Guru Nanak College Budhlada

Department of Fashion Technology & Home Science

Incubation Centre for Fiber & Fabric Testing

Introduction

Testing of textile materials is playing a key role in determining product quality and assuring control of raw material, products and processes. This activity deals with the testing of fiber, yarns and fabrics and recent development of textile testing instruments. In the fiber part, the identification of fibers and testing of fineness, length and strength properties of fibers have been discussed. In the yarn part, testing of yarn count and twist have been explained. It then goes on to explain the testing of yarn tensile properties, evenness and hairiness. In the fabric part, testing of some important fabric properties such as thickness, weight, strength, abrasion resistance, serviceability, and comfort and color fastness have been discussed.

When a textile material or product is tested, its results must fulfill both explicit and implicit requirements. The explicit requirements from the tests are either that how the product will perform during its life cycle or how it will meet the required specifications. The core purpose of testing is that it must be reproducible; it means that if the same material tested under similar conditions in different laboratories, or at another time, and by another operator but it should yield the same results. However, testing results of textile materials are not expected to be similar every time.

Textile testing is to assess the product properties and predict its performance during use. To give complete knowledge of textiles will facilitate an intelligent appraisal of standards and brands of merchandise and will develop the ability to distinguish quality in fabrics. Textile testing is key in gauging product quality, ensuring regulatory compliance and assessing the performance of textile materials. Only by testing the performance of textiles live up to the high expectation on the market and that they are strong and flexible enough to do the job that they designed for. Testing textile can include testing the strength and tests on yarns and attachments such as buttons and poppers.

Objectives of the workshop-

a) For R&D (research and development) purpose
b) Process development
c) To check the quality and suitability of textile raw material
d) Fiber and fabric testing
e) Product failure analysis
f) To monitor the production (process control)
g) To assess the quality of final product
h) To investigate the faulty materials
i) Comparative testing and bench-marking
j) For new product development

Variation in the material: It could be minimized by proper selection of representative sample from the material being tested by using some statistical tools.

Variations imparted by test method: These variations are caused by conditions under which the testing is being held like speed, pressure, gauge length, temperature, relative humidity, etc. These variations could be minimized by specifying the standard written test methods for testing. For this purpose, organizations like ISO (International Organization for Standardization) are working to build internationally accepted standard test methods.

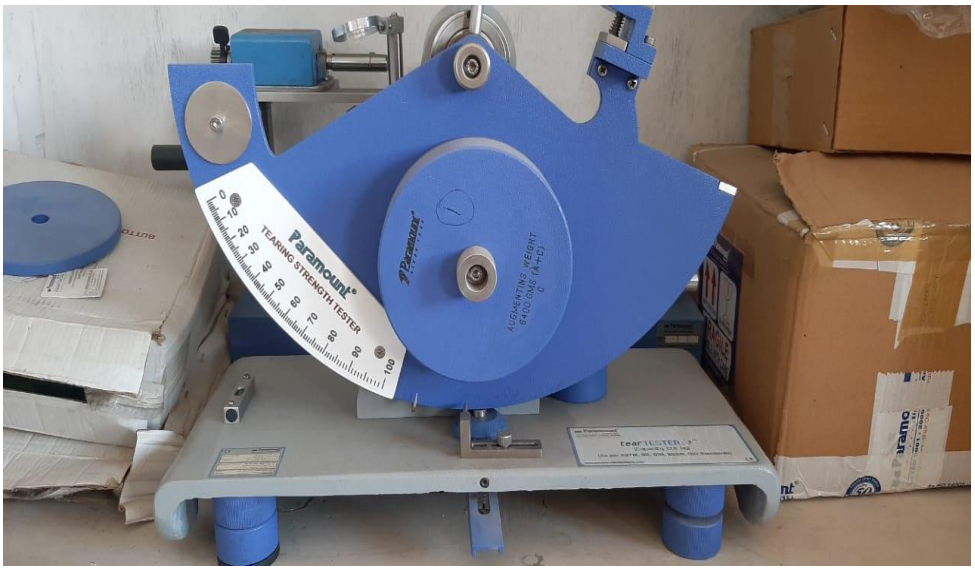
Lab and Facilities:

Textile Lab available in Fashion Technology Department. Various types of equipments of textile testing are available here.

1. **Textile Fabric Wet Resistance Tester\ Spray Tester**

Textile Fabric Wet Resistance Tester, also as a kind of textile testing equipment. It has not been used for a variety or water resistant or water repellent finishing fabric surface moisture resistance (wet level) testing.
It is testing equipment which is employed to check the water repellency of a cloth sample. For testing a little shower of water is sprayed over the material which is kept at a particular angle. From there the quantity of water retained and soaked on the material is measured and compared from a predefined rating chart which is then graded accordingly.

2. Textile Elmendorf Tearing Tester



Textile Elmendorf Tearing Tester also a kind of textile testing equipment, to determine the ballistic tearing strength of woven fabrics, plastic films, paper, Textile Elmendorf Tearing or other similar materials.

3. Microscope

Microscope is used to closely analyse substances to understand their composition. We have seen this equipment used widely in the medical field, but every microscope is different and poses different qualities for various researches. However, in the textile industry it is mainly used to understand the weave pattern with which the fabric is woven. It is also used to understand the

structure of the fiber before it is processed into a fabric to understand the pattern that is best for the construction of the fabric.

4. Twist tester:

Twist is the estimation of the spiral turns given to a yarn in order to hold the element of the fibers on thread together.

There are two types of twist direction as;

1. S-twist
2. Z-twist

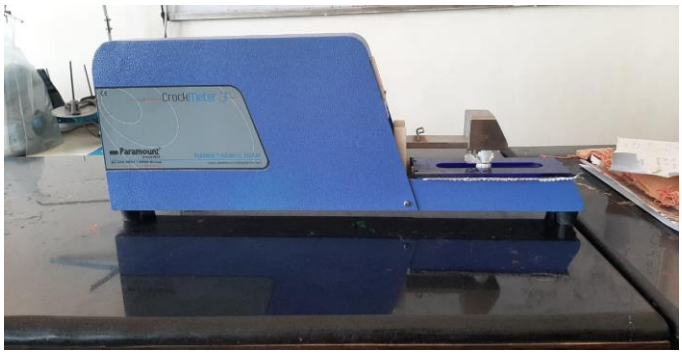
5. Tension meter:

The tension in the moving yarn is very important to determine. This method calculates the load during yarn processing during the spin and winding cycle and is observed during the warping cycle. Yarn should be tested by the tension meter to be extremely sensitive to stress. When the measurement conditions are replicated, the instruments are very delicate, provide reproductive and reliable reading; therefore the right tension meter range should be chosen.

6. GSM Cutter:

GSM means gram by square meter, and the weight of the textile which includes both knit, woven and non-woven is the designation, as the name implies. It's a basic tool used to cut a tissue sample for the measurement of the GSM of the textile. The measurement of the fabric is 11.2 cm in diameter. The sample shall be measured and computed for GSM after cutting.

7. Crock meter:



Crock Meter is used to determine by abrasion process the discoloration of the teared cloth or teared leather. This test equipment is designed to monitor the rubbing color speed of any textile material. The amount of color transferred from one fabric to another is determined. The product is mostly used for textiles, such as teared, printed or coloured fabrics. The test is performed by rubbing the sample constantly against an undyed sample. The transferred color is then tested for a predefined gray size and the score is accordingly allocated. This test is done on two different stages of the fabric, once in the dry state and again repeated when wet.

8. Perspirometer:

Perspiration is usually liable for the change in color of the material. It's testing equipment which is employed to work out color fastness of dyed or printed fabric against perspiration thanks to water, sea water etc. and sublimations during storage. It's carried on by exposing the material sample to the action of the both acidic and alkaline medium during a controlled temperature and pressure alongside an undyed sample.

9. Fabric Thickness Tester

The fabric thickness is usually measured as the distance between the two fabric surfaces under a certain level of applied pressure, depending on whether nonwovens are high loft.

10. Fabric Drape Tester

Cusick drape test is measured the drape property of fabric on the basis of its sheer and bending stiffness properties under motion.

Activity:

Workshop on Innovative Research in Textile Machinery for Fiber & Fabric Testing

Name of Activity : Workshop on Innovative Research in Textile Machinery for Fiber & Fabric Testing

Date : 11-09-2021

Venue : Textile Lab at Department

Organized by : PG Department of Fashion Technology

Name of Faculty : Paramount Group (Expert- Lakhvir Singh)

Participated by : Student of B.Voc FT, B.Voc GD and M.Sc FT

Objective : To give complete knowledge of textiles will facilitate an intelligent appraisal of standards and brands of merchandise and will develop the ability to distinguish quality in fabrics.

Outcome of Activity : Students got practical based skills and knowledge about different Equipments of textiles




Students Work