

# Testing Leaves For Starch

Name \_\_\_\_\_ Date \_\_\_\_\_

**Photosynthesis is the name of the process by which the plant manufactures sugars.**

The plant takes CARBON DIOXIDE from the air and WATER from the soil and combines them together to form SUGAR. OXYGEN is released as a waste product. The energy for the process comes from the SUN which is absorbed with the help of CHLOROPHYLL (green). Photosynthesis takes place in the CHLOROPLASTS which are found mostly in the leaves. Gases are exchanged through tiny holes (called *stomata*) in the underside of the leaf. The stomata close up during the night or during hot weather to prevent the plant losing too much water. The sugar is used three ways:

- i. Converted into STARCH and transported away to other parts of the plant.
- ii. Converted into CELLULOSE for the cell walls.
- iii. Used by the plant for its own respiration to provide energy for other processes

## Materials:

- Leaves for testing – one that has been in the light and one that has been in the dark for 48 hours (destarching)
- Iodine solution                      - 250 mL beaker                      - Forceps
- Eye dropper                              - Watch glass                              - 70% Ethanol
- Boiling tube                              - Grains of sand

## Procedures

1. Half fill a 250 cm<sup>3</sup> beaker of water. Boil the water. Turn down the Bunsen burner sufficiently to keep the water at boiling point.
2. Take a leaf from the plant that has been in the light.
3. Using forceps, place the leaf in a beaker of boiling water for 1 minute. This will kill the cells, arrest all chemical reactions and make the leaf permeable to alcohol and iodine solution.
4. Using forceps place the leaf in a boiling tube. Push the leaf to the bottom of the tube.
5. Add enough ethanol to cover the leaf.

**CAUTION.** The alcohol sometimes becomes super-heated and shoots out of the tube. If it ignites at the same time it can cover a nearby hand or face with burning alcohol.

**The Bunsen burner must be extinguished when the alcohol is being heated.** Super-heating can be reduced by putting a few grains of coarse sand or unglazed porcelain in the test-tube.

6. Turn off the Bunsen burner
7. Place the boiling tube into the beaker of hot water for about three minutes  
Record your observations.



