

ABSTRACT

Plastic bag is one of the biggest contributors to plastic waste, so there is a need for alternative uses of bioplastic materials that are easily decomposed by the environment. Orange peel, as a residual agricultural product, has great potential to be processed into a raw material for bioplastic materials. This material has the potential as an alternative to materials that are difficult to decompose by nature. In this study, orange peel waste, which is used as a raw material for making bioplastics, was designed into shopping bags using the SCAMPER design method so that they have adequate quality and function. Exploration of bioplastic materials with compositions of orange peel, alginate, wool fiber, glycerin, and coconut oil, respectively 19%, 21%, 3%, 47%, and 9%, was carried out by the natural drying method at temperature and humidity conditioned for 3 to 7 days and the resulting bioplastic materials have been characterized and mechanical testing. The bioplastic material from orange peel has a physical bond between the forming materials with an average tensile strength, load capacity, and elongation of 1.012 N/mm², 4.003 N, and 87.7%, respectively. This shopping bag design made from orange peel sheets has a bag size of 25.5 x 25 cm with a bag width of 7.5 cm, a natural orange color with more aesthetic value compared to conventional cloth-based shopping bags, and is easy to fold so you can take it anywhere without it taking up so much space.

Keywords: Product design, Shopping bags, Bioplastics, Orange peel waste.