



Use of Benedict's Solution: ***SAFETY FIRST!***

The standard chemical test for sugar is Benedict's Solution, a reagent of (mainly) copper sulfate and sodium hydroxide. It can be purchased from many drug stores because it was once the standard test for sugar in the urine of diabetics.

Typical Testing Procedure: An aqueous sample is mixed with Benedict's reagent (by volume, usually about 4 solution to 1 reagent) and heated almost to boiling.

- There are two hot-plates located within the lab with multiple 40 milliliter beakers of water on each one.
- **The water in the beakers is VERY HOT! You are not to move, pour, or touch the beaker, the water and especially the hot plate!**
- Choose a beaker for your hot water baths, and place your test tube in it.
- This reaction may take as long as 10 minutes to fully develop.
- **The test tube coming out of the Hot Water Bath will also be VERY HOT!**
- If you did not bring a pair of test tube tongs, ask for an event assistant for assistance in removing the test tube from the beaker.

DO NOT GRAB IT WITH YOUR BARE HAND!

A color change from the blue of the reagent to almost any other color -- green, yellow, orange, red, brown is an indication of the presence of what are called "simple" sugars.

For practical purposes, simple sugars are monosaccharides like glucose and fructose. It is important to note the most disaccharides (like sucrose, which is the sugar most often used at the table) will not react at all with Benedict's Solution. The color sequence given -- green, yellow, orange, red, brown -- is in order of increasing concentration of simple sugar in the test solution.

NOTE: For obvious safety reasons, no questions will be asked regarding the solubility of the sample in hot water, so do not attempt to test the solubility of the powder in the hot water baths.