DETERMINATION OF INDIVIDUAL FIBERS TENSILE PROPERTIES: RELATIONSHIPS WITH MATURITY AND FIBER LENGTH DISTRIBUTION

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Abstract

The goal of this research is determining the relationship between individual cotton fiber tensile properties and their length, both within and between-sample. In order to show between-sample relationship, the tensile properties and length distribution of 104 reference cotton samples have been measured. For within-sample investigation, six samples were selected among 104 samples and each one of them was sorted into seven length groups using the array method. Tensile properties of each length group were measured using FAVIMAT®, individual fiber tensile tester. For all samples, within-sample, short cotton fibers have higher propensity to break on the average. It can be said that throughout mechanical processing, the least mature cotton fibers may be broken into smaller segments.