

Experiment No. 6. Estimation of filament length, denier, renditta and reelability

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Aim: To estimate the filament length, denier, renditta, reelability of the given cocoon sample.

Introduction: Though the cocoon contains floss, shell, pupa and silkworm larval skin, shell weigh is the most important trait from the point of reelable silk. Therefore, determination of these commercial characters like filament length, renditta, denier and reelability are the most important parameters to be considered for price fixation in cocoon markets.

Requirements: Hot water bath, thermometer, epprouvette, balance, cocoon sample *etc.*,

Procedure:

1. Weigh the given cocoons along with pupa and floss. This gives the total weight of the cocoons.
2. Dip the cocoons in warm water for 2-3 min. Then introduce the cocoons in to boiling water bath and cook them for 2-3 min depending upon the quality of the cocoons or until the cocoons become dull in colour and soapy to touch.
3. After proper cooking transfer them in to a basin congaing the water maintained 40-45 °C temperature. Now brush the cocoons to remove outermost layer of floss and to get single filament.
4. Then attach the single filament on the reel of the epprouvette and reel with a constant speed until the cocoons are completely exhausted. While reeling note down number of breaks and epprouvette reading for individual cocoons.

Observations and Calculations:

1. Total weight of five cocoons (A) = ___ gm.
2. Average weight of the cocoon (A/5) = ___ gm.
3. Total length of the filament ($C_1 + C_2 + C_3 + C_4 + C_5$) = ___(C) meters.
[Eg., C_1 = Number of revolutions (meter reading) x 1.125 (circumference) = ___ meters]
4. Average filament length $C/5$ = ___ (D) meters.
5. Total number of breaks = ___ (E).
6. Average number of breaks $E/5$ = ___ (F).
7. Total weight of the reeled silk = ___ (G) gm.

8. Average weight of reeled silk $G/5 = \text{---} \text{ (H) gm.}$

$$\text{Denier} = \frac{\text{Weight of the reeled silk (G)}}{\text{Total length of the reeled silk (C)}} = \text{---} \text{ (I).}$$

$$\text{Renditta} = \frac{\text{Weight of the cocoons (A)}}{\text{Weight of the raw silk (G)}} = \text{---} \text{ (J).}$$

$$\text{Reelability} = \frac{\text{Number of cocoons reeled (G) x 100}}{\text{Number of ends fed (5) + Number of breaks (E)}} = \text{---} \text{ (K) \%}.$$

Report: The given cocoon sample contains C meters of filament length, I denier, J renditta and K % of reelability.
