

# Humidity in Textile Manufacturing

## Textiles in general

In the days when cave men ruled the world, people were dressing with animal fur to protect themselves from the elements. Today we are far beyond that point and a wide range of natural as well as synthetic fibers have widely replaced animal fur.

The modern textile industry grew out of the industrial revolution in the 18th Century as mass production of clothing became a mainstream industry. To handle the huge demand for textiles, sophisticated machines are now producing impressive quantities. For example, denim is being produced at a rate of one square meter per minute.

To ensure optimum performance of modern spinning, twisting or weaving machines, a consistent environment must be created and maintained.

That's where humidity and temperature measurement plays an important role.

### Facts & Figures

- China has the largest textile industry directly followed by India. In 2010 China's textile industry exported 25 billion USD worth of textiles.
- The textile industry in India is experiencing annual growth rates of 9-10%.
- China is the largest producer of cotton with 34 million bales each year.
- Australia produces about 25% of the world wool production followed by China at 18% and United States at 17%.

## Why the need to measure humidity?

Controlling humidity in the textile industry is essential. Too dry or an unbalanced environment will have the following negative effects on product quality and the production process.

### Static electricity

Dry materials create more friction and are more prone to static electricity. Higher humidity reduces static problems and makes materials more manageable enabling more efficient production.

### Moisture Regain

Moisture Regain is defined as the weight of water in a material expressed as a percentage of the oven dry weight.

Dry air causes lower regain and this contributes to poor quality and lower productivity. By humidifying the environment, the materials are kept at optimum regain and are less prone to breakage, heating and friction effects. The materials handle and feel better, have fewer imperfections and are more uniform.

### Yarn strength

Yarns with low moisture content are weaker, thinner, more brittle and less elastic.



### Fabric shrinkage

Low humidity causes fabric shrinkage. Maintaining the appropriate level of humidity permits greater reliability in cutting and fitting during garment creation. Strict control of humidity in the production environment allows for tighter quality control where dimensions are important, such as in the carpet industry.

### Product weight

Textile weights are determined at standard condition of 65% RH and 20°C (68°F). Maintaining humidity will ensure accurate product weights, ensuring appropriate profits.

### Dust

Humidification reduces fly and micro dust, providing a healthier and more comfortable working environment.

Best humidity level for	Spinning	Twisting	Winding	Weaving
Wool	50-85%rH	60-65%rH	55-60%rH	50-60%rH
Cotton	35-65%rH	50-65%rH	55-65%rh	70-85%rH
Man made fibres	50-65%rH	N/A	60-65%rH	60-70%rh