SIMPLIFIED PROCEDURE FOR PULP BLEACHING (REFER TO MANUAL FOR BACKGROUND AND MORE DETAILED AND GENERIC INSTRUCTIONS)

1. Remove the pulp from the sample bag. Leave a small piece (about the size of half of your little finger) in the bag. Take the rest and obtain its weight on one of the balances. Record to the nearest 0.1 gram (round off if necessary). Record.

2. We will assume that the solids content of the pulp (the portion that is dry fiber, not water) is 10%. Use the formula on the data sheet to calculate the equivalent dry fiber content of your sample. Use the next formula to calculate the amount of water in the sample.

3. We will be using a bleaching chemical charge of 10%, which is based on the dry fiber content of the wet pulp sample. Use the formula on the data sheet to calculate the amount of undiluted bleach required.

4. Since the commercial bleaching solution we will be using has been diluted to 5% strength (5 parts actual bleach per 100 parts of total bleaching solution), then we will have to weigh out more of this solution than the value obtained in step 3 above. Use the formula on the data sheet to calculate the amount of diluted (actual) bleaching solution to weigh out. Weigh this solution out into a small beaker (be sure to tare/zero the beaker first).

5. We will be bleaching at a total solids content of 1% by weight. That is, in a total batch of weight 100 grams (for example), only 1 gram would be dry fiber; the rest would be water and bleach solution. Use the formula on the data sheet to calculate the amount of extra water required to dilute the pulp and bleach solution to a total solids content of 1%.

6. Let the hot tap run until very hot. Weigh the amount of water calculated in step 5 above on the balance in a 1-liter beaker, then add to the blender container.

7. Add the wet pulp to the blender container, then replace the lid securely with the open lip pointing away from you. Placing a hand firmly on the lid, energize the blender on the lowest setting for 10 seconds.

8. Remove the blender lid and add the bleaching solution. Replace the lid, then energize for 30 seconds to mix. Allow to sit for at least one hour (while you are in lecture). Attendants will mix the pulp briefly at regular intervals for you.

9. At the end of bleaching, insert Buchner filtering funnel into the filtering flask and line with two thicknesses of cheesecloth. Turn on the vacuum supply valve to the flask 100% open. Slowly pour the contents of the blender container into the funnel, allowing liquid to be removed the vacuum into the flask. When no more liquid is observed going into the flask, fill the blender container halfway with cold tap water (making sure that it captures any remaining fiber in the container), the pour this liquid slowly across the fiber mat formed in the funnel. Repeat once.

9. When no more liquid is seen going into the flask, turn off the vacuum. Record observations about the color of the pulp, especially compared to the unbleached sample on hand.