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Abstract	:	<p>In this study, binderless particleboard was fabricated from industrial crop kenaf fiber with the addition of different percentages of potato starch. The effect of potato starch was evaluated on the physical, mechanical, and chemical binding mechanism of the particleboard. The particleboard with varying ratios of kenaf and potato starch was fabricated at the temperature of 180 °C, pressing time of 20 min, compressing at a pressure of 5.3 MPa, and board thickness uniformly maintained at 0.51 cm with the targeted density of 0.8 g/cm³. The results show that at 10% potato starch containing particleboard (K90P10) has the lowest water absorption (444%) and thickness swelling (241%) and highest MOR (11.39 MPa) and MOE (1540 MPa) values. In comparison, 50% potato starch-containing particleboard has the highest water absorption (625%) and thickness swelling (330%) and lowest MOR (5.79 MPa) and MOE (733 MPa) values. The water contact angle (~90°) closure to the hydrophobic surface and internal bonding (0.30 MPa) were also found to be the highest among the fabricated kenaf particleboard for the 10% potato starch composition (K90P10). The characterization results indicated that the desired properties of the particleboard could be achieved with a lower percentage of potato starch in the kenaf/potato starch particleboard. Potato starch percentage above 30% in the kenaf/potato starch particleboard significantly decreased the MOE, MOR, internal bonding, and water contact angle. However, the MOR values of samples K90P10, K80P20, and K70P30 met the Japanese Industrial Standard (JIS) type 8 requirement, which is a minimum of 8 MPa.</p>