Mineral Identification Table

Minerals for This Lab and Some Physical Properties They Possess.

An asterisk (*) means the rock contains only minor amounts of the mineral.

Mineral Name	Physical Properties	Geologic Setting	Industrial Uses
Biotite[1] *(K, Mg, Fe, Al Silicate)*	Luster nonmetallic. Color dark green, brown, or black. Hardness 2.5-4. **Platy cleavage (sheets)**. Streak white to gray.	Schist, gneiss, granodiorite, granite*, rhyolite*.	Used as an insulator and in electrical devices.
Calcite *($CaCO_3$)*	Luster nonmetallic. Colorless and transparent or white when pure; wide range of colors possible. **Hardness 3**. **Cleavage rhomb shaped**. Streak white to gray. **Reacts with dilute HCl acid**.	Limestone, marble, caliche, veins of calcite, hard-water deposits on plumbing fixtures.	Chief raw material for cement, wide variety of other uses.
Galena *(PbS)*	**Luster bright metallic**. **Color lead-gray**. Hardness 2.5. **Cubic cleavage**. Streak lead-gray. High specific gravity.	Veins and other ore deposits.	Lead ore.
Garnet *(Fe, Mg, Ca, Al Silicate)*	Luster nonmetallic. **Color varies but dark red and reddish brown most common**. **Hardness 6.5-7.5**. **Cleavage none**. Streak white or shade of mineral color. Common 12- or 24-sided crystals.	Schist, gneiss, metamorphic rocks near intrusions, pegmatite*, light-colored granites*.	Commercial abrasive. Gemstone varieties are red and green.
Gypsum *($CaSO_4*H_20$)*	Luster nonmetallic; vitreous to pearly. Colorless to white, gray, yellowish orange, light brown. **Hardness 2**. **One primary direction and one less defined direction of cleavage**. Streak white.	Salt deposits from evaporation of lakes and seas.	Wallboard (sheet-rock), plaster, filler in paper products.
Halite *(NaCl)*	Luster nonmetallic. **Transparent to translucent**. Colorless, also white, gray, yellow, red. **Hardness 2.5**. Three directions of cleavage at 90° angles. Streak white. Characteristic taste of salt.	Salt deposits formed from evaporation of lakes and seas, salt domes.	Widely used as source of both sodium and chlorine and as table salt.
Hematite *(Fe_2O_3)*	Luster metallic in form known as specular hematite; submetallic to dull in other varieties. Color steel gray in specular hematite, dull to bright red in other varieties. Hardness 5-6. Cleavage none. **Streak red-brown**.	Red sedimentary rocks*, ancient iron-rich sedimentary rocks, soil, zones of weathering, veins.	Iron ore and red pigment in paints.
Mafic Minerals *(Na, Ca, Mg, Fe, Al Silicates)*	Luster nonmetallic. Color dark green to black. Hardness 6. Cleavage 2 directions at nearly 90º (**pyroxene**) and 2 directions at 60º and 120º (**amphibole**).	Dark-colored igneous rocks and gneiss.	Some amphibole minerals formerly used as asbestos; some pyroxene minerals used as source of lithium.

Mineral Name	Physical Properties	Geologic Setting	Industrial Uses
Magnetite *(Fe_3O_4)*	Luster metallic. Color black. Hardness 6. Cleavage none. Streak black. **Strongly magnetic**.	Igneous rocks*, ancient iron-rich sedimentary rocks, near intrusions.	Iron ore.
Muscovite[1] *(K, Al Silicate)*	Luster nonmetallic. Colorless to shades of green, gray, or brown. Hardness 2.5-4. **One cleavage forming platy sheets**. Streak white. Flakes apart easily.	Schist, gneiss, pegmatite, veins, marble*, light-colored granite*.	Variety of industrial uses.
Olivine *($(Mg, Fe)_2SiO_4$*	Luster nonmetallic. **Color olive-green to yellowish**. Hardness 6.5-7. Cleavage indistinct. Streak white or gray. Usually granular masses.	Basalt and dark-colored intrusive rocks, inclusions in basalt; forms most of upper mantle.	Gemstone variety is peridot.
Plagioclase Feldspar *(Na, Ca, Al Silicate)*	Luster nonmetallic. Color white or gray. Hardness 6. Cleavage 2 planes at close to right angles, **twinning striations**. Streak white.	Most igneous and metamorphic rocks; volcanic-derived sandstone.	Sodium-rich varieties mined for use in ceramics.
Potassium Feldspar *(K,Al Silicate)*	Luster nonmetallic. Color varies white, cream, or **pink**. Hardness 6. **Two directions of cleavage at right angles**. Streak white. Has glossy appearance and may display wavy lines.	Most igneous and metamorphic rocks; sandstone derived from granite.	Commonly used in ceramics, glassmaking, and in scouring and cleansing products.
Pyrite *(FeS_2)*	Luster metallic. **Color brass-yellow**, may be iridescent if tarnished. Hardness 6-6.5. Cleavage none, conchoidal fracture. **Streak greenish or brownish black**. Crystals common, usually cubic with striated faces.	Veins, some granites*, slates*, schists*, and some unoxidized sedimentary rocks*.	Known as "fools gold." Source of sulfur for sulfuric acid.
Quartz *(SiO_2)*	Luster nonmetallic. Typically colorless or white, but almost any color may occur. **Hardness 7**. **Cleavage none, conchoidal fracture**. Streak white but difficult to obtain on streak plate.	Sandstone, mudrocks, granite, granodiorite, quartzite, schist, gneiss, veins.	Electronics and glassmaking. Color variations include amethyst, smoky, rose, and milky quartz.
Talc *(Mg Silicate)*	Luster nonmetallic, pearly to greasy or dull. Usually pale green, also white to silver-white or gray. Hardness 1. Streak white. **Greasy or soapy feel**. Platy.	Some metamorphic rocks.	Commercial uses in paints, ceramics, roofing, paper, and talcum powder.

[1] Biotite and muscovite belong to a family of platy minerals called "mica". All have one strong cleavage and form sheets that you can pick apart with a knife or your fingernail. Micas strongly reflect light and appear shiny. Muscovite is also called "white mica" and biotite is sometimes called "brown mica" or "black mica".