

Physical and mechanical properties of kenaf seed

ABSTRACT

This study was conducted to investigate some moisture-dependent physical and mechanical properties of kenaf seed (*Hibiscus cannabinus* L.). Selected physical and mechanical properties often are required for designing the planting, storage, and other processing equipment. The average length, width, thickness, geometric and arithmetic mean diameter of kenaf seed were 4.92, 4.70, 2.76, 3.98, and 3.81 mm. The average of the surface area, projected area, thousand seed mass and volume of kenaf seed increased from 46.9 to 53.7 mm², 9.9 to 11.3 mm², 26 to 30 g, and 19.4 to 25 mm³, respectively, with increasing moisture content from 6.8% to 25.2% d.b. Studies showed that as moisture content increased, the true density and bulk density decreased from 1341.4 to 1202.8 kg m⁻³ and 662.3 to 589.3 kg m⁻³, respectively. Also, in the same moisture range, the static coefficient of friction, filling and emptying angle of repose of kenaf seed increased linearly against the various surfaces, namely, stainless steel, aluminum and glass.

Keyword: *Hibiscus cannabinus* L.; Kenaf seed; Moisture content; Physical and mechanical properties