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# EFFECT OF BORIC ACID TREATMENT ON TERMITE RESISTANCE OF PARTICLEBOARD COMPOSED OF DIFFERENT RATIO OF OIL PALM AND ACACIA FIBER

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ABSTRACT

**One way to overcome the shortage in wood supply is by substituting the commercial wood utilization with other wood materials that has great potential but still limited in its utilization such as oil palm (*Elaeis guineensis* Jacq.) and acacia (*Acacia mangium* Wild.) fibers. The possibility of using acacia and oil palm wood as raw material in particleboard production as well as medium density fiberboard has previously reported. Meanwhile, decay and insect attack which may limit the performance of the particleboard is one of the major concerns. A study has been conducted to evaluate the effect of boric acid treatment on termite resistance of particleboard composed of different ratio of oil palm and acacia fiber (0%:100%, 25%:75%, 50%:50%, 75%:25% and 100%: 0%, respectively). Termite resistance of the particleboard were evaluated according to a modified wood block test (MWBT) standard. It was observed that termite resistance of the untreated particleboard was relatively low. However, the boric acid treatment has significantly improved the termite resistance of the particleboard.**

*Keywords*: oil palm, acacia fiber, boric acid, termite resistance, particleboard, *C. curvignathus*

An increasing of Indonesian population by 2.5% per year leads to the increasing demand of wood material for housing construction purposes as well as for furniture. At the end of of *Pelita VI* (The five-year Development Plan VI), the demand for wood was about 40 million $m^3$ per annum while in the year 2000 the demand is estimated to increase up to 80 million $m^3$ per annum. The supply of logs in 1995 was only about 48.54 million $m^3$, while by the year 2000 the supply is estimated to be 49.01 million $m^3$ (Kartodihardjo, 1995). One way to overcome the shortage in wood supply is by substituting the commercial wood utilization with other wood materials that has great potential but still limited in its utilization such as oil palm (*Elaeis guineensis* Jacq.) and acacia (*Acacia mangium* Wild.) fiber.

At present, oil palm plantation has reached 2.2 million hectares and scattered all over 16 provinces throughout the country. It is expected that by the year 2005, Indonesia will become the leading country in oil palm industry. In line with the growth of oil palm products, biomass waste also increases every year. Part of the biomass waste that has not been utilized is the oil palm stem, which contribute the major part of the oil palm trees (Said, 1996). Under the provision of a sustained yield plantation management, future supplies of oil palm timber in Indonesia will amount to 1.1 million $m^3$ per annum. However, the proportion of oil palm wood that can be optimally utilized is relatively low since the inner part of the stem consists of very low density wood (Prayitno, 1991). Therefore, oil palm fiber-based products should be considered as one of the promising wood based panel for housing construction and furniture in Indonesia. This is obviously true for Indonesia since its agricultural and forest products has significantly contributed to the national development.

In the future, Indonesia's primary interest is to ensure that the role of plantation forests will continually be recognized. The Forestry Principles established at the Rio Earth Summit of 1992 stated that the role of planted forests and permanent agricultural crops as sustainable and environmentally sound sources for renewable energy and industrial raw material need to be recognized, enhanced, and promoted. Their contribution to the maintenance of ecological processes, offsetting pressure on primary growth forest and to providing regional employment and development with adequate involvement of local inhabitants should be recognized and enhanced." In this context, acacia (*A. mangium* Willd.) is one of the most important species in Indonesian plantation forest areas. At present, there is more than one million ha of *A. mangium* plantation found through the country.

The possibility of using acacia and oil palm wood as raw material in particleboard production (Nandika, Hadi and Gunawan, 1998) as well as medium density fiberboard (Thole, 1998) has previously reported. Meanwhile, decay and insect attack which may limit the performance of the particleboard is one of the major concerns. Several researchers reported that boron compounds are particularly suitable as preservative system for wood composites (Hashim *et al.*, 1992; Laks & Manning, 1994, 1995; Laks, *et al.*, 1994; Yalinkilic 1996).

This paper discus the effect of boric acid treatment on termite resistance of particleboard composed of different ratio of oil palm and acacia fiber.

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