Packing Peanut Density Investigations   Name_____

When you open many boxes, packing peanuts fill the spaces. We do not even think about it, but what are these things _made_ of? Does it matter? Have we thought about the **science** behind the **peanut**? Let's start with making our own basic peanut!

Peanut basic

1. Add 10 g **cornstarch** to a paper cup.
2. Add 15 ml of **water** to the paper cup.
3. Stir with a spoon until mixture is fairly smooth.
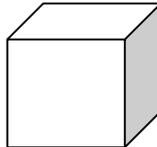4. Put paper cup in microwave, on HI, for **30 sec**.

**Observations:** _____

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> Make a drawing here!

Packing peanut **density** is a very important property of the peanut. To calculate density, we need to measure the **volume** and **mass** of your peanut.

Calculate the density of Peanut basic:

1. Remove your packing peanut material from the cup.
2. **Cut** a cube:
   a. height= 1 cm
   b. length= 1 cm
   c. width = 1 cm
3. **Measure** the mass of the cube on a digital balance and record to the tenth of a gram:_____g

4. To calculate **density,** you need to take the **mass and divide it by the volume.**
   a. Volume of a cube = length x width x height.
   b. Our cube's **volume** = 1 cm x 1 cm x 1 cm= 1 cm^3 or 1 cc or **1 ml**

   SOOOO, OUR PACKING PEANUT'S DENSITY IS:

   MASS_____g ÷ **VOLUME**_____1 ml___=_____g/ml

QUESTION: All of our class packing peanuts should have the **same density** because they are made of the **same material**. Why do you think the density you calculated might be different from your classmate?

Packing Peanut 2.0

Most commercial packing peanuts have a lot of **air** holes in them. This **reduces** the peanut's mass- and per peanut density-which is important because the **more mass** a package has, the **more expensive** it is to mail.

Adding oil to our peanut will make it have more air holes, which might *decrease* the density per peanut. However, we are adding the mass of the oil, which might *increase* the density per peanut!

WELL, WHICH IS IT??? ☺ Put your **HYPOTHESIS** here::_____

Packing Peanut 2.0

1. Add 10 g **cornstarch** to a paper cup.
2. Add 15 ml of **water** to the paper cup.
3. Stir with a spoon until mixture is fairly smooth.
4. Add 1 ml of **vegetable oil** to cup.
5. Stir with a spoon until mixture is fairly smooth.
5. Put paper cup in microwave, on HI, for **30 sec**.

Calculate the density of Packing Peanut 2.0:

2. Remove your packing peanut material from the cup.
3. **Cut** a cube:
    a. height= 1 cm
    b. length= 1 cm
    c. width = 1 cm
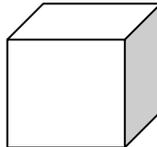
Mass of the cube_____g

4. To calculate **density,** you need to take the **mass and divide it by the volume.**
    a. Volume of a cube = length x width x height.
    b. Our cube's **volume** = 1 cm x 1 cm x 1 cm= 1 cm^3 or 1 cc or **1 ml**

MASS_____g ÷ VOLUME_____1 ml___=DENSITY_____g/ml

QUESTIONS:

1.Does **Packing Peanut 2.0** have a higher or lower density than Peanut basic?_____

2.Which one would be the better peanut in terms of $$$ to use to mail packages? Why?

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3.What other properties of the peanut might we be concerned about? (hint: think environment!)

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