



Preparing the Sand for the Groundwater Model

Andrew Warnock- GetWet, Colorado State University
GetWet.Colostate.edu

Where to get Sand

Get sand from a natural source if possible. Collect a bucket full at the beach or a river sand bar. Natural sand has nice round grains and typically does not have dangerous minerals present. If you do not have a natural source, try a garden center that sells sand in bulk, where you can inspect the grains for roundness. Your last resort should be “Play Sand” sold at the hardware store. It is crushed rock from quarries. Some of the quarries may be mining rocks that contain bad minerals like asbestos.

Sand Size

The GetWET groundwater models work best with a mixture of medium- and coarse-grained sand. For geologists, medium to coarse sand ranges in size from 0.0165” to 0.0394”.

Sieves

The best way to ensure you have the right grain sizes is to pass the sand between two sieves with mesh sizes that correspond to the upper and lower limits. Fortunately, you can buy sieves in many different sizes. You need to get Sieves #40 (0.0165”) and #18 (0.0394”). Good brass ones cost about \$60 each and will last for years if properly handled. You will also need a small brass brush to clean the sieves from the bottom. Wear a high-grade dust mask. Place the coarser sieve on top of the finer sieve. Put a small scoop of sand on the sieve set and swish back and forth and tap lightly over a bin. The sand trapped between the two sieves is what you want. You do not need to be super exact. Once most of the fine sand finishes coming out, empty the middle fraction into your “keep” bin. Discard the finer and coarser fractions. Clean your sieves with the brush and repeat with more sand.

Washing the Sand

Once you have a bin full of medium to coarse sand, your next step is to wash it. This removes any organic matter and fine dust that might not be so good to breath. Simply put your bin in a sink or do this outside with a hose. Fill the bin slowly and let it overflow while you stir the sand. The organics will float to the top and the fine dust will be suspended and float away. Once your water is crystal clear, you can drain the water and let the sand dry in the sun or in a drying oven. This is also the method you will use to remove food coloring and salt from the sand after it has been used by students.