

Jureporn Noodam 2012: Magnetic Properties and Attraction Characteristics of Nd-Fe-B Coated Rubber Wood. Master of Science (Physics), Major Field: Physics, Department of Physics. Thesis Advisor: Miss Watcharee Rattanasakulthong, Ph.D. 102 pages.

Magnetic properties of coating-type magnetic wood prepared by coating lacquer containing neodymium iron boron (Nd-Fe-B) powders on rubberwood were characterized by vibrating sample magnetometry, magnetic moment measurements and attraction tests with an iron-core solenoid. Nd-Fe-B powders were recycled from electronic wastes by the ball-milling technique. By comparing the effect of the milling time from 20 to 300 min, the magnetic squareness and the coercive field of Nd-Fe-B powders were at the minimum after 130 min. It followed that, the coercive field of coating-type magnetic wood was increased with increasing milling time from 130 to 300 min. For composites using Nd-Fe-B from the same milling time, the magnetic squareness and the coercive field were rather insensitive to the variation of weight-to-volume percent of Nd-Fe-B in lacquer (Nd-Fe-B % w/v) from 30 to 50. By contrast, the magnetizations and magnetic moment were increased with increasing Nd-Fe-B % w/v. Furthermore, the electrical current in the solenoid required for attraction of magnetic wood composites was exponentially reduced with the increase in the amount of Nd-Fe-B used in coating.

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