

QUALITY IMPROVEMENT OF MDF BOARD BY ADDING SUITABLE CHEMICALS TO REDUCE FUNGAL ATTACK

Nipunika Y. M. M.^{1*}, Jayaweera C. D.¹, Fernando K M E P², Hathurusinghe H. A. G.³

- 1. Department of Chemistry, Faculty of Applied Sciences, University of Sri Jayewardenepura
 - 2. Department of Botany, Faculty of Applied Sciences, University of Sri Jayewardenepura
 - 3. Merbok MDF Lanka (PVT) Ltd
- **mashanipunika@gmail.com*

Medium Density Fiber boards are hygroscopic materials that can take up and retain moisture. Mainly its moisture content depends on the relative humidity and temperature in the surrounding environment. In a country like Sri Lanka where the humidity condition is very high, MDF readily absorbs moisture. When the moisture content is over 18%, MDF is susceptible to fungal attack. Due to this issue nearly 80% demand of local market of MDF has been decreased. This study aimed to improve the durability of MDF by adding suitable chemicals to reduce fungal attack.

Favourable conditions for fungal attacks; moisture content, light intensity, resin load and fiber composition were evaluated. Carbendezim (DELSENE 50 WP) and Chlorothalonil (DACONIL SC) were introduced to the samples as fungicide. Different resin samples were prepared by adding 0.5% (w/w) Carbendezim, 0.5% (w/w) Chlorothalonil, 0.5% (w/w) Carbendezim and 0.5% (w/w) Chlorothalonil, 0.1% (w/w) Chlorothalonil and 0.6% (w/w) borax to 100 g of Urea Formaldehyde resin. Five fungi species were observed on MDF board and two *Aspergillus* spp. were identified. They caused 4.5% decay within 3 weeks. Based on the initial findings dark and high humidity conditions were more susceptible to the fungal growth on MDF boards. High resin content and low rubber fiber composition exhibited more resistant to fungal attack. Chemical added samples showed remarkable resistance than normal boards. It was found that the resistance to fungal attack was enhanced by mixture of Chlorothalonil and borax. Samples with 0.5% (w/w) Carbendezim and 0.5% (w/w) Chlorothalonil showed more resistance.

Keywords: MDF, Carbendezim, Chlorothalonil, fungal attack