Experiment No. 9: Bleaching of silk.

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Aim: To determine the bleaching loss in the given silk sample.

Introduction: H_2O_2 is a soft chemical used as bleaching agent. It is an aqueous solution with 30-50% concentration. H_2O_2 becomes more stable in acidic media.

The chemical reaction involves disassociation of H_2O_2 in the form of perhydroxyl ion in the alkaline media which further disassociates in to O, OH^+ and O^+. The perhydroxyl ion or even atomic oxygen is responsible for the oxidation affect on the organic colouring matter present in silk and thus for bleaching effect.

Requirements: Heater, vessel, thermometer, balance, glass wares, H_2O_2, EDTA, liquid ammonia, *etc*.,

Procedure:

1. Weigh the given silk sample and note down the weight as W_1 g.
2. Prepare the bleaching bath in the ratio of 1:20 (1portion is silk and 20 is distilled water/ soft water)
3. Add H_2O_2, liquid ammonia and EDTA at the rate of 20ml/l, 1g/l and 1ml/l respectively and keep it for heating.
4. Introduce the material, raise the temperature to 60°C and treat the material for 1 h at this temperature. Constant stirring is necessary while working.
5. After an hour take out the material, wash it in running water thoroughly to remove the soap and soda.
6. Again keep the material in soft water and give a hot wash for 30 min.
7. After hot wash, wash the silk in running water thoroughly and dry at room temperature under shade. After complete drying, weigh the bleached silk and note down the weight asW_2 g.
8. Find out the bleaching loss by using the following formula.

$$\text{Bleaching loss in \%} = \frac{W_1 - W_2 \times 100}{W_1}$$

Report: The bleaching loss in the given silk material is _____ %.

Observations and Calculations:

Weight of the silk = _____ (W_1) g

Weight of the bleached silk = _____ (W_2) g

Liquor ratio 1:20 *i.e.*, W_1 X 20 = ----- ml of water (a)

Volume of H_2O_2 20ml/liter = $\frac{20X\ a}{1000}$ = ___ ml.

Volume of EDTA 1gm/liter = $\frac{1\ X\ a}{1000}$ = ___ gm.

Volume of liquid ammonia 1ml/ liter = $\frac{1\ X\ a}{1000}$ = ___ ml.

Bleaching loss = $\frac{W_1\text{-}W_2\ X100}{W_1}$ = ___ %.
