

Random Analysis of Physical and Mechanical Characteristics of Superfine Animal Fibres

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Abstract : The physical and mechanical property parameters, inter-relation of key dimensional and distribution profile of raw Australia Superfine Merino Wool (ASFW) and Inner Mongolia Cashmere (IMC) fibres have been studied. The relationship between the properties of these fibres is assessed using fit transformation functions obtained through correlation coefficient analysis. ASFW and IMC fibre properties are found to be both positively skewed and asymmetric in nature. Whilst fibre diameter varies along its length and both ends have a tapering shape. The basic physical features, namely linear density, true local diameter, true length and breaking load are positively correlated while their tenacity is negatively correlated. The tenacity and true length follow a second order polynomial while the true local diameter is linearly correlated. Assessment of the diameter and length is sufficient to estimate the evaluation of quality for commercial grade ASFW and IMC fibres.

Keywords : Australia Superfine Merino Wool fibre, Inner Mongolia Cashmere fibre, distribution profile, physical properties

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