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Name of the Presenter : Dr. Socorrinha D'Costa

Notes

Silkworms have a silk gland which helps them to secrete silk. The silk gland is divided into anterior, middle and posterior parts. The anterior part is important in spinning silk protein. The middle part secretes sericin while the posterior part secretes silk fibroin. Silk is composed of proteins fibroin (amino acid – glycine and alanine), sericin (serine, threonine, aspartic acid, glutamic acid) and also of fats, wax, sand pigments and minerals. Fibroin is a fibrous protein, composed of heavy (H) chain, Light (L) chain and glycoprotein linked by disulfide bonds while sericin is a macromolecular protein, serves as an adhesive to unite fibroin.

Physical and chemical properties of silk

The specific gravity of silk ranges from 1.32 to 1.40. The sericin specific gravity is slightly higher than that of fibroin.

Tenacity is the quantity of weight a given fibre can support before breaking, the tenacity of silk is 3.6 to 4.8g per denier.

Elongation is the length to which a fibre may be stretched before breaking. Raw silk has elongation ability of 18 to 23% of its original length. Excess moisture increases elongation but decreases the tenacity of the fibre.

Silk has 11% moisture regain coefficient.

Silk is a poor conductor of electricity and hence used for covering wire in electrical appliances. It absorbs water readily but is not affected by water. It disintegrates at 170°C.