Development of Biodegradable Paper Bags Using Alginate-chitosan Gel and Its Potential as Eco-friendly Flame Retardant

Lee, Hyunjeong (School: Korean Minjok Leadership Academy)
Lee, Hyun Seung (School: Sejong Academy of Science and Arts)

In this research, we present an eco-friendly hanji-based disposable bag. We placed hanji immersed in alginate solution on the flat board to coat the paper with gel by spraying calcium solution. Through adding stiffeners, we improved the tensile strength of the gel-coated hanji. Chitosan, in particular, significantly improved water-resistance, the result which allowed us to conclude that adding chitosan to 2% alginate gel is an optimal way to better tensile strength and water-resistance. Furthermore, we suggest the possibility to utilize the hanji coated with alginate gel and chitosan as an eco-friendly flame resistant. Finally, we rendered prototypes, discovering that they could store wet item. We anticipate that alginate gel with chitosan can be widely used in industry.

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