

Addition of propylamine as formaldehyde scavenger for urea formaldehyde-bonded particleboard

ABSTRACT

Rubberwood particleboard were produced using urea formaldehyde (UF) resin admixed with propylamine as formaldehyde scavenger. 1 % propylamine were incorporated into 8 %, 10 %, 12 %, 14 % and 16 % UF resins, respectively. The effectiveness of propylamine addition to reduce formaldehyde emission from particleboard was examined. Physical and mechanical properties were evaluated according to Japanese Industrial Standard (JIS). The results showed that addition of propylamine had reduced 33 to 65 % formaldehyde emission from particleboard made with different dosages of UF resin. However, the properties of the particleboard were adversely influenced by the addition of propylamine. Higher resin dosage (≥ 14 %) had counterbalanced the loss of strength and dimensional stability but accompanied by increased formaldehyde emission. As a conclusion, UF dosage of 14 % admixed with 1 % propylamine is the most ideal formulation to produce particleboard with low formaldehyde emission while maintaining the desired properties.

Keyword: Formaldehyde emission; Formaldehyde scavenger; Particleboard; Propylamine; Urea formaldehyde resin