

Using Cabbage to Test pH - Activity for Students

Chemical Safety

Forensic chemists test many kinds of unknown substances every day and need to maintain the safety of their laboratory and themselves. One of the first tests performed on any unknown chemical in a forensic laboratory is pH: this determines the acidity of the substance. Some strong acids or bases (opposite of acid) can harm laboratory equipment and burn skin. Safety first!

Red cabbage juice has a special chemical called flavin which changes color based on pH.



Supplies

- Instruction Sheet (this page)
- pH Test Sheet (next page)
- Safety goggles and gloves
- Red cabbage
- Blender or knife (and permission)
- Boiling water
- Coffee filters or paper towels
- One large glass or clear bowl
- Six small, clear glasses
- Test substances (any of the following): window cleaner, hydrogen peroxide, baking soda, laundry detergent, lemon juice, vinegar, cream of tartar, antacids, seltzer water, liquid soap

Directions

1. With permission or adult supervision, chop the cabbage into small pieces until you have about 2 handfuls, or use a blender if you have one.
2. Place the cabbage in a large glass or clear bowl and add boiling water until the cabbage is completely covered (it will be smelly).
3. Wait at least 10 minutes until you see color moving out of the cabbage and into the water.
4. Place a filter or a few paper towels over the cabbage and slowly pour just the liquid into a smaller glass. Throw out or compost the wilted leaf scraps.
5. The liquid will be a redish / purplish / bluish color. This contains your pH test chemical, flavin, and is at about pH 7. The color you get depends on the pH of the water you used.
6. Pour about ¼-cup of your red cabbage indicator into each smaller glass.
7. Add various test substances to your pH test liquid until it changes color. Add only 1 type of test substance into each glass. Don't mix the samples.
8. Note your results from each sample on the pH Test Sheet.
9. The chemicals used in this activity can safely be washed down the drain with water.



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pH TEST SHEET

Name _____ Date _____ Time _____

Red Cabbage pH Indicator Colors

pH	2	4	6	8	10	12
Color	Red	Purple	Violet	Blue	Blue-Green	Yellow-Green

[illegible]