

TECHNICAL TUESDAYS

TOPIC: Wool Fibre & its Properties

REF: TT/ Jan 2017/ WK 3

What are wool fibers?

Wool is a protein fiber which is formed in the skin of sheep and hence it is known as an animal fiber. Wool fibers are hygroscopic in nature and is found to be the most hydrophilic textile fiber. Wool is one of the major classifications of animal fibers.

Properties of wool fiber:

It is important to classify the property of the wool fiber before processing. To define the properties, we will look at:

1. Physical properties of wool fiber
2. Chemical properties of wool fiber

Few physical properties of wool fiber:

- **Specific gravity:** 1.31
- **Length :** 35 to 250 mm
- **Color:** The color of wool fiber could be white, near white, brown and black.
- **Flame reaction :** Odor of burnt horn
- **Luster:** Luster from a course fiber is found to be higher than that of a fine fiber.
- **Moisture regain:** 13-16% of moisture regain, wool fiber are characteristically very absorbent and are observed to loose fiber strength on moisture absorption.

Few chemical properties of wool fiber:

- **Effect of Acids:** Wool is found to react with hot concentrated sulphuric acid to decompose completely. It showcases a general resistance to mineral acids of all strength even at high temperatures, although nitric acids tends to cause damage to the fiber by oxidation.
- **Effects of Alkalis:** The chemical nature of wool keratin is such that it is particularly sensitive to alkaline substances. Wool fiber is found to dissolve in caustic soda solutions, without showing adverse effects on cotton. Strong alkaline react to effect on wool fiber but weak alkaline do not affect the wool fiber.
- **Effect of Resilience:** Wool fibers can be stretched up to 50 percent of their original length when wet and 30 percent when dry.



- **Effect of Organic Solvent:** Wool are not effected by organic solvents.
- **Effects of Insects:** Wool are not effected by insects.
- **Effect of bleach:** Chlorine bleach is predominantly harmful to the wool fiber. KMnO_4 , Na_2O_2 are generally adopted as a bleaching agent for the fiber.

Wishing you a great week ahead!

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