

杉木与松木热处理改性和生态旅游中的应用研究

巫国富^{1*}, 黄圣霞², 颜军³

(1 广西生态工程职业技术学院, 柳州 545000; 2 南宁职业技术大学, 南宁 538000; 3 柳州林道轻型木结构制造有限公司, 柳州 545000)

摘要: 随着人们生态环保意识的提高, 绿色环保材料越来越受人们的青睐。为了改善人工林木材的天然缺陷, 可对其进行热处理改性, 人工林杉木与松木木材经过热处理改性后将是一种绿色环保材料。研究基于广西丰富的人工林及生态旅游旅游资源, 以水蒸气作为保护介质, 对 15 年生的杉木与松木使用 160-220℃ 温度进行热处理, 借助 SPSS 软件对高温热处理杉木与松木的物理力学性能进行了分析。同时采用模糊综合评价法对高温热处理木材在生态旅游业中的应用发展潜力进行评价, 并以三江县为例进行实证研究。结果表明: (1) 热处理温度在 160℃~200℃ 范围内, 杉木与松木木材经过热处理后其尺寸稳定性比未处理材显著提高, 其吸湿性能下降了 40%, 干缩及湿胀下降了 50%; 热处理温度在 180℃~220℃ 范围内, 对人工林杉木与松木进行热处理改性, 其静曲强度分别在 59~69 MPa 之间和 67~115 MPa 之间, 其弹性模量分别在 7640~8067 MPa 之间和 11399~12320 MPa 之间, 杉木材达到一级材性能, 松木达到了二级材性能。(2) 热处理改性杉木与松木可以作为生态旅游游客中心、票务中心、健身或休闲中心等建筑中作为室内及室外装饰材料, 及生态景区内的木栈道、木亭、木廊、木塔、木桥、木质小品、小木屋等景观, 突出景区的原生态化, 让游客身心得到彻底的回归和放松。(3) 结果显示, 高温热处理木材在生态旅游业中的应用潜力巨大, 可能 40.4% 为“优秀”, 40.7% 为“良好”, 17.3% 为“中等”, 1.7% 为“一般”, 0.1% 为“差”, 综合潜力为良好; 高温热处理木材特性权重值最大为 0.492, 维护保障权重值最小为 0.004。高温热处理木材+文化生态旅游产业融合发展模式, 是促进高温热处理木材产业及旅游产业绿色化发展的有效途径。

Application of heat treatment modification and ecotourism in Chinese fir and pine

Wu Guo-fu¹ Huang Sheng-xia¹ Yan Jun³

(Guangxi Eco-engineering Vocational College, Liuzhou 545000, Nanning Vocational and Technology University, Nanning, 530003, Liuzhou Lin Dao Light Wood Structure Manufacturing Co. Ltd. 545000, Liuzhou China)

Abstract: With the improvement of people's awareness of ecological and environmental protection, green environmental protection materials are more and more popular. In order to improve the natural defects of plantation wood, it can be modified by heat treatment. After heat treatment, the wood of Chinese fir and pine will be a kind of green ecological material. Based on the rich artificial forest and ecological tourism resources in Guangxi, with water vapor as the protection medium, the 15-year-old Chinese fir and pine were heat treated at software. Fuzzy comprehensive evaluation method is used to evaluate the application and development potential in tourism industry, and an empirical study is carried out with Sanjiang County as an example. The comparative experiment included (1) Heat treatment temperature in the range of 160℃ to 200℃, The dimensional stability of Chinese fir and pine wood is significantly higher than that of untreated wood, Its hygroscopic properties were decreased by 40%, Dry shrinkage and wet swelling decreased by 50%; Heat treatment temperature in the range of 180C to 220℃, Heat treatment modification of artificial forest fir and pine, Its static curvature intensity is between 59 and 69 MPa and from

67 to 115 MPa, Its elastic modulus is between 7640-8067 MPa and between 11399 - 12320 MPa, Chinese fir wood reaches the first grade material performance. Pines wood has reached the secondary material performance. (2) Heat treatment modified Chinese fir and pine can be used as ecological tourism tourist center, ticket center, fitness or leisure center building as indoor and outdoor decoration materials, and ecological scenic area within the wooden boardwalk, wooden pavilion, wooden gallery, wooden tower, wooden bridge, wooden sketch, cabins, landscape, highlight the original ecology of the scenic spot, let visitors get thorough return of body and mind and relax. (3) The results show that the application potential in ecotourism industry is huge, probably 40.4% is "excellent", 40.7% is "good", 17.3% is "medium", 1.7% is "general", 0.1% is "poor", Comprehensive potential is good, the maximum weight value of wood structure characteristic is 0.492, and the minimum value of maintenance guarantee weight is 0.004. The integrated development mode of wood structure cultural ecotourism industry is an effective way to promote the green development of wood structure industry and tourism industry.