

### Improving the performance of an eco-friendly WPC based on heavy metal free PVC

김대수\*, 홍진욱, 박솔몬, 성시현, 김영주, 채현규  
충북대학교 화학공학과  
(dskim@chungbuk.ac.kr\*)

Wood plastic composites (WPCs) have been attracting lots of interest because they are economic and have reasonable physical properties. In this study, eco-friendly wood/PVC/silica composites were prepared by melt blending wood flour, a heavy metal free PVC compound, and silica. In general, most physical properties of a WPC with PVC matrix are not so high because of poor interfacial adhesion between the hydrophilic wood flour and hydrophobic PVC. Therefore, in this study, we tested several coupling agents to improve the wood/PVC interfacial adhesion strength. Furthermore, to improve the performance of the wood/PVC composite, a small amount of silica nanoparticles was incorporated into the WPC. WPC specimens were fabricated by melt-blending followed by compression molding, and their physical properties were investigated by UTM, izod impact tester, DMA, and TGA. The effects of introducing the silica nanoparticles and various coupling agents were investigated.