

Suitability of annual plants for gypsum-bonded particleboards

V. Thole D. Weiss

(Fraunhofer-Institut fuer Holzforschung, Germany)

Chen Shiying

(The Research Ins. of Wood Industry, CAF, China)

Abstract The semi-dry process for the manufacture of gypsum-bonded particleboards suggested by Kossatz besides the use of wood particles offers also the possibility of employing annual plants for this purpose. Using a Chinese and a German Beta-hemihydrate gypsum plaster the suitability of bagasse, bamboo, cotton stems, rice straw and wheat straw was investigated. Besides phase-analytical investigations regarding the characterization of the binders also the efficacy of various retardants as well as the influence of the different plant substances on the hydration were determined. Test boards of varying formulas and density were manufactured from annual plants in order to evaluate the suitability of same. The considerably retarded hydration of the gypsum plaster which was due to the different plant substances does not necessarily lead to boards with low strength properties as well as a moderate impairment compulsorily leads to boards with high strength properties.

As far as the board strength is concerned, equal importance has to be attached to the surface condition of the particles, their spraying behaviour and pore structure, as well as to the fineness ratio of the particles and the portion of plant parts which cannot be broken up to particle-shape structures.

Keywords Annual plants; Gypsum particleboard

水溶性聚合物改进硼基 防腐剂的性能

腐剂用于与地面相接触时的防腐性能。

1988年美国密西西比州林产研究所与瑞典科学、工艺和医学学院开始进行防腐剂与聚合物的研究, 研究结果表明, 聚合物防水剂既可以加入到硼基防腐剂中, 也可以作二次处理, 都能增进防腐剂配方的效力, 可以应用于与地面接触的位置, 也不易受持续的气候影响和雨水淋失。聚合物作用的方式还不清楚, 尚待继续研究。对含铜防腐剂性能的改进还保持在较低水平, 表明这种体系尚需改进。

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硼基防腐剂具有一定优点, 如价格低、对哺乳动物毒性小、能有效防止昆虫和担子菌的侵害, 其主要缺点是可浸出性。故被应用于不易受雨水淋失或不过份潮湿的地方。近年来, 有采用具有防水和保持尺寸稳定的水溶性聚合物系统。要是这样的处理能降低硼盐的流失率, 就可以延长防腐材的使用寿命, 可使硼基防腐剂应用于地上部位。这样的处理也可以改进硼盐与其它广谱防腐剂组成的复合防