
Potential of Coconut Coir as an Environmentally Friendly Wet Floral Sponge

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Abstract

Wet floral foam commonly used in flower arrangements, has a negative environmental impact as it is made of non-biodegradable plastic material that can break down into microplastics. This study explores the development of an environmentally friendly floral sponge formulated from a blend of coconut coir and polyurethane. Coconut coir a natural resource, was selected for its biodegradability and water retention properties, while polyurethane was used as a binding agent to enhance structural integrity. The research employed three different ratios of coconut coir to polyols to diisocyanates which were 0.5:1:1 (Sample A), 1:1:1 (Sample B) and 2:1:1 (Sample C). Each sample was subjected to ASTM D570 water absorption test and ASTM E96/E96M water evaporation tests to determine its effectiveness as a floral sponge. Results revealed, as the coconut coir ratio increases, the absorption rate increases but the absorption percentage drops. Coconut coir contributes its natural hydrophilic and capillary structure, allowing effective moisture wicking and retention. While polyurethane adds porosity and increases the material's surface area for trapping water. In term of evaporation, increasing the ratio of coconut coir enhances evaporation rates due to its fibrous texture and larger porous structure, which increases the surface area for water exposure and promotes faster evaporation. In conclusion, the findings suggest that a balanced formulation of coconut coir to polyurethane 1:1:1 (Sample B) can yield an effective and environmentally friendly floral sponge. This biodegradable alternative hold promises for reducing plastic waste in floral arrangements, offering a viable substitute to traditional floral foam without compromising on performance.

Keywords : *Wet floral sponge; Coconut Coir; Polyurethane; Environmentally friendly; Absorption; Evaporation*
