Polymer Bead Demo

MER-100

Polyethylene oxide (Poly-Ox) forms a solution that can be used to demonstrate a tubeless siphon. When a beaker filled with this solution is slightly tipped, the liquid starts to fall into a lower beaker. Even when the top beaker is returned to the upright position, all of the liquid continues to siphon up and over the edge into the bottom beaker. The chains of polymer become tangled and act as a single strand. Gravity exerts a force on the falling strand and the top beaker slowly empties.

The Polymer Bead Demonstration allows one to model the tubeless siphon phenomena.

Procedure:

1. Carefully feed the 15-meter (50 ft.) length of beaded chain into the large mug beaker so that the chain does not tangle.

2. To start the demonstration, hold the beaker by its handle, pull the end of the chain out over the rim of the beaker and release. The weight of the beads will pull the rest of the continuous chain out. This is analogous to how the long polymer (Poly-Ox) is able to self-siphon out of a beaker.

Notes:

As the speed picks up, the string rises above the rim of the container due to the inertia of the moving beads. This is a very rapid demonstration; remind students ahead of time to be observant so they can see all the action.

Although it is difficult, with practice it is possible to pour the string back and forth between two containers. Holding the container of beads as high as possible gives the falling beads a chance to gain speed as they accelerate in free fall. This causes the chain to climb even higher above the edge of the container and is seen as a “discrepant event.”

If the beaded chain should break, simply use a torch or lighter to melt the two end beads and push them back together.

Poly-Ox (item GB-100A) can be ordered from Educational Innovations, Inc.

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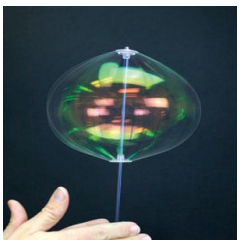
Poly-Ox: A Self-Siphoning Gel (GB-100A)
This amazing polyethylene oxide polymer displays mind-bending, non-Newtonian properties when dissolved with anhydrous alcohol or acetone (not included). Using only a small amount of polymer, you can create a fluid that will climb a rotating rod, or siphon itself into a lower beaker! By adding a fluorescent dye during the dissolving process, the Poly-Ox can be presented in the dark using an ultraviolet light for illumination—a Super! Wow! Neat!® demo.

Hoberman Switch Pitch Balls (HOB-315)
Gently toss one in the air without spin and notice no change. Repeat with increasing energy until a change occurs. A beautiful lesson in activation energy! Point out the activated complex. Show the difference between translational and rotational energy. Use to demonstrate the activation energy needed for a reaction when two particles collide. Relate to the Arrhenius equation: k=Ae-Ea/RT. Demonstrate isomerization. Lesson plans included.

Capillary Tube Set (PHY-225)

Can water flow upward? Our Capillary Tube Set is the perfect tool to demonstrate the science behind rising fluids. Four clear glass capillary tubes—each with a different inner diameter—are mounted on a plastic stand, allowing your students to observe the processes of capillary action, cohesion, adhesion, and electrostatic attractive forces. This device will strengthen your students' understanding of particles and the forces that hold them together. The 8-page Teacher's Guide contains a broad assortment of classroom activities, discussion questions and a student quiz.



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