

THE CLASSIFICATION AND GRADE OF WOOL FIBRES AND QUALITY OF WOOL

Гірна Тетяна Віталіївна,

Київський національний університет технологій та дизайну

Науковий керівник – ст. викл. Телев'як І.І.

Nowadays the quality of wool fiber plays a very important role in textile processing, and various quality parameters have the essential impacts on the textile industry. The issue of research quality and grading of wool fibers is always important. In general, grade refers to the average diameter or thickness of the fibers.

Wool fiber is the natural hair grown on sheep and is composed of protein substance called as keratin. Wool is composed of carbon, hydrogen, nitrogen and this is the only animal fiber, which contains sulfur in addition. The wool fibers have crimps or curls, which create pockets and give the wool a spongy feel and create insulation for the wearer. The outside surface of the fiber consists of a series of serrated scales, which overlap each other much like the scales of a fish. Wool is the only fiber with such serration's which make it possible for the fibers to cling together and produce felt. [1, p. 107]

Properties of Wool Fiber. The characteristics of Wool fiber or protein fibers are as follows:

- They are composed of amino acids.
- They have excellent absorbency.
- Moisture regain is high.
- They tend to be warmer than others.
- They have poor resistance to alkalis but good resistance to acids.
- They have good elasticity and resiliency.

Classification of Wool

Firstly, wool fibres are classified as the follow:

- Fine wool (Merino)
- Carpet wool
- Cross bred wool

- Long wool
- Medium wool [2, p. 1]

The quality of wool fibers produced is based on the breeding conditions, the weather, food, general care etc [3, p. 93]. For example, excessive moisture dries out natural grease. Similarly the cold weather produces harder and heavier fibers. The wool could be classified in two different ways:

1. By sheep from which it is obtained
2. By fleece

Classification by Sheep

The wool is classified according to the sheep from which it is sheared as given below:

Merino Wool: Merino sheep originated in Spain yields the best quality wool. These fibers are strong, fine and elastic fiber which is relatively short, ranging from 1 to 5 inches (25 – 125 mm). Among the different wool fibers, merino wool has the greatest amount of crimp and has maximum number of scales. These two factors contribute to its superior warmth and spinning qualities. Merino is used for the best types of wool clothing. [4, p. 82]

Class – Two Wool: This class of sheep originates from England, Scotland, Ireland and Wales. The fibers are comparatively strong, fine, and elastic and range from 2 to 8 inches (50 – 200mm) in length. They have a large number of scales per inch and have good crimp.

Class – Three Wool: This class of sheep originates from United Kingdom. The fibers are coarser and have fewer scales and less crimp when compared to earlier varieties of wool fibers and are about 4 to 18 inches long. They are smoother, and are more lustrous. These wool are less elastic and resilient. They are of good quality, used for clothing.

Class – Four Wool: This class is a group of mongrel sheep sometimes referred to as half-breeds. The fibers are about 1 to 16 inches (25 – 400 mm) long, are coarse and hair like, and have relatively few scales and little crimp. The fibers are smoother and more lustrous. This wool is less desirable, with the least elasticity and strength. It is used mainly for carpets, rugs, and inexpensive low-grade clothing.

Classification by Fleece: Shearing, is the process by which the woolen fleece of a sheep is removed. Sheep are generally shorn of their fleeces in the spring, but the time of shearing varies in different parts of the world. Sheep are not washed before shearing. They are sometimes dipped into an antiseptic bath as prescribed by law. [4, c. 95]. The classification by fleece is as follows:

Lamb's Wool: The fleece obtained by shearing the lamb of six to eight months old for the first time is known as lamb's wool. It is also referred to as fleece wool, or first clip. As the fiber has not been cut, it has a natural, tapered end that gives it a softer feel.

Hogget Wool: Hogget wool is the one obtained from sheep about twelve to fourteen months old that have not been previously shorn. The fiber is fine, soft, resilient, and mature, and has tapered ends. These are primarily used for warp yarns.

Wether Wool: Wether wool is the one obtained from the sheep older than fourteen months. The shearing is not done for the first time and in fact these fleeces are obtained after the first shearing. These fleeces contain much soil and dirt.

Pulled Wool: Pulled wool is taken from animals originally slaughtered for meat. The wool is pulled from the pelt of the slaughtered sheep using various chemicals. The fibers of pulled wool are of low quality and produce a low-grade cloth.

Dead Wool: This is the wool obtained from the sheep that have died of age or accidentally killed. This type of wool fiber known should not be confused for pulled wool. Dead wool fiber is decidedly inferior in grade; it is used in low-grade cloth.

Cotty Wool: This type of wool is obtained from the sheep that are exposed to severe weather. As discussed; the severe weather conditions hamper the qualities of the fleece obtained. The cotty wool is of a poor grade and is hard and brittle.

Tag locks: The torn, ragged, or discolored parts of a fleece are known as tag locks. These are usually sold separately as an inferior grade of wool.

The importance of grade or fiber diameter and its distribution within a given lot or fleece of wool in the textile industry cannot be over-emphasized. Certain qualities such as fineness, length, color and appearance determine the end use and value of wool.

REFERENCES

1. Супрун Н.П. Основи текстильного матеріалознавства : підручник для студ. вищих навч. закладів / Н. П. Супрун, Ю. С. Шустов. – К. : КНУТД, 2009. – 293 с.
2. <http://www.infovets.com/books/smrm/A/A988.htm>
3. Супрун Н.П . Матеріалознавство швейних виробів: волокна та нитки : підручник для студ. вищих навч. закладів / Н. П. Супрун. – К. : Знання, 2008. – 183 с.
4. Арабулі С.І. Експертиза текстильних матеріалів та виробів: Конспект лекцій для студентів денної та заочної форм навчання освітньо-кваліфікаційного рівня бакалавр, напряму підготовки 6.051601 Технологія та дизайн текстильних матеріалів, спеціальності Експертиза текстильних матеріалів та виробів/ Арабулі С.І. –К.: КНУТД, 2016. – 91с.