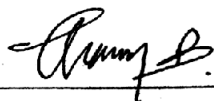


Thanong Bunmemapasuk 2006: Manufacture of Flame Retardant and Insulation Sheets From Water Orchid Fiber and Natural Rubber. Master of Engineering (Safety Engineering), Major Field: Safety Engineering, Interdisciplinary Graduate Program. Thesis Advisor: Mr. Wisit Locharoenrat, M.Eng. 160 pages.
ISBN 974-16-2296-1

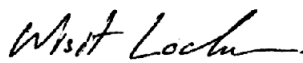
A thesis is done for utilization the Water Orchid that causes of irrigation problem, to produce the flame retardant and insulation sheet and then tests it under ASTM D635-98 for burn rate value and ASTM C177-97 for thermal conductivity value, and compare its thermal conductivity with fiber glass insulator.

From experiment, it was found that the steps of fiber and latex preparation are as follows; part1: retardant Water Orchid fiber; by react Water Orchid fiber with Sodium Hydroxide (NaOH) solution 15% by weight and then react with Borax ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$) solution 10% by weight, part2: fire retardant latex; by diluted natural latex by water at ratio of natural latex: water 1: 3 by weight, and react it with zinc borate ($2\text{ZnO} \cdot 3\text{B}_2\text{O}_3 \cdot 2.35\text{H}_2\text{O}$) 40% by weight. The next step is a spraying retardant latex on retardant fiber layer and spray natural latex again, produce it like this cycle until getting planned thickness

The results of thesis found that density of retardant insulation sheet vary the thermal conductivity but convert a burn rate of produced insulation sheet. At density 195.48 kg/m^3 has the lowest burn rate (testing under ASTM D 635-98) equal 2.03058 mm/min by average, thermal conductivity (testing under ASTM C177-97) equal 0.052 W/mK more than thermal conductivity of fiber glass 0.012 W/mK. Testing both burn rate and thermal conductivity use 16 specimens.



Student's signature



Thesis Advisor's signature

25 / 5 / 2006