



17. Potassium Feldspar (potassium aluminum silicate or $KAlSi_3O_8$)



Potassium feldspar (also called K-feldspar) is a primary constituent of light-colored igneous rocks, such as granite and rhyolite. Feldspars are the most common minerals in the Earth's crust, forming more than half of it (quartz is the most common mineral on the surface of the continents). The three principle varieties of K-feldspar are microcline, orthoclase, and sanidine, which form at low, medium, and high

temperatures, respectively. They have the same chemical composition but different crystal structures. K-feldspar is common in many rocks used as building stones. In some massive deposits of the igneous intrusive rock pegmatite, the amount of K-feldspar may be large enough to be commercially exploitable. Potassium feldspar is used for aggregate in concrete and asphalt, and in the manufacture of glass and ceramics, primarily porcelain, such as for sinks, bathtubs, and toilets. It is also used in the manufacture of fiberglass.

Activities:

K-5: When feldspar decomposes, it forms clay. There are a lot of other minerals that also decompose to form clay. Clay particles are very small and hold water in the soil better than sand because the smaller clay particles have more surface area and fit tightly together. Having the right amount of clay is important to growing crops, and too much clay would not drain well. You can demonstrate this by filling two self-sealing sandwich or snack bags with water. Take scissors and cut a tiny piece of a bottom corner off one bag and a larger piece off the other bag. Circle which bag empties out faster:



Small opening in the bag



Large opening in the bag

So, could water flow faster through a rock with large openings between the grains (sand) or small openings (clay)? Circle your answer (on the next page):



17. Potassium feldspar continued



Water flows faster through clay grains



Water flows faster through sand grains

4-5: The mineral halite (salt) has a chemical formula of NaCl. Salt is used to season and preserve food, but too much salt can cause a person’s blood pressure to increase and cause health problems. Potassium is also a vital nutrient for our diet, and potassium chloride (KCl) is used by some people as a substitute for NaCl for table salt. Most people know that bananas are high in potassium, but there are many foods that are better sources of potassium. Research how much potassium is in a serving of banana and find four other foods that are higher in potassium to complete this table. Circle which of these would be your favorite for consuming potassium in your diet:

Food	Potassium (mg)
Banana	

6-8: Some potassium feldspar occurs in rocks called pegmatites, which can contain extremely large crystals up to several inches or even feet across, along with many gemstones such as tourmaline and beryl. One of the feldspar gemstones is moonstone. Research why moonstones have the property of adularescence and explain here: _____

_____.

8+: The name potassium feldspar reflects this mineral’s large content of potassium. Find potassium on the periodic table of the elements. What is its atomic number? _____. What element sits above it on the periodic table? _____. What group is potassium in and what does that tell you about its properties? _____

_____.