

Describing Substances and Recognizing Change

Purpose: To identify physical and chemical properties and changes

Equipment:

Microspatula	Bunsen burner and matches	Distilled water
Tongs	Hydrochloric Acid, 1.0 M	Iron, Fe
2 small test tubes	Magnet	magnesium ribbon (2)
1 medium test tube	Sulfur, S	Sucrose, C ₁₂ H ₂₂ O ₁₁
Test tube holder	Watch glass	Sodium Bicarbonate (baking soda)

Procedure

Change #1:

1) Add a pea-sized portion of sulfur to a **small** test tube and test its magnetism with a magnet. Add a pea-sized portion of iron to the same test tube and mix them together by flicking the tube. Test the magnetism of the substance. Record your observations.

2) Using a test tube holder, hold the tip of the tube in flame of a Bunsen burner until a change occurs, being sure to point opening away from anyone! Record observations.

3) Test the contents with a magnet again (ignore any unchanged iron). Record observations. Throw tube into trash (don't break it).

Change #2:

4) Fill a **small** test tube half-way with distilled water and add a few crystals of sucrose. Flick tube to see if it dissolves. Record observations. Dump solution into sink.

5) Put another PEA-SIZED portion of sucrose into the tube, (don't worry about it being wet). Using a test-tube holder, hold tip of tube in Bunsen burner approximately one minute. Record observations.

6) Rinse the tube twice with distilled water and then fill half-way. Flick to mix. Does any dissolve? Record observations.

Change #3:

7) In a medium test tube add a PEA-SIZED amount of sodium bicarbonate (baking soda), NaHCO₃. Fill one quarter of the tube with hydrochloric acid, HCl, making sure to feel the test tube for any temperature changes. Record observations. Dump the liquid into sink with water.

Change #4:

8) Using forceps, remove a piece of Magnesium ribbon and place in watch glass. Add 10 drops of Hydrochloric acid, HCl, and, being sure to feel bottom of watch glass, record observations. When the change is finished, put any leftover metal in the trash with forceps. Dump the acid in the sink with water. Rinse the glass in the sink and dry it.

9) Using tongs, remove a second piece of ribbon and hold it in the hottest part of Bunsen burner flame. **Look slightly to the side of the Mg, not directly at it!** Record observations.

10) Now put the ashes on the watch glass and test the ashes with 10 drops of HCl. Put any leftover metal in the trash with forceps. Dump the acid in the acid waste. Record observations.

NOW CLEAN UP. Rinse and dry anything you got dirty and put it back where you found it.

- * Identify THREE physical properties from your data.
- * Identify THREE chemical properties from your data.
- * For EACH of the four changes, state whether it was a physical or chemical change, and back up your decision with evidence from your data.