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Chapter 3

Wear Properties of Flax/Epoxy-Based Composites With Different Machining Parameters

K.R. Sumesh, Petr Spatenka, G. Rajeshkumar

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Summary

In this work, flax/epoxy-based composites were fabricated using compression molding method. Initially, alkali treatment (5% NaOH) was applied to the fibers to reduce their hydrophilic nature and, thus, to improve the adhesion to epoxy-based composites during fabrication. For the fabrication, fibers were cropped to a length of 1 cm at a temperature of 120 °C and pressure of 14 MPa. The combination of flax/epoxy-based composites showed a lower wear rate of $0.4 \times 10^{-5} \text{ mm}^3 \text{ Nm}^{-1}$ with 30 wt% flax, machining parameter of 1500 m sliding distance (SD), applied load of 5 N, and 0.5 m s^{-1} sliding speed. High wear rate of $0.545 \times 10^{-5} \text{ mm}^3 \text{ Nm}^{-1}$ was observed at 40 wt% flax, 500 m of SD, and load of 5 N. This result also shows that wear rate is directly proportional to applied load (N) and sliding speed (m s^{-1}), but inversely proportional to distance (m). More the contact between counter specimens and composite samples, higher will be the wear rate.

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