearly 90 degrees, black, glass hardness)
Enstatite (a pyroxene) (cleavage and color differ slightly from diopside/augite)
Hornblende (a common amphibole) (black color, distinguished from augite by cleavage angles being 124 degrees apart, and from tourmaline by absence of conchoidal fracture or striations)

**phyllosilicates**:
Biotite (a mica) (perfect cleavage, elastic cleavage sheets, black color, hardness of a fingernail)
Phlogopite (a mica) (perfect cleavage, elastic cleavage sheets, brown color, hardness of a fingernail)
Muscovite (a mica), (perfect cleavage, elastic cleavage sheets, clear to tan color, hardness of a fingernail)
Chlorite (similar to other micas, but folia are not elastic and it has a green color)
Lepidolite (similar to other micas except for typical pink-lilac color)
Talc (softer than a fingernail, greasy feel, often wavy, foliated appearance
Kaolinite (white, chalky appearance, but no effervescence, softer than a fingernail)
Serpentine (green color, fibrous habit)

**tectosilicates**:
Quartz (conchoidal fracture, harder than glass, vitreous luster)
Orthoclase (a feldspar) (2 cleavage planes at right angles, often pinkish-coral color, harder than glass)
Plagioclase (a feldspar) (2 cleavage planes at right angles, often grey-white color, harder than glass)
Leucite (trapezohedral form, highly unstable in weathering environment so rare to find unaltered)
Nepheline (white-grey, softer than a steel nail, hardness of glass, although softer than quartz, and unlike quartz, does not have conchoidal fracture)
Sodalite (characteristic blue color)

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