KNEAD A BALLOON?

Sand becomes an amazing plastic material inside a balloon.

THE SETUP

Make a sandbag. This is most easily done with a balloon. Take a funnel or a piece of paper rolled up like a funnel and stick it into the neck of the balloon. Pour in enough sand to almost fill the balloon. If the sand stops running into the balloon before the balloon is filled, squeeze it to let out air. Knead the balloon a few times to get the feel of the dry sand. Now, pour enough water into the balloon to cover the sand. Again, you may have to release an air lock. Tie a knot in the end of the balloon. Squeeze the balloon a few times. The sand doesn’t feel like it did before, does it? It is a plastic material now that is fun to knead.

INSIDER INFORMATION

A mound of sand is made up of tiny rock crystals that are piled on top of one another in no real order. The spaces between the grains are filled with air. When you pour water over the grains, the water flows around the grains replacing the air. But water does what air can’t. It lubricates the sand crystals. This allows the grains to move closer together and become densely packed. Wet sand is a plastic material that is easily molded. Knead your sandbag and see all the shapes you can make. As every sandcastle builder knows, wet sand holds its shape even without a balloon. A substance that allows a non-plastic to become a plastic is called a plasticizer. In this case, water is the plasticizer. Do you think another lubricant, such as salad oil, can do the same job? Experiment to find out.