

Flame retardancy of particleboards made from oil palm trunk-poly(vinyl) alcohol with citric acid and calcium carbonate as additives

ABSTRACT

Flame retardant particleboards from oil palm trunk particles were made by treatment with sodium chloride solution, then bonded with poly(vinyl) alcohol together with citric acid and calcium carbonate as additives. Flame retardancy, thermal, physical, and mechanical properties were evaluated for suitability as construction materials. The novel flame-retardant oil palm trunk particleboard was successfully produced. Treated oil palm trunk with 20% of poly(vinyl) alcohol and 10% of calcium carbonate showed the highest limited oxygen index (LOI) with good thermal stability and potential to be used as flameretardant particleboard. Also, salt pre-treatment was found to enhance the flame retardancy of particleboard.