

Workshop #2 Density determination and density towers as a way to measure density

Purpose

- Explore density and one way to determine the density of objects (Density tower). Determine density of random objects in the classroom;
- In regards to the Engineering Process this lesson is at the 'Do your research' and 'Develop a possible solution'.

Safety

- Glucose Syrup (no reference available):
 - No PPE;
 - No handling instructions;
 - No First Aid.
- Glycerine (Reference Page 93 of Science ASSIST Chemical Management Handbook Edition 1 Feb-2017). Safe for F-12
 - PPE: Safety glasses, closed shoes, lab coat, gloves (nitrile, latex);
 - Handling Instructions:
 - Avoid ingestion and contact with skin, eyes and clothing.
 - First Aid in Reference.
- Water:
 - No PPE;
 - No handling instructions;
 - No First Aid.
- Vegetable Oil (no reference available):
 - No PPE;
 - No handling instructions;
 - No First Aid.
- Baby Oil (Reference MSDS)
 - No PPE;
 - Handling Instructions:
 - Limit all unnecessary personal contact.
 - Use in a well-ventilated area.
 - When handling DO NOT eat, drink or smoke.
 - First Aid in Reference.
- General Brief to students:
 - No fingers in mouth or face, need to wash hands afterwards;
 - No mucking around.

Materials

- Following liquids of differing density. 800ml each plus extra in case of spills:
 - Glycerine (died);
 - Vegetable Oil;
 - Baby Oil;
 - Water (died blue); and
 - Glucose Syrup.
- Turkey basters x8;
- 8 x disposable plastic cups to hold the liquids.
- 2L tall cylinder.
- Safety/protection (Does the school have gloves and glasses?)

Method to creating the density tower

1. Collect the first liquid in a bowl (This is the Glucose Syrup);
2. Use the turkey baster to slowly add the first liquid to the tall cylinder. IT MUST BE SLOW and at the edges of the cylinder, we are trying not to mix the liquids.
3. Wash the bowl and the turkey baster.
4. Repeat steps 1-3 for all the liquids. Liquid order is:
 - a. Glucose Syrup (Bottom of tube);
 - b. Glycerine;
 - c. Water;
 - d. Vegetable oil;
 - e. Baby oil (Top of tube).
5. Place the towers in a safe place until lesson #3.

Setup

- Tables outside to undertake the tower building.

Approach/Timing

Time	Duration (min)	Task	Description
1400	5	Introductions/Welcome	Students into groups and grab all the equipment.
1405	45	Build the Density Tower	
1450	5	Clean up / Pack Up	
1455	0	Back to Class / Finish	