Science 8/9 - Earth Core Sample Activity

**Materials: Name:\_\_\_\_\_\_\_\_\_\_\_\_\_**

One plastic mold

10 cubes of clear soap base

Rubbing alcohol spray to share with other groups

Red, Yellow, Blue dye to share with other groups

Sharpie

Stir Stick

**Step One: Creating the Proportioned Layers to Scale:**

Measure the length of the cylinder in cm \_\_\_\_\_\_\_\_\_\_\_\_

What is the radius of the earth? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ km

What is the scale ratio of cm of your cylinder, to km of the earth? \_\_\_\_\_\_\_\_\_\_:\_\_\_\_\_\_\_\_\_\_\_

**(Example: If the length of a toy car measures 20cm, and a real car measures 15 ft, the scale ratio is 1cm:0.75ft)**

Fill out the chart:

|  |  |  |
| --- | --- | --- |
| **Earth Layer** | **Real distance of layer** | **Scaled Distance of Layer** |
| Inner Core |  |  |
| Outer Core |  |  |
| Lower Mantle |  |  |
| Upper Mantle |  |  |
| Crust |  |  |

Using your sharpie, mark on the outside of your mold the correct layers of the earth.

**Step Two: Creating the Inner Core**

Add 2 cubes of the clear soap base to one microwave safe bowl. Melt in microwave for 30 seconds, stirring after until soap is completely melted. This layer is going to remain white

Spray the bottom of the mold with rubbing alcohol. Now carefully pour the white soap mixture into mold until you reach the line where the inner core ends. Spray the top of the liquid soap with rubbing alcohol to prevent bubbles.

Put the mold into the deep freezer and allow this first layer to harden for at least 3 minutes.

WASH the microwave safe bowl, to use for the next round.

**Step Three – Creating the Outer Core**

Add 4 cubes of the clear soap base to the microwave safe bowl. Melt for 30 seconds in microwave, stirring regularly until completely melted. Add yellow dye and mix thoroughly into soap mixture.

Spray the white soap layer with rubbing alcohol. Be liberal, but don’t go overboard! This helps the layers adhere to one another. Pour the yellow soap mixture into mold until you reach the next line. Spray with rubbing alcohol to prevent bubbles. Allow to harden for at least 5 minutes in deep freeze.

WASH the bowl for the next round

**Step Four – Creating the Lower Mantle**

Melt 4 cubes of the clear soap base. Add yellow and red dye to the bowl to make orange. Mix well. Continue as before, let harden. Wash bowl.

**Step Five – Creating the Upper Mantle**

This layer is going to be thinner. Add only 1/2 cube of the clear soap base to one microwave safe bowl. Melt in 30 second intervals, stirring after each until it is completely melted. Add red dye to the bowl. Thoroughly mix color and soap mixture. Continue as before, let harden for 2 minutes.

**Step Six – Creating the Crust**

This step is a little different since we are using two colours, Blue will be the oceanic crust and green will represent the continental crust.

Add 1/4 cube of the clear soap base to one microwave safe bowl. Melt for 10seconds stirring after until it is completely melted.

Add blue dye to the bowl, mix and pour into the mold. DO NOT PUT IN THE FREEZER.

Immediately wash the bowl and melt another ¼ cube. Add blue and yellow to make green, pour into the mold, mixing slightly with the blue to create an earth looking crust.

Allow to set overnight.

**Step Seven – CLEAN UP**

Write your name on the paper plate and leave in the drying area overnight.

Clean up all your materials and return to their place.

Layers of the Earth – Questions

1. The five layers of the earth are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. The which two layers of the earth are liquid?
   1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. The crust layer is made up of both \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ crust, and

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ crust.

1. The thinnest part of the earth is only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ km thick.
2. What is the diameter of the earth? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ km
3. The Core is made up of two elements \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. Rock, or Molten Rock makes up the material in three layers, they are:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.