ABSTRACT

The rapid development of 3D printing technology has become an important innovation in modern manufacturing processes, especially in the manufacture of prototypes and industrial components more efficiently. This technology allows the manufacture of objects with high precision and faster processing times. However, the use of filaments such as ABS and PLA+ in 3D printing often produces waste in the form of print failures and unused support materials. Therefore, this study aims to explore the application of mechanical recycling methods in the processing of 3D printing waste, especially ABS and PLA+ filaments. This study tested various methods, such as shredding, heating using an oven, pressing, and using an extruder machine at a certain temperature, to process the waste into reusable materials. This recycling process aims to evaluate the quality of the recycled material and determine the potential for reusing the material in other applications. The results of the experiment show that mechanical recycling techniques can produce materials with fairly good quality, which can be reused in the manufacture of new products. This study is expected to contribute to more efficient management of 3D printing waste and provide recommendations for waste management service providers in dealing with 3D printing waste processing.

Keywords*: 3D printing, ABS and PLA+, Waste, Recycling.*