**Mystery Powder Lab**

**Purpose**  To identify the components of an unknown mixture, based on the results of individual tests of each unknown, and to identify chemical changes.

**Materials**

Unknowns

Water

Spot plates

Aluminum foil

Hot plate

Scoopula

Universal indicator

Vinegar

Iodine solution

Tongs

Stirring rod

**Procedure:**

Perform all tests on all of the unknowns including the mystery powders. Record your observations in both Chart 1: Qualitative Observations and Chart 2: Chemical/Physical Change on the back of this page.

1. Observe the physical properties of the unknown powders and record in the chart.
2. Mix a *very* small amount of each unknown in water. Observe whether the unknowns

dissolved in water (if the solution becomes clear). Record in the chart.

1. Place a small scoop of each unknown in a pre-made aluminum foil cup and heat on high

on a hot plate for 3 minutes. Record your observations in the chart.

1. Add two drops of Universal Indicator to a small sample or each unknown. Record.
2. Add two drop of iodine solution to a small sample of each unknown. Record.
3. Add a few drops of vinegar to a small sample of each unknown. Record.

**Questions** Record your answers in FULL SENTENCES on a separate piece of paper. Hand in this sheet

and your questions next day.

1. Explain the difference between a chemical and physical change.
2. For unknown D, explain the results of each test, including what you saw and whether what you

saw was a chemical or physical change.

1. Based on your results identify which two powders make up Mystery Powder X and which two

powders make up Mystery Powder Z?

4. Explain any experimental sources of error from this lab (where could you have possibly made a

mistake?)

***Chart 1:*** ***Qualitative Observations***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Test** | **A** | **B** | **C** | **D** | **E** | **Mystery X** | **Mystery Z** |
| Appearance |  |  |  |  |  |  |  |
| Dissolves in Water |  |  |  |  |  |  |  |
| Heated in Aluminum foil |  |  |  |  |  |  |  |
| Universal Indicator |  |  |  |  |  |  |  |
| Iodine Solution |  |  |  |  |  |  |  |
| Vinegar |  |  |  |  |  |  |  |

***Chart 2: Identifying Chemical and Physical Changes***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Test** | **A** | **B** | **C** | **D** | **E** | **Mystery X** | **Mystery Z** |
| Dissolves in Water |  |  |  |  |  |  |  |
| Heated in Aluminum foil |  |  |  |  |  |  |  |
| Universal Indicator |  |  |  |  |  |  |  |
| Iodine Solution |  |  |  |  |  |  |  |
| Vinegar |  |  |  |  |  |  |  |