

Sand

On SCOPE's Beach Science episode, Julia looked at the science behind sand. Next time you head to the beach check out the cool properties of sand!

The sand you encounter at the top of the beach and up on the dunes is dry and loose and it can be kind of slippery to walk on. Although this sand is made of billions of tiny *solid* particles, all together they act more like a fluid!

Fluids are things that can flow and take the shape of a container. Dry sand also flows and takes the shape of a container, like a bucket. Fluids also can't hold their shape, and while you can make a sort-of tower with dry sand, it doesn't really stack up very well!



Down in the littoral zone, which is the bit of the beach between the high and low tide marks, the sand is wet from the breaking waves. It's also a lot smoother, and easier to walk on because the surface tension of the water forms little bridges between the sand grains and helps them stick together.

Even further down the beach, closer to the breaking waves, there's more water between the sand grains and they don't stick together any more. Instead, they start to flow like a liquid again!

Try these activities in the area of the beach close to the breaking waves:

Go for a walk on the sand. Have a look at the patch of soggy sand under your feet.

WHAT'S HAPPENING? The sand you step on appears to dry out because the pressure of your foot packs the sand together and forces the water outwards, making the sand look dry.

Try to mould a ball of sand and make cool drippy castles!

WHAT'S HAPPENING? If you work quickly, you can create a ball of wet sloppy sand, but as soon as you stop, it loses its shape and runs like a fluid again.

Stand in one spot and don't move!

WHAT'S HAPPENING? You start to sink because there is so much water mixed with the sand that it cannot hold your weight; the sand is acting like a fluid. But, below the surface, there is less water mixed with the sand. The sand is more dense, so it is acting like a solid again and you stop sinking!