Laboratory method to determine termite-resistance of plastics

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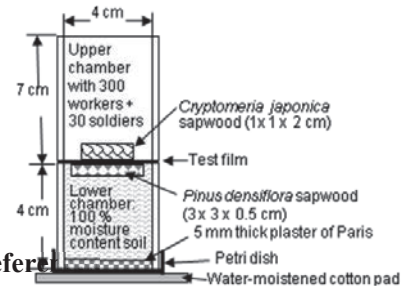
There is no standardized methodology worldwide to assess the resistance of plastic materials to subterranean termites in both the laboratory and the field. However, the development of new plastic materials always necessitates the reliable comparison between new and existing products. Early studies by Gay and Wetherly [1, 2] and Watson [3] indicated that laboratory evaluations with Australian termite species were effective for comparing the resistance of various plastics to termites and could reproduce the termite-susceptibility of plastics in the field test by others [4,5]. However, they were forced to sacrifice the relatively large quantity of termites. A new method in which plastic samples were exposed to a nest of *Coptotermes formosanus* Shiraki was proposed and proved applicable to the evaluation of comparative termite-resistance [6]. Existing Japanese standardized laboratory methods were proved to be unsuitable for evaluating the termite-resistance of plastics in any form [7,8]. One of the modified Japanese standardized methods that were applicable to evaluating termite-resistance of plastics would not sacrifice many termites, and it was possible to standardize the method to compare the termite-resistance of non-woody materials with or without chemical treatment as shown in Figs. 1 and 2. The termite density of 24 workers/cm^2 foraging area was high enough for *C. formosanus* to cause visible attack on straight face [6].



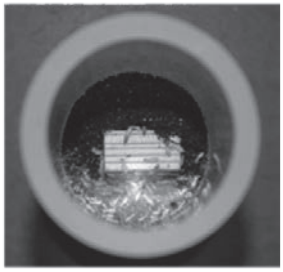


Fig. 1 (left) Experimental device composed of two acrylic cylinders
Fig. 2 (right) Termite penetration through a susceptible HDPE film: penetration took place within 2-3 days after the initiation of test; soil on the film surface is the sign of termite penetration

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